DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

Rehabilitation of Runway 8R-26L and Associated Airfield Improvements at Ontario International Airport

State Clearinghouse No. 2021060531

Lead Agency:

Ontario International Airport Authority
1923 East Avion Street
Ontario, CA 91761

Prepared by:

HNTB Corporation
6033 West Century Boulevard, Suite 1050
Los Angeles, CA 90045

In association with:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

April 2022

ONTARIO
INTERNATIONAL AIRPORT
So Cal. So Easy.

TABLE OF CONTENTS

Page

1.0 Introduction 1-1
1.1 Document Purpose 1-1
1.2 Rationale for Supplementing the 1991 Certified FEIR 1-1
1.2.1 Project Updates Since Certification of 1991 Certified FEIR 1-2
1.2.2 Current Requirements to Meet Project Objectives 1-2
1.2.3 CEQA Updates Since Certification of 1991 Certified FEIR 1-3
1.3 Environmental Categories to be Reviewed 1-4
1.4 Supplemental EIR Process 1-4
1.4.1 Notice of Preparation and Scoping 1-4
1.4.2 Draft SEIR Public Review and Comment Period 1-4
1.4.3 Final SEIR/Responses to Comments 1-5
1.4.4 Notice of Determination 1-5
1.5 Aviation Activity Forecast and Years Reviewed in Environmental Analysis 1-5
1.6 Document Organization 1-6

2.0 Proposed Project Description 2-1
2.1 Project Location 2-1
2.2 Site Description, Existing Land Uses and Airfield Operations 2-2
2.2.1 Site Description 2-2
2.2.2 Existing Land Uses 2-3
2.2.3 Airfield Operations 2-3
2.3 Project Objectives 2-4
2.4 Project Description 2-5
2.4.1 Runway Improvements 2-6
2.4.2 Taxiway and Other Airfield Improvements 2-7
2.4.3 Relocation of Objects to Outside of the Runway Safety Area (RSA), Runway Object Free Area (ROFA) and Taxiway Object Free Area (TOFA) 2-14
2.4.4 Relocation of the South Electrical Vault 2-15
2.5 Intended Uses and Purpose of the Supplemental EIR 2-16

TABLE OF CONTENTS

Page

3.0 Environmental Setting 3-1
3.1 Regional Setting 3-1
3.1.1 Local Jurisdictions 3-1
3.1.2 Regional Land Use Patterns 3-2
3.1.3 Regional Topography 3-2
3.2 Baseline Conditions 3-3
3.2.1 Existing Conditions 3-3
3.2.2 Baseline Conditions 3-3
3.3 Environmental Factors with Potential for Impact 3-4
3.4 Air Quality 3-5
3.4.1 Pollutants of Interest 3-5
3.4.2 Regulatory Setting 3-7
3.4.3 Baseline Conditions 3-11
3.5 Biological Resources 3-15
3.5.1 Regulatory Setting 3-15
3.5.2 Existing Conditions 3-18
3.6 Greenhouse Gas Emissions 3-24
3.6.1 Greenhouse Gases and Climate Change 3-24
3.6.2 Regulatory Setting 3-25
3.6.3 Baseline Conditions 3-29
3.7 Cultural Resources 3-31
3.7.1 Regulatory Setting 3-32
3.7.2 Existing Condition 3-33
3.8 Noise 3-33
3.8.1 Noise Metrics 3-34
3.8.2 Regulatory Setting 3-34
3.8.3 Baseline Conditions 3-37
3.9 Transportation/Traffic 3-38
3.9.1 Regulatory Setting 3-38
3.9.2 Existing Conditions 3-39
3.10 Tribal Cultural Resources 3-40
3.10.1 Regulatory Setting 3-40
3.10.2 Existing Conditions 3-40

TABLE OF CONTENTS

Page

4.0 Environmental Impacts and Mitigation 4-1
4.1 Air Quality 4-1
4.1.1 Methodology 4-2
4.1.2 Baseline Conditions 4-3
4.1.3 Thresholds of Significance 4-6
4.1.4 Impacts 4-7
4.1.5 Mitigation Measures 4-18
4.2 Biological Resources 4-18
4.2.1 Methodology 4-18
4.2.2 Existing Conditions 4-21
4.2.3 Thresholds of Significance 4-21
4.2.4 Impacts 4-22
4.2.5 Mitigation Measures 4-25
4.3 Greenhouse Gases 4-27
4.3.1 Methodology 4-27
4.3.2 Baseline Conditions 4-28
4.3.3 Thresholds of Significance 4-29
4.3.4 Impacts 4-30
4.3.5 Mitigation Measures 4-35
4.4 Cultural Resources 4-36
4.4.1 Methodology 4-36
4.4.2 Existing Conditions 4-37
4.4.3 Thresholds of Significance 4-37
4.4.4 Impacts 4-37
4.4.5 Mitigation Measures 4-38
4.5 Noise 4-38
4.5.1 Methodology 4-38
4.5.2 Baseline Conditions 4-39
4.5.3 Thresholds of Significance 4-39
4.5.4 Impacts 4-40
4.5.5 Mitigation Measures 4-53
4.6 Transportation/Traffic 4-54
4.6.1 Methodology 4-54
4.6.2 Existing Conditions 4-54
4.6.3 Thresholds of Significance 4-54

TABLE OF CONTENTS

Page

4.6.4 Impacts 4-54
4.6.5 Mitigation Measures 4-55
4.7 Tribal Cultural Resources 4-55
4.7.1 Methodology 4-55
4.7.2 Existing Conditions 4-56
4.7.3 Thresholds of Significance 4-56
4.7.4 Impacts 4-56
4.7.5 Regulatory Requirements 4-56
4.7.6 Mitigation Measures 4-56
4.8 Health Risk Assessment 4-59
4.8.1 Methodology 4-60
4.8.2 Existing Conditions 4-62
4.8.3 Thresholds of Significance 4-62
4.8.4 Impacts 4-62
4.8.5 Mitigation Measures 4-67
4.9 Significant Irreversible Environmental Changes 4-67
4.10 Significant and Unavoidable Impacts 4-68

5.0 Cumulative Impacts 5-1
5.1 Introduction 5-1
5.2 Methodology 5-1
5.3 Qualitative Review 5-7
5.3.1 Air Quality 5-8
5.3.2 Biological Resources 5-9
5.3.3 Greenhouse Gas Emissions 5-10
5.3.4 Cultural Resources 5-10
5.3.5 Transportation/Traffic 5-11
5.3.6 Tribal Cultural Resources 5-12
5.3.7 Health Risk Assessment 5-12
5.4 Quantitative Review of Noise 5-13
5.4.1 Noise 5-13

6.0 Growth-Inducing Impacts 6-1
6.1 Growth-Inducting Impacts of the Proposed Project 6-1

TABLE OF CONTENTS

Page

7.0 Effects Found Not to be Significant..... 7-1

8.0 Alternatives..... 8-1

8.1 Alternatives Carried Forward for Detailed Evaluation 8-2
8.1.1 Two-Year Program Alternative 8-2
8.1.1.1 Description of Alternative 8-2
8.1.1.2 Comparison of Environmental Effects 8-2
8.1.1.3 Ability of Alternative to Meet Basic Objectives of the Proposed Project and to be Feasibly Implemented 8-50
8.1.2 No Project Alternative 8-52
8.1.2.1 Description of Alternative 8-52
8.1.2.2 Environmental Effects 8-52
8.1.2.3 Ability of Alternative to Meet Basic Objectives of the Proposed Project8-65
8.1.3 Summary Comparison 8-65
8.2 Alternatives Not Carried Forward for Detailed Evaluation.....8-68
8.2.1 Continued Use of Contra Flow Operations During Construction 8-68
8.2.2 Partial Rehabilitation 8-69
8.2.3 Reduced Project Components 8-69
8.3 Environmentally Superior Alternatives 8-70

9.0 Mitigation, Monitoring and Reporting or Monitoring Program 9-1

10.0 Consultation..... 10-1

10.1 Notice of Preparation.....10-1
10.2 Tribal Consultation.....10-1

11.0 Lead Agency and Consultants..... 11-1

11.1 Lead Agency 11-1
11.2 Consultants 11-1

12.0 Abbreviations and Acronyms and List of References 12-1

12.1 Abbreviations and Acronyms 12-1
12.2 List of References 12-6

LIST OF TABLES

Page

Table 1-1 Summary of Aircraft Activity 1-7

Table 2-1 Primary Runway Use Configurations 2-4

Table 3-1 Sources of Airport Emissions 3-6
Table 3-2 Federal and State Air Quality Standards and Attainment Status for the South Coast Air Basin 3-9
Table 3-4 Baseline Conditions Aircraft Taxiing Emissions 3-12
Table 3-5 CA-60 Monitoring Data 3-13
Table 3-6 Northwest San Bernardino Valley Monitoring Data 3-14
Table 3-7 Central San Bernardino Valley 1 Monitoring Data 3-15
Table 3-8 Vegetation Communities 3-18
Table 3-9 Existing Jurisdictional Features 3-21
Table 3-10 Baseline Conditions Aircraft Taxiing GHG Emissions 3-30
Table 3-11 GHG Emissions in California by Economic Sector 3-31
Table 3-12 2010-2019 GHG Emissions in California by Economic Sector 3-31
Table 3-13 Baseline Conditions Effects of Aircraft Noise Exposure on Land Uses 3-38

Table 4-1 Baseline Conditions Aircraft Taxiing Emissions 4-5
Table 4-2 General Conformity de minimis Levels 4-6
Table 4-3 SCAQMD Thresholds of Significance for Construction Criteria Air Pollutants and Precursors 4-7
Table 4-4 Proposed Project Direct Construction Emissions 4-9
Table 4-5 Proposed Project Aircraft Taxiing Indirect Construction Emissions from Temporary Runway Closures Compared to Baseline Conditions 4-11
Table 4-6 Total Proposed Project Construction Emissions Compared to Baseline Conditions 4-12
Table 4-7 Proposed Project Aircraft Taxiing Indirect Construction Emissions from Temporary Runway Closures Compared to No Project Alternative 4-14
Table 4-8 Total Proposed Project Construction Emissions Alternative 4-15
Table 4-9 Impacts to Vegetation Communities 4-23
Table 4-10 Baseline Conditions Aircraft Taxiing GHG Emissions 4-29
Table 4-11 Proposed Project Direct Construction GHG Emissions (MT/Year) 4-30
Table 4-12 Proposed Project Aircraft Taxiing Indirect Construction GHG Emissions from Temporary Runway Closures Compared to Baseline Conditions 4-31
Table 4-13 Total Proposed Project Construction GHG Emissions Compared to Baseline Conditions 4-31
Table 4-14 Proposed Project Aircraft Taxiing Indirect Construction GHG Emissions from Temporary Runway Closures Compared to the No Project Alternative 4-33

LIST OF TABLES

Page

Table 4-15 Total Proposed Project Construction GHG Emissions Compared to the No Project Alternative 4-33
Table 4-16 2023 Proposed Project Effects of Aircraft Noise Exposure on Land Uses (acres) 4-41
Table 4-17 2024 Proposed Project Effects of Aircraft Noise Exposure on Land Uses (acres) 4-42
Table 4-18 2025 Proposed Project Effects of Aircraft Noise Exposure on Land Uses (acres) 4-43
Table 4-19 Noise Inputs and Outputs for Baseline Conditions and Proposed Project 4-44
Table 4-20 Estimated Population, Housing Units and Acreage within Proposed Project and Baseline Conditions Aircraft Noise Contours 4-45
Table 4-21 2023 No Project Alternative Effects of Aircraft Noise Exposure on Land Uses (acres) 4-47
Table 4-22 2024 No Project Alternative Effects of Aircraft Noise Exposure on Land Uses (acres) 4-48
Table 4-23 2025 No Project Alternative Effects of Aircraft Noise Exposure on Land Uses (acres) 4-49
Table 4-24 Noise Inputs and Outputs for No Project and Proposed Project 4-50
Table 4-25 Estimated Population, Housing Units and Acreage within Proposed Project and No Project Aircraft Noise Contours 4-51
Table 4-26 Proposed Project Maximally Exposed Individual Resident Incremental Health Risk 4-63
Table 4-27 Proposed Project Maximally Exposed Individual Worker Incremental Health Risk 4-63
Table 4-28 Proposed Project Discrete Sensitive Receptor Incremental Cancer Risk 4-64
Table 4-29 Proposed Project Discrete Sensitive Receptor Incremental Chronic Risk 4-65
Table 4-30 Proposed Project Discrete Sensitive Receptor Incremental Acute Risk 4-66

Table 5-1 Projects Reviewed for Cumulative Impacts (On-Airport) 5-3
Table 5-2 Projects Reviewed for Cumulative Impacts (Off-Airport) 5-4
Table 5-3 2024 Proposed Project – Cumulative Impact Effects of Aircraft Noise Exposure on Land Uses (acres) 5-15
Table 5-4 2025 Proposed Project – Cumulative Impact Effects of Aircraft Noise Exposure on Land Uses (acres) 5-16
Table 5-5 Noise Inputs and Outputs for Baseline Conditions and Proposed Project – Cumulative Impacts 5-17
Table 5-6 Estimated Population, Housing Units and Acreage within Proposed Project – Cumulative Impact and Baseline Conditions Aircraft Noise Contours 5-18

LIST OF TABLES

Page

Table 8-1 Two-Year Program Alternative Direct Construction Emissions 8-4
Table 8-2 Two-Year Program Alternative Aircraft Taxiing Indirect Construction Emissions from Temporary Runway Closures Compared to Baseline Conditions 8-6
Table 8-3 Total Two-Year Program Alternative Construction Emissions Compared to Baseline Conditions.....8-6
Table 8-4 Two-Year Program Alternative Aircraft Taxiing Indirect Construction Emissions from Temporary Runway Closures Compared to the No Project Alternative ...8-8
Table 8-5 Total Two-Year Program Alternative Construction Emissions Compared to the No Project Alternative 8-8
Table 8-6 Comparison of Proposed Project and Two-Year Program Alternative Construction Emissions 8-13
Table 8-7 Comparison of Proposed Project and Two-Year Program Alternative Indirect Construction Emissions.....8-14
Table 8-8 Comparison of Proposed Project and Two-Year Program Alternative Total Construction Emissions.....8-15
Table 8-9 Two-Year Program Alternative Direct Construction GHG Emissions (MT/Year) 8-17
Table 8-10 Two-Year Program Alternative Aircraft Taxiing Indirect Construction GHG Emissions from Temporary Runway Closures Compared to Baseline Conditions 8-18
Table 8-11 Total Two-Year Program Alternative Construction GHG Emissions Compared to Baseline Conditions.....8-18
Table 8-12 Two-Year Program Alternative Aircraft Taxiing Indirect Construction GHG Emissions from Temporary Runway Closures.....8-20
Table 8-13 Total Two-Year Program Alternative Construction GHG Emissions 8-20
Table 8-14 Comparison of Proposed Project and Two-Year Program Alternative Direct Construction GHG Emissions 8-24
Table 8-15 Comparison of Proposed Project and Two-Year Program Alternative Indirect Construction GHG Emissions 8-24
Table 8-16 Comparison of Proposed Project and Two-Year Program Alternative Total Construction GHG Emissions 8-25
Table 8-17 2023 Two-Year Program Alternative Effects of Aircraft Noise Exposure on Land Uses (acres).....8-27
Table 8-18 2024 Two-Year Program Alternative Effects of Aircraft Noise Exposure on Land Uses (acres).....8-28
Table 8-19 Noise Inputs and Outputs for Baseline Conditions and Two-Year Program Alternatives 8-29
Table 8-20 Estimated Population, Housing Units and Acreage within Two-Year Program Alternative and Baseline Conditions Aircraft Noise Contours 8-30
Table 8-21 Noise Inputs and Outputs for No Project and Two-Year Program Alternative 8-32

LIST OF TABLES

Page

Table 8-22 Estimated Population, Housing Units and Acreage within Two-Year Program Alternative Aircraft Noise Contours 8-33
Table 8-23 Noise Inputs and Outputs for Proposed Project and Two-Year Program Alternative 8-37
Table 8-24 Estimated Population, Housing Units and Acreage within the Proposed Project and Two-Year Program Alternative Aircraft Noise Contours 8-38
Table 8-25 Two-Year Program Alternative Maximally Exposed Individual Resident Incremental Health Risk 8-41
Table 8-26 Two-Year Program Alternative Maximally Exposed Individual Worker Incremental Health Risk 8-41
Table 8-27 Two-Year Program Alternative Discrete Sensitive Receptor Incremental Cancer Risk 8-42
Table 8-24 Two-Year Program Alternative Discrete Sensitive Receptor Incremental Chronic Risk 8-43
Table 8-29 Two-Year Program Alternative Discrete Sensitive Receptor Incremental Acute Risk 8-44
Table 8-30 Proposed Project and Two-Year Program Alternative Maximally Exposed Individual Resident Incremental Health Risk 8-46
Table 8-31 Proposed Project and Two-Year Program Alternative Maximally Exposed Individual Worker Incremental Health Risk 8-46
Table 8-32 Proposed Project and Two-Year Program Alternative Discrete Sensitive Receptor Incremental Cancer Risk 8-47
Table 8-33 Proposed Project and Two-Year Program Alternative Discrete Sensitive Receptor Incremental Chronic Risk 8-48
Table 8-34 Proposed Project and Two-Year Program Alternative Discrete Sensitive Receptor Incremental Acute Risk 8-49
Table 8-35 No Project Alternative Aircraft Taxiing Emissions Compared to Baseline Conditions 8-54
Table 8-36 Proposed Project Aircraft Taxiing Indirect Construction Emissions from Temporary Runway Closures Compared to No Project Alternative 8-55
Table 8-37 No Project Alternative Aircraft Taxiing GHG Emissions Compared to Baseline Conditions 8-57
Table 8-38 Proposed Project Aircraft Taxiing Indirect Construction GHG Emissions from Temporary Runway Closures Compared to the No Project Alternative 8-58
Table 8-39 Noise Inputs and Outputs for Baseline Conditions and No Project Alternatives 8-60
Table 8-40 Estimated Population, Housing Units and Acreage within No Project Alternative and Baseline Conditions Aircraft Noise Contours 8-61
Table 8-41 Noise Inputs and Outputs for No Project and Proposed Project 8-62
Table 8-42 Estimated Population, Housing Units and Acreage within Proposed Project and No Project Aircraft Noise Contours 8-63

LIST OF TABLES

Page

Table 8-43 Summary Comparison of Alternatives' Impact Significance Compared to Baseline Conditions 8-66

LIST OF FIGURES

On or Following Page

Figure 2-1 Project Location 2-2
Figure 2-2 Airport Facilities 2-2
Figure 2-3 Existing Land Uses 2-3
Figure 2-4 Primary Runway Use Configurations 2-4
Figure 2-5 Proposed Project 2-6

Figure 3-1 Soils 3-18
Figure 3-2 Vegetation and Sensitive Resources 3-18
Figure 3-3 Jurisdictional Features 3-21
Figure 3-4 Cultural Resources Project Area 3-33
Figure 3-5 Existing Condition Noise Exposure 3-37

Figure 4-1 Impacts to Vegetation 4-23
Figure 4-2 2023 Proposed Project vs Baseline Conditions Noise Contours 4-40
Figure 4-3 2024 Proposed Project vs Baseline Conditions Noise Contours 4-40
Figure 4-4 2025 Proposed Project vs Baseline Conditions Noise Contours 4-40
Figure 4-5 2023 Proposed Project vs 2023 No Project Noise Contours 4-46
Figure 4-6 2024 Proposed Project vs 2024 No Project Noise Contours 4-46
Figure 4-7 2025 Proposed Project vs 2025 No Project Noise Contours 4-46
Figure 4-8 Receptor Locations 4-60

Figure 5-1 Projects Considered for Cumulative Impacts 5-2
Figure 5-2 2024 Proposed Project – Cumulative Impact, 2025 Proposed Project – Cumulative Impact and Baseline Conditions Noise Contours Comparison 5-14

Figure 8-1 2023 Two-Year Program Alternative vs. Baseline Conditions Noise Contours 8-26
Figure 8-2 2024 Two-Year Program Alternative vs. Baseline Conditions Noise Contours 8-26
Figure 8-3 2023 Two-Year Program Alternative vs. 2023 No Project Noise Contours 8-31
Figure 8-4 2024 Two-Year Program Alternative vs. 2024 No Project Noise Contours 8-31
Figure 8-5 2023 Two-Year Program Alternative vs. 2023 Proposed Project Noise Contours 8-36
Figure 8-6 2024 Two-Year Program Alternative vs. 2024 Proposed Project Noise Contours 8-36
Figure 8-7 No Project vs. Baseline Conditions Noise Contours 8-59

APPENDICES

Appendix A Notice of Preparation (NOP) and Initial Study
Appendix B NOP Comments
Appendix C Pavement Management Program (2020)
Appendix D Air Quality and Greenhouse Gas Emissions
Appendix E Biological Resources
Appendix F Cultural Resources
Appendix G Introduction to Noise
Appendix H Noise
Appendix I Health Risk Assessment
Appendix J City of Ontario Coordination
Appendix K Two-Year Program
Appendix L Contra Flow

Executive Summary

The Ontario International Airport Authority (OIAA) as lead agency, has prepared a Supplemental Environmental Impact Report (SEIR) in compliance with the California Environmental Quality Act (CEQA) for the proposed rehabilitation and reconstruction of Runway 8R-26L and associated airfield improvements (Proposed Project) at Ontario International Airport (ONT). The SEIR provides new information and analyzes the environmental effects of changes to the project reviewed in the 1991 *Certified ONT Final EIR (FEIR) for Terminals, Other Facilities and Operations to Support 12 Million Annual Passengers* (referred to hereafter as "1991 Certified FEIR"). While the Proposed Project remains similar to the project reviewed in the 1991 Certified FEIR, with the objective of providing facilities to accommodate 12 million annual passengers (MAP) at ONT, the Proposed Project reviewed in this SEIR would have temporary significant effects during periods of the runway rehabilitation construction. The proposed improvements would not result in increased runway capacity.

Starting in April 2022, OIAA circulated a Draft SEIR for review to agencies, local governments and interested members of the general public for a period of 45 days. Comments must be provided to OIAA by the close of the public review period (Thursday, June 9, 2022) for consideration in the Final SEIR. During the public review period, comments on the Draft SEIR from agencies, local governments and members of the public may be submitted to OIAA at the following address:

ATTN: OIAA Environmental Planning Manager
1923 East Avion Street
Ontario, CA 91761

Or email:
NWALKER@FLYONTARIO.COM

This Executive Summary addresses the potential environmental effects associated with the Proposed Project. An introduction and project background, project objectives, project description, environmental setting and project alternatives are also included. A table summarizing the environmental impacts and mitigation measures is provided.

ES.1 Overview of Ontario International Airport

ONT is located in San Bernardino County, approximately 35 miles east of Downtown Los Angeles in the center of Southern California and is considered part of the Inland Empire. The Airport resides on 1,741 acres of land, surrounded primarily by airport-related, industrial and commercial uses. Airport facilities include two passenger terminals, general aviation facilities, air freight buildings, parking lots, and numerous airport and aircraft maintenance and support services. ONT has two parallel runways that are oriented in the east-west direction, Runways 8L-26R and 8R-26L. Runway 8R-26L, the primary runway during low visibility conditions, is 10,200' x 150' and is served by a full-length, parallel taxiway to the south (Taxiway S). Runway 8L-26R is

12,197’ x 150’ and is served by a full-length, parallel taxiway to the north (Taxiway N).

The three primary runway use configurations at ONT are (1) East Flow (depart and arrive on Runways 8L and 8R), (2) West Flow (depart and arrive on Runways 26L and 26R), and (3) Contra Flow. Contra Flow is an operational noise mitigation strategy used at ONT to minimize noise over residential areas at night and thus occurs daily between 10:00 PM and 7:00 AM when weather and wind conditions allow. Under certain circumstances in the interest of safety, airport efficiency, or aircraft operational necessity, pilots and FAA Air Traffic Control may deviate from noise abatement procedures.

ES.2 Project Background

Improvements are proposed at ONT to meet current FAA standards, improve safety, and enhance airfield efficiency. In 2020, ONT conducted an assessment of all airfield and landside pavements to establish a Pavement Management Plan (“2020 ONT PMP”) in accordance with current Federal Aviation Administration (FAA) requirements found in FAA Advisory Circular (AC) 150/5380-6C - Guidelines and Procedures for Maintenance of Airport Pavements, and 150/5380-7B - Airport Pavement Management Program (PMP). With the results of the PMP, OIAA identified and prioritized future maintenance, rehabilitation, and reconstruction projects for airside pavement based on priority of pavement, severity of distressed pavement, and available funding.

ES.3 Project Objectives

The objectives of this Proposed Project are to make improvements to the ONT airfield via rehabilitation and reconstruction of pavement and relocation and facilities that would:

- Prioritize future maintenance, rehabilitation and/or reconstruction projects for airside pavement in accordance with the 2020 ONT PMP;
- Meet current FAA standards;
- Improve safety on the airfield;
- Enhance airfield efficiency;
- Provide adequate infrastructure to support airfield and navigational power requirements; and
- Maximize available FAA funding for construction.

ES.4 Proposed Project

The Proposed Project focuses on the rehabilitation and reconstruction of Runway 8R-26L, taxiway connector improvements and other associated airfield improvements, the relocation of objects located within the Runway Safety Area (RSA) and Runway Object Free Area (ROFA), and relocation of the south electrical vault. The Proposed

Project would not result in increased runway capacity. Runway use and flight patterns would not be impacted after the Proposed Project is implemented However, during runway closure periods as part of construction, all operations would occur on a single runway. Because the two runways are parallel and closely spaced, temporarily operating on a single runway would not significantly alter flight patterns. The only change in flight patterns during temporary runway closure periods may result from FAA Air Traffic Control (ATC) imposed restrictions on the use of Contra Flow operations during nighttime (10:00 PM to 7:00 AM). Since Contra Flow would not be used by ATC when operating on a single runway, there would be temporary increases in noise exposure to the west of the Airport during nighttime operations. The runway program would be constructed over a three-year period in 2023, 2024 and 2025 due to FAA AIP funding availability.

The individual project components, that in total make up the Proposed Project, their justification, and connected actions are summarized below according to the type of improvement (e.g., runway, taxiway/airfield, relocation need) and are illustrated on **Figure ES-1**. Many of the project elements have connected actions, including replacement of centerline striping with centerline lights, replacement of taxiway edge striping with taxiway edge lights, relocation or runway hold bars, relocation of runway guard lights, and relocation of above ground directional signage.

Runway Improvements

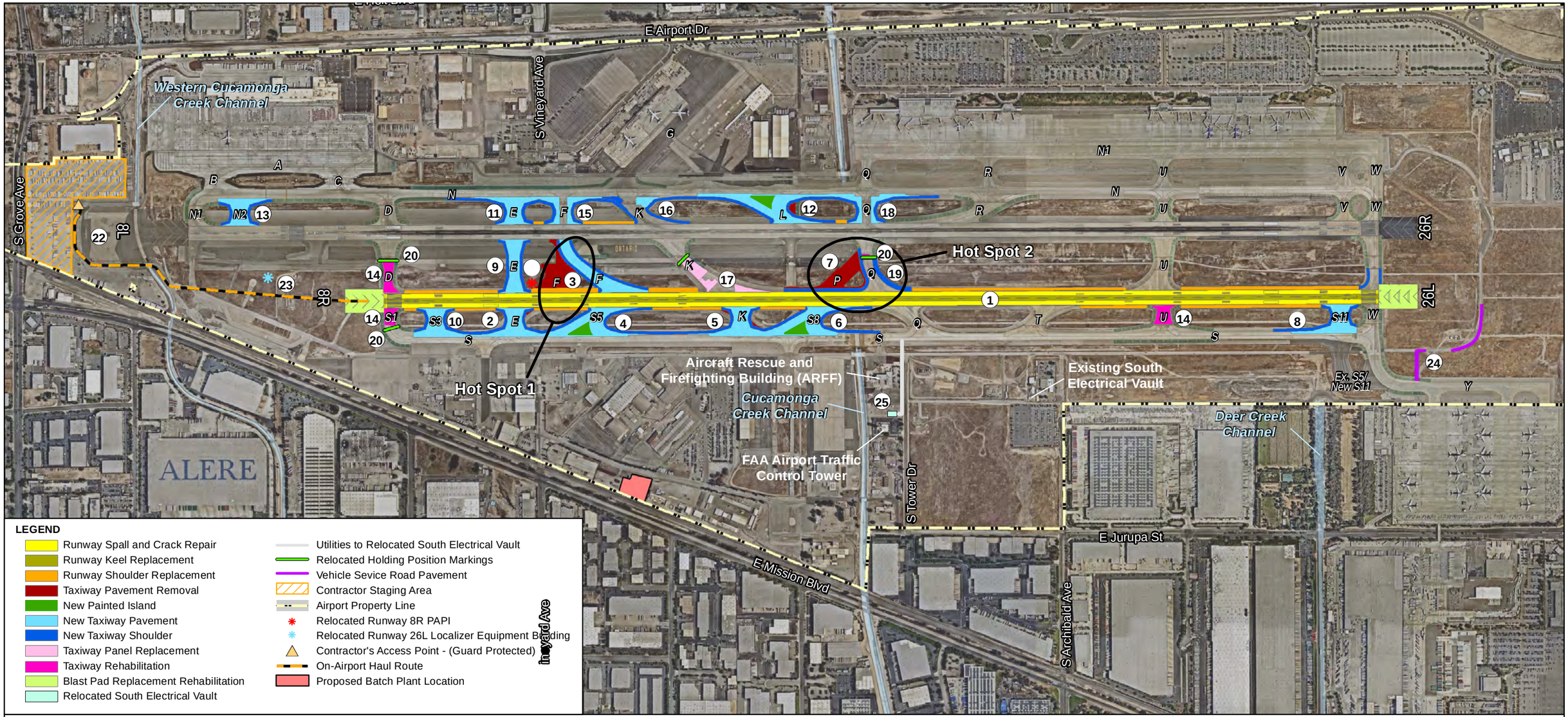
The runway improvements would meet the objectives to improve safety on the airfield and enhance airfield efficiency. Runway 8R-26L requires rehabilitation and reconstruction after 40 plus years of use. According to the PMP, due to the age and the type of distresses, full reconstruction of the keel section and maintenance and rehabilitation projects repairing the large amount of joint seal damage and spalling of the outboard sections are necessary at this time.

- Project Element #1 - Rehabilitate Runway 8R-26L

Taxiway and Other Airfield Improvements

The taxiway and other airfield improvements would meet the objectives to meet current FAA standards, improve safety on the airfield, enhance airfield efficiency and provide adequate infrastructure to support airfield and navigational power requirements. Several taxiways need to be modified to address "Hot Spots" at ONT. A Hot Spot is defined as a location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary.

- Project Element #2 - Modify Existing Connector Taxiway F and Redesignate as Taxiway E
- Project Element #3 - Remove Existing Taxiway F between Runways 8L-26R and 8R-26L and Construct New Exit Taxiway F
- Project Element #4 - Construct Exit Taxiway S5



LEGEND

- Runway Spall and Crack Repair
- Runway Keel Replacement
- Runway Shoulder Replacement
- Taxiway Pavement Removal
- New Painted Island
- New Taxiway Pavement
- New Taxiway Shoulder
- Taxiway Panel Replacement
- Taxiway Rehabilitation
- Blast Pad Replacement Rehabilitation
- Relocated South Electrical Vault
- Utilities to Relocated South Electrical Vault
- Relocated Holding Position Markings
- Vehicle Sevice Road Pavement
- Contractor Staging Area
- Airport Property Line
- Relocated Runway 8R PAPI
- Relocated Runway 26L Localizer Equipment Building
- Contractor's Access Point - (Guard Protected)
- On-Airport Haul Route
- Proposed Batch Plant Location

PROPOSED PROJECT ELEMENTS

(1) REHABILITATE RUNWAY 8R-26L
(2) MODIFY EXISTING CONNECTOR TAXIWAY F AND REDESIGNATE AS TAXIWAY E
(3) REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F
(4) CONSTRUCT EXIT TAXIWAY S5
(5) RECONSTRUCT EXISTING EXIT TAXIWAY K
(6) RECONSTRUCT EXISTING EXIT TAXIWAY P TO A HIGH-SPEED EXIT AND REDESIGNATE AS TAXIWAY S8
(7) REMOVE EXISTING TAXIWAY P BETWEEN RUNWAYS 8L-26R AND 8R-26L
(8) CONSTRUCT BYPASS TAXIWAY S11
(9) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8R-26L AND 8L-26R
(10) CONSTRUCT BYPASS TAXIWAY S3
(11) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8L-26R AND TAXIWAY N
(12) RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED EXIT TAXIWAY
(13) CONSTRUCT BYPASS TAXIWAY N2
(14) RESURFACE TAXIWAY D, TAXIWAY S1 AND TAXIWAY U PAVEMENT
(15) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(16) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(17) REPLACE/REHABILITATE PANELS ON TAXIWAY K BETWEEN RUNWAYS
(18) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(19) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAYS
(20) RELOCATE HOLDING POSITION MARKINGS*
(21) RELOCATE RUNWAY 8R PAPI
(22) RELOCATE PERIMETER FENCE AND REMOVE OBJECTS WITHIN ROFA
(23) RELOCATE RUNWAY 26L (8R END) LOCALIZER EQUIPMENT BUILDING
(24) MODIFY EXISTING VEHICLE SERVICE ROAD
(25) RELOCATE SOUTH ELECTRICAL VAULT

* DEPICTED IN MULTIPLE LOCATIONS

Figure ES-1

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 250 500 1,000 Feet

N

HNTB

Proposed Project

Sources: OIAA, Nearmap, HNTB Analysis

- Project Element #5 - Reconstruct Existing Exit Taxiway K (South)
- Project Element #6 - Reconstruct Existing Exit Taxiway P to a High-Speed Exit and Redesignate as Taxiway S8
- Project Element #7 - Remove Existing Taxiway P between Runways 8L-26R and 8R-26L
- Project Element #8 - Construct Bypass Taxiway S11
- Project Element #9 - Construct Crossing Taxiway E between Runways 8R-26L and 8L-26R
- Project Element #10 - Construct Bypass Taxiway S3
- Project Element #11 - Construct Crossing Taxiway E between Runway 8L-26R and Taxiway N
- Project Element #12 - Reconstruct Existing Taxiway L as a High-Speed Exit Taxiway
- Project Element #13 - Construct Bypass Taxiway N2
- Project Element #14 - Rehabilitate Taxiway D, Taxiway S1 and Taxiway U Pavement
- Project Element #15 - Construct Fillet Modifications on Taxiway F between Runway 8L-26R and Taxiway N
- Project Element #16 - Construct Fillet Modifications on Taxiway K (North) between Runway 8L-26R and Taxiway N
- Project Element #17 - Rehabilitate/Replace Panels on Taxiway K (Middle) between Runways
- Project Element #18 - Construct Fillet Modifications on Taxiway Q between Runway 8L-26R and Taxiway N
- Project Element #19 - Construct Fillet Modifications on Taxiway Q between Runways
- Project Element #20 - Relocate Hold Bar Position Markings

Relocation of Objects to Outside of the Runway Safety Area (RSA), Runway Object Free Area (ROFA) and Taxiway Object Free Area (TOFA)

Several objects and navigational aids (NAVAIDS) are currently located within the RSA or ROFA. The objects need to be removed and/or relocated clear of the ROFA. The relocation of objects to outside of the RSA, ROFA and TOFA would meet the objectives to meet current FAA standards and improve safety on the airfield.

- Project Element #21 - Relocate Runway 8R precision approach path indicator (PAPI)
- Project Element #22 - Relocate Perimeter Fence and Remove Objects within the Runway 8L-26R ROFA
- Project Element #23 - Relocate Runway 26L (8R End) Localizer Equipment Building
- Project Element #24 - Modify Existing Vehicle Service Road

Relocation of South Electrical Vault

To support the taxiway improvements and future rehabilitation of Runway 8R-26L, the existing south electrical vault would be replaced and relocated to an area between the ATCT and the Aircraft Rescue and Firefighting (ARFF) building, in the ARFF Auxiliary Lot. The airfield improvements would result in electrical power requirements that cannot be accommodated with the existing south electrical vault, which is outdated and difficult to maintain. The relocation of the south electrical vault would meet the objective to provide adequate infrastructure to support airfield and navigational power requirements.

- Project Element #25 – Relocate South Electrical Vault

ES.5 Anticipated Environmental Effects of the Proposed Project

It was determined that the following environmental factors would be potentially affected by the Proposed Project and thus are included in the evaluation of impacts as it relates to construction and operation of the Proposed Project. The following issue areas are evaluated:

- Air Quality
- Biological Resources
- Greenhouse Gas Emissions
- Cultural Resources
- Noise
- Transportation/Traffic
- Tribal Cultural Resources
- Health Risk Assessment
- Cumulative Impacts

Note that Cultural Resources have no impact, Air Quality and Transportation/Traffic have less than significant impact, and Biological Resources and Tribal Resources findings have less than significant impact with mitigation incorporated, however discussion of these resources is included to support that determination.

Table ES-1 presents the impact conclusions for each of the subject areas evaluated in this SEIR *or* as part of the June 2021 Initial Study for the project (*see Appendix A of the SEIR*).

Table ES-1: Summary of Environmental Impacts of the Proposed Project

Resource	No Impact	Less than Significant Impact	Less than Significant Impact with Mitigation	Significant Unavoidable Impact
Aesthetics		X		
Agricultural and Forestry Resources	X			
Air Quality	X (Operations)	X (Construction)		
Biological Resources			X	
Cultural Resources	X			
Energy		X		
Geology/Soils		X		
Greenhouse Gas Emissions	X (Operations)			X (Temporary during Construction)
Hazards and Hazardous Materials		X		
Hydrology and Water Quality		X		
Land Use/Planning	X			
Mineral Resources	X			
Noise	X (Operations)			X (Temporary during Construction)
Population/Housing	X			
Public Services	X			
Recreation	X			
Transportation/Traffic		X		
Tribal Cultural Resources			X	
Utilities/Service Systems		X		
Health Risk Assessment		X		
Cumulative Impacts			X	
Growth-Inducing Impacts	X			

A summary of the environmental impacts from construction and operation of the Proposed Project for each of the eight resource topics analyzed in *Chapter 4.0, Environmental Impacts and Mitigation*, of this Draft SEIR follows.

Air Quality

Construction of the Proposed Project would result in emissions associated with construction activities (direct emissions) as well as emissions associated with temporary changes in aircraft taxiing times from proposed temporary runway closures (indirect emissions). The total construction emissions do not exceed NAAQS or SCAQMD thresholds of significance in any construction year, and therefore the Proposed Project results in a *less than significant impact* from construction emissions.

The Proposed Project would have no impact on operations at the Airport beyond the three-year construction period. The Proposed Project would not increase Airport capacity and would not result in increases in local traffic. Therefore, emissions associated with overall aircraft activity levels and passenger traffic arriving and departing ONT were not analyzed.

Biological Resources

Impacts to biological resources resulting from implementation of the Proposed Project were reviewed as it relates to sensitive species, sensitive vegetation communities, wildlife movement, migratory species, local policies and ordinances, and adopted plans. The Proposed Project would have no impact on rare plant species, sensitive vegetation communities, wildlife movement, local policies and ordinances, or adopted plans. The Proposed Project would have a *less than significant impact with mitigation* incorporated on sensitive animal species and migratory species.

Greenhouse Gas Emissions

Construction of the Proposed Project would result in GHG emissions associated with construction activities (direct emissions) as well as GHG emissions associated with temporary changes in aircraft taxiing times from proposed temporary runway closures (indirect emissions). The Proposed Project would result in total net positive construction-related GHG emissions in years 2023, 2024 and 2025. Therefore, the Proposed Project would result in *significant, unavoidable temporary impacts* due to construction-related GHG emissions.

The Proposed Project would have no impact on operations at the Airport beyond the three-year construction period. The Proposed Project would not increase Airport capacity and would not result in increases in local traffic. Therefore, GHG emissions associated with overall aircraft activity levels and passenger traffic arriving and departing ONT were not analyzed.

Cultural Resources

A records search was requested through the SCCIC, a review of the Sacred Lands File was completed, archival research was completed, and a pedestrian field survey of the project area was conducted. The SCCIC record search did not identify any cultural resources within the project area. Furthermore, the Sacred Lands File search, conducted through the NAHC, failed to identify any tribal cultural resources within the project area, thus *no impacts* to Cultural Resources are anticipated related to the Proposed Project.

Noise

Construction of the Proposed Project would require temporary runway closure periods in 2023, 2024, and 2025. During the proposed runway closure periods, all operations would occur on a single open runway. Due to the two runways being parallel and closely spaced, temporarily operating on a single runway would not significantly alter flight patterns. The only change in flight patterns during temporary runway closure periods in 2023, 2024 and 2025, may result from FAA Air Traffic Control (ATC) imposed restrictions on the use of Contra Flow operations during nighttime (10:00 PM to 7:00 AM), as defined in *Section 2.2.3, Airfield Operations*. Since Contra Flow would not be used by ATC when operating on a single open runway, the Proposed Project would result in temporary increases in noise exposure to the west of the Airport during the nighttime hours during these construction periods. This would result in a *significant, unavoidable temporary impact on noise levels* in the vicinity of the project.

The Proposed Project would have no impact on operations at the Airport beyond the three-year construction period. The Proposed Project would not increase Airport capacity and would not result in increases in local traffic. Therefore, noise levels associated with overall aircraft activity levels and passenger traffic arriving and departing ONT were not analyzed beyond the construction period.

Transportation/Traffic

The Proposed Project is a rehabilitation, repair, replacement, and safety improvement project that does not add or increase capacity at ONT and would therefore not increase VMT. The Proposed Project would have less than significant impacts to transportation and traffic. Any temporary surface traffic changes associated with construction of the Proposed Project would be minor and mitigated, if necessary, by a required construction traffic plan.

Tribal Cultural Resources

No tribal cultural resources have been identified within the project area. During AB 52 consultation with Kizh Nation, although not recorded at the SCCIC, the Nation advised that they have knowledge of some isolated prehistoric isolates and a fire hearth located within the airport property. As such, there is potential for the Proposed Project to impact buried prehistoric archaeological and tribal cultural resources if

found during construction. Mitigation measures described in *Chapter 4.0, Section 4.7.6 Mitigation Measures* are proposed to reduce the potential for significant impacts to tribal cultural resources. Therefore, the Proposed Project would result in a *less than significant impact with mitigation* to tribal cultural resources.

Health Risk Assessment

Potential temporary changes in health risks to nearby sensitive receptors from the emission of Toxic Air Contaminants (TACs) during construction of the Proposed Project were analyzed. The analysis considered increased cancer risk and non-cancer chronic risks for the maximally exposed individual resident (MEIR) and for off-site maximally exposed individual worker (MEIW); discrete sensitive receptor incremental cancer risk, chronic risk, and acute risk; and cancer burden. The analysis determined that the incremental increases in health risk due to the Proposed Project would not exceed SCAQMD thresholds for significant impact. Therefore, the Proposed Project would have a *less than significant* impact due to human health risks.

Cumulative Impacts

The Proposed Project results in significant, unavoidable temporary impacts to GHG emissions and noise levels at ONT. For this reason, the Proposed Projects impact on GHG emissions and noise is cumulatively considerable.

The cumulative impacts analysis determined that recently completed or probable future on- and off-airport projects are expected to result in a *cumulatively considerable significant impact to GHG emissions*, from construction or operationally, when combined with the Proposed Project.

As it relates to cumulative impacts associated with noise, the greatest potential for impacts is associated with aircraft operational noise at ONT. A future on-airport project, the South Air Cargo Center (SACC), proposes cargo operations that overlap with the analysis of Proposed Project noise levels in 2024 and 2025. A cumulative noise analysis determined that the "Proposed Project – Cumulative Impact" would result in temporary (during construction) and permanent (due to background growth and SACC operations compared to baseline conditions) increases in noise exposure surrounding ONT and would therefore be a *cumulatively considerable significant impact on noise levels*.

All cumulative projects would be subject to CEQA requirements to identify feasible mitigation measures and alternatives. While no additional cumulative impacts are anticipated from the combined impact of the Proposed Project and other projects other than to GHG emissions and noise, CEQA documentation for future projects will include a comprehensive analysis of potential cumulative impacts.

ES.6 Growth Inducement

The Proposed Project would not facilitate any unplanned growth, would not result in increased runway capacity, and would not affect the number of employees required to operate Airport facilities. No changes to land uses on or off airport property would occur. No land acquisition or new facilities are proposed in the surrounding communities as a result of, or to accommodate the Proposed Project. The Proposed Project is consistent with plans, goals, policies, zoning and local controls that have been adopted and govern over the project site. The Proposed Project would not induce growth at the Airport beyond that which would occur without the improvements and therefore would not result in a significant growth-inducing impact.

ES.7 Effects Found Not Significant

Impacts to aesthetics, agricultural resources, geology/soils, hazards and hazardous materials, land use/planning, mineral resources, population/housing, public services, recreation, utilities/service systems, and wildfire were found not significant and did not require detailed evaluation in the SEIR.

ES.8 Alternatives

The CEQA Guidelines state that an EIR must identify alternatives that would feasibly attain the most basic objectives of the project, but avoid or substantially lessen significant environmental effects, or further reduce impacts that are considered less than significant with the incorporation of mitigation. As described in ES.5, the Proposed Project would result in significant temporary noise and GHG emissions impacts during construction in parts of 2023, 2024 and 2025. This SEIR chapter focuses on alternatives that would avoid or minimize these significant or potentially significant temporary environmental impacts.

Alternatives Carried Forward for Detailed Evaluation

The alternatives carried forward for detailed evaluation for this SEIR therefore includes an alternative that would minimize potentially significant temporary environmental impacts, the Two-Year Program Alternative.

Two-Year Program Alternative

This alternative would include identical project components included as part of the Proposed Project and depicted in Figure 2-5: the rehabilitation and reconstruction of Runway 8R-26L, taxiway connector improvements and other associated airfield improvements, the relocation of objects located within the RSA and ROFA, and relocation of the south electrical vault. However, the Two-Year Program Alternative would implement all of the project components over a two-year schedule (2023 and 2024). For comparison, the Proposed Project is expected to be implemented over a three-year schedule (2023, 2024, and 2025). The Two-Year Program Alternative was considered during early planning efforts.

Ability of Alternative to Meet Basic Objectives of the Proposed Project and to be Feasibly Implemented

This alternative would only partially achieve the basic objectives of the Proposed Project in that it would prioritize future maintenance, rehabilitation and/or reconstruction projects for airside pavement in accordance with the 2020 ONT PMP, meet current FAA standards, improve safety on the airfield, enhance airfield efficiency, and provide adequate infrastructure to support airfield and navigational power requirements. The Two-Year Program Alternative both does not meet the Project Objective to maximize FAA funding for capital projects at ONT and is neither practically nor financially or economically feasible under CEQA Guidelines sections 15126(f)(1) and 15364. OIAA does not have available funds for the Proposed Project or any Alternative independent of FAA funding available during a three-year construction program for the Project. Without a funding commitment from FAA for the Two-Year Program Alternative, OIAA is financially unable to implement this alternative which makes it infeasible. Nor can this Alternative be feasibly implemented given construction labor shortages and supply chain problems for needed construction materials and goods.

No Project Alternative

CEQA and CEQA Guidelines require the evaluation of a No Project Alternative. The No Project Alternative is the circumstance under which the project does not proceed. No rehabilitation or reconstruction of runways, taxiways, or other airfield improvements would occur.

Ability of Alternative to Meet Basic Objectives of the Proposed Project

The No Project Alternative would fail to meet all the objectives of the Proposed Project. It would not prioritize future maintenance, rehabilitation and/or reconstruction projects for airside pavement in accordance with the 2020 ONT PMP, meet current FAA standards, improve safety on the airfield, enhance airfield efficiency, and provide adequate infrastructure to support airfield and navigational power requirements, or maximize the use of available FAA funding for construction.

Table ES-2 provides a summary comparison of the Two-Year Program Alternative, Proposed Project, and No Project regarding impact significance.

As indicated, both the Proposed Project and the Two-Year Program Alternative would result in temporary significant, unmitigable impacts to GHG emissions and noise. The Proposed Project would result in less overall construction related GHG emissions as compared to the Two-Year Program Alternative. However, the Proposed Project would result in greater temporary impacts to noise levels (and as a result additional population and housing counts) due to the extended construction period through 2025 as compared to the Two-Year Program Alternative that is complete in 2024.

Table ES-2: Summary Comparison of Alternatives' Impact Significance Compared to Baseline Conditions

Resource	Proposed Project	Two-Year Program	No Project
Aesthetics	Less than significant	Less than significant	No impact
Agricultural and Forestry Resources	No impact	No impact	No impact
Air Quality	Operations – No impact Construction – Less than significant	Operations – No impact Construction – Less than significant	Operations – No impact Construction – No impact
Biological Resources	Less than significant with mitigation	Less than significant with mitigation	No impact
Cultural Resources	Less than significant with mitigation	Less than significant with mitigation	No impact
Energy	Less than significant	Less than significant	No impact
Geology/Soils	Less than significant	Less than significant	No impact
Greenhouse Gas Emissions	Operations – No impact *Construction – Temporary Significant, unmitigable*	Operations – No impact *Construction – Temporary Significant, unmitigable*	Operations – No impact Construction – No impact
Hazards and Hazardous Materials	Less than significant	Less than significant	No impact
Hydrology and Water Quality	Less than significant with mitigation	Less than significant with mitigation	No impact
Land Use/Planning	No impact	No impact	No impact
Mineral Resources	No impact	No impact	No impact
Noise	Operations – No impact *Construction - Temporary Significant, unmitigable*	Operations – No impact *Construction - Temporary Significant, unmitigable*	Operations – No Impact Construction – No impact
Population/Housing	No impact	No impact	No impact
Public Services	No impact	No impact	No impact
Recreation	No impact	No impact	No impact

Table ES-2: Summary Comparison of Alternatives' Impact Significance Compared to Baseline Conditions

Resource	Proposed Project	Two-Year Program	No Project
Transportation/Traffic	Less than significant	Less than significant	No impact
Tribal Cultural Resources	Less than significant with mitigation	Less than significant with mitigation	No impact
Utilities/Service Systems	Less than significant	Less than significant	No impact
Health Risk Assessment	Less than significant	Less than significant	No impact
Cumulative Impacts	Less than significant with mitigation	Less than significant with mitigation	No impact
Growth-Inducing Impacts	No impact	No impact	No impact

Note: The Proposed Project would result in less overall construction related GHG emissions as compared to the Two-Year Program Alternative. However, the Proposed Project would result in greater temporary impacts to noise levels (and as a result additional population and housing counts) due to the extended construction period through 2025 as compared to the Two-Year Program Alternative that is complete in 2024.

Alternatives Not Carried Forward for Detailed Evaluation

Three potential alternatives were initially considered and were not carried forward for more detailed evaluation. According to Section 15126.6(c), "Among the factors that may be used to eliminate alternatives from detailed consideration in an [S]EIR are:(i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts." Based on this guidance, the following alternatives were not carried forward for detailed evaluation due to the failure to meet most of the basic project objectives.

- Continued Use of Contra Flow Operations During Construction
- Partial Rehabilitation
- Reduced Project Components

Environmentally Superior Alternative

The No Project Alternative could be considered environmentally superior because it would avoid virtually all impacts associated with the Proposed Project. Of the alternatives that would at least partially meet the objectives of the Proposed Project and that were carried forward for detailed analysis, the Two-Year Program would be environmentally superior. This alternative would have similar impacts to the Proposed Project, however it would reduce the duration of the noise exposure impacts associated with the Proposed Project during construction. As explained above, however, the Two-Year Program Alternative does not meet a key Project Objective to maximize available FAA funding and is not practically or economically or financially feasible.

ES.9 Significant, Unavoidable Effects

A significant unavoidable impact is an impact that cannot be mitigated to a less than significant level if the project is implemented as it is proposed. The following significant unavoidable impacts have been identified as a result of the Proposed Project:

GHG Emissions: The Project would result in the following temporary significant unavoidable GHG emissions impacts:

- Net increase in construction-related GHG emissions.

Noise: The Project would result in the following temporary significant unavoidable noise impacts:

- Increased noise levels in the vicinity of the project due to construction-related aircraft operation changes (due to proposed runway closures and suspension of Contra Flow)

All other significant impacts of the Proposed Project would be reduced to a less than significant level with the implementation of mitigation measures identified in this SEIR.

1.0 Introduction

This chapter describes the purpose of the document, the rationale for supplementing the 1991 Certified Final Environmental Impact Report (EIR) completed for Ontario International Airport (ONT), and the process of environmental review. This chapter also summarizes the aviation activity forecast used in the analysis of the Proposed Project and the organization of this document.

1.1 Document Purpose

This Supplemental EIR (SEIR) provides new information and analyzes the environmental effects of changes to the project reviewed in the 1991 *Certified ONT Final EIR (FEIR) for Terminals, Other Facilities and Operations to Support 12 Million Annual Passengers* (referred to hereafter as "1991 Certified FEIR"). The 1991 Certified FEIR studied, among other items, the potential impacts of various airfield improvements, including a runway extension and construction and reconstruction of several taxiways. The Ontario International Airport Authority (OIAA) as lead agency, has prepared this SEIR in compliance with the California Environmental Quality Act (CEQA) of 1970, as amended, (Public Resources Code 21000–21189) and the CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387). This SEIR evaluates the potential environmental effects associated with the proposed rehabilitation and reconstruction of Runway 8R-26L and associated airfield improvements (Proposed Project) at ONT. While the Proposed Project remains similar to the project reviewed in the 1991 Certified FEIR, with the objective of providing facilities to accommodate 12 million annual passengers (MAP) at ONT, the Proposed Project reviewed in this SEIR would have temporary significant effects during periods of the runway rehabilitation construction. These effects include temporary increases in noise exposure to the west of the Airport during nighttime operations due to likely Federal Aviation Administration (FAA) Air Traffic Control (ATC) imposed restrictions on the use of Contra Flow operations, explained in *Section 2.2.3, Airfield Operations.* during nighttime hours when operating on a single runway.

This SEIR reviews the temporary significant effects expected during construction and addresses environmental review requirements that have been enacted since certification of the 1991 FEIR. The proposed improvements would not result in increased runway capacity.

1.2 Rationale for Supplementing the 1991 Certified FEIR

If an agency determines that one or more of the conditions described in California Public Resources Code *Division 13. Environmental Quality Statute*, as amended in 2020, *Chapter 6: Limitations § 21166*, and *CEQA Guidelines* Article 11 Section 15162 applies to a subsequent discretionary approval, it must prepare either a subsequent EIR or a supplemental EIR. OIAA has determined that the following conditions apply to the Proposed Project:

- Public Resources Code Section § 21166 (c) "New information, which was not known and could not have been known at the time of the EIR was certificated as completed, becomes available."
- CEQA Guidelines Section 15162(a)(3)(A) "The project will have one or more significant effects not discussed in the previous EIR", and (B) "Significant effects previously examined will be substantially more severe than shown in the previous EIR."

CEQA Guidelines Article 11 Section 15163 sets forth the circumstances under which a project may warrant a supplemental (rather than subsequent) EIR. Specifically, a lead agency shall prepare a supplement to an EIR if any of the conditions described in Section 15162 requiring further documentation are found, but only minor additions or changes would be necessary to make the original EIR adequate. OIAA has determined that a Supplemental EIR to the 1991 Certified FEIR is the appropriate environmental review documentation needed to consider approval of the Proposed Project.

The purpose of an SEIR is to provide the additional information necessary to make the previously certified EIR adequate for the project as modified. Accordingly, per CEQA Section 15163(b), the SEIR need contain only the information necessary to analyze the project modifications, changed circumstances, or new information that triggered the need for additional environmental review. Information and analysis from the 1991 Certified FEIR that is relevant to the analysis of the project modifications is briefly summarized or described rather than repeated.

1.2.1 Project Updates Since Certification of 1991 Certified FEIR

Most of the proposed developments included in the 1991 Certified FEIR have been constructed, including: Taxiway S and connecting taxiways; air cargo development; roadway upgrades; and extensive terminal improvements, all in keeping with passenger and airfield operational needs. As with the approved project, the Proposed Project includes "Taxiway and Other Airfield Improvements." The taxiway and other airfield improvements reviewed in this SEIR include similar taxiway modifications needed to align more closely with current FAA standards, as well as to improve pavement conditions. In addition, this SEIR Proposed Project includes relocation of objects and a vehicle service road (VSR) located within the Runway Safety Area (RSA) and Runway Object Free Area (ROFA) to meet FAA standards, and relocation of the south electrical vault. Although not explicitly described in the 1991 Certified FEIR, in order to meet the project objectives of adequately serving 12 MAP and mitigating environmental impacts associated with future growth, the runways must be maintained through rehabilitation and/or reconstruction and objects must be relocated to be outside of FAA defined object free and safety areas.

1.2.2 Current Requirements to Meet Project Objectives

Improvements are proposed at ONT to meet current FAA standards, improve safety, and enhance airfield efficiency. In 2020, ONT conducted an assessment of all airfield and landside pavements to establish a Pavement Management Plan ("2020 ONT

PMP") in accordance with current Federal Aviation Administration (FAA) requirements found in FAA Advisory Circular (AC) *150/5380-6C - Guidelines and Procedures for Maintenance of Airport Pavements*, and *150/5380-7B - Airport Pavement Management Program (PMP)*. With the results of the PMP, OIAA identified and prioritized future maintenance, rehabilitation, and reconstruction projects for airside pavement based on priority of pavement, severity of distressed pavement, and available funding.

Connector taxiways would be reconstructed to align more closely with current FAA standards, as well as to improve pavement conditions for air traffic throughout the airfield. The proposed pavement sections would be designed for a 20-year life for all shoulder pavements, blast pad pavement, and the new taxiway pavement. Runway 8R-26L was built in 1979 and is now over 40 years old, and requires rehabilitation and reconstruction as it has exceeded the intended design service life of 20-years. As noted in the 2020 ONT PMP, with the age and the type of distresses, full reconstruction of the keel section and maintenance and rehabilitation projects repairing the large amount of joint seal damage and spalling of the outboard sections are necessary at this time. The shoulder and blast pad pavement for Runway 8R-26L has been deteriorating up to a point where large cracks which are over an inch wide are frequently seen.[1] Runway shoulder replacement is also proposed along sections of Runway 8L-26R in the vicinity of taxiway improvements.

To support airfield and navigational power requirements, the existing south electrical vault would be relocated. Additionally, there are objects and a VSR located within the RSA and ROFA that need to be relocated to meet current FAA standards. The proposed improvements would not result in increased runway capacity.

The improvements would be implemented over a three-year period in 2023, 2024 and 2025 to maximize use of available federal funding. OIAA is reliant on federal funding for large scale airfield improvement projects. The need to maximize federal funding plays a significant role in the timing of projects at ONT and in this case requires that the Proposed Project be constructed over a three-year period. See *Chapter 2.0, Project Description* for a detailed project description.

1.2.3 CEQA Updates Since Certification of 1991 Certified FEIR

The 1991 Certified FEIR was prepared pursuant to CEQA Statutes and Guidelines (June 1986). Since the certification of the FEIR in 1991, several changes have been made to Appendix G, the Environmental Checklist Form. Analysis and mitigation of greenhouse gas (GHG) emissions was included March 2010. In September 2016, the form was updated to include tribal cultural resources questions. On December 28, 2018, updated guidelines went into effect, which included a comprehensive update that contained "changes or additions involving nearly thirty different sections of the CEQA Guidelines, addressing nearly every step of the environmental review process. In general, OPR [Office of Planning and Research] proposed changes that address efficiency, substantive, and technical improvements. It is a balanced package that is intended to make the CEQA process easier and quicker to implement, and to better protect natural and fiscal resources in a way that is consistent with other state

environmental policies."[2] Part of the 2018 update was to ensure consistency of CEQA Guidelines with recent court decisions, including but not limited to the incorporation of energy as new topic and requirement to analyze hazards that a project may risk exacerbating. As such, the thresholds and analyses contained in this SEIR reflect the latest CEQA Guidelines.

1.3 Environmental Categories to be Reviewed

This SEIR reviews in detail the following environmental categories: air quality, biological resources, greenhouse gas emissions, noise, and their related cumulative impacts, which have been found to be potentially significant. As indicated in the June 2021 Initial Study (IS), biological resources, cultural resources, transportation/traffic and tribal cultural resources findings were found to be less than significant impact with mitigation incorporated. While this finding remains valid, these resources are also reviewed in detail in the SEIR to support that determination.

The Proposed Project would have no impact, less than significant impacts, or less than significant impacts with mitigation incorporated on all other environmental resource categories (i.e., aesthetics, agricultural resources, geology/soils, hazard and hazardous materials, hydrology and water quality, land use/planning, mineral resources, population/housing, public services, recreation, and utilities/ service systems and wildfire). These resource areas would not result in potentially significant impacts and were not analyzed further in this SEIR.

1.4 Supplemental EIR Process

A supplement to an EIR has the same noticing and public review requirements as a regular EIR as described in CEQA Section 15087. A supplement to an EIR may be circulated by itself without recirculating the previous Draft or Final EIR.[3]

1.4.1 Notice of Preparation and Scoping

In accordance with Sections 15063 and 15082 of the CEQA Guidelines, OIAA prepared a Notice of Preparation (NOP) for this SEIR. The NOP was circulated to local, state, and federal agencies from June 17, 2021 through July 17, 2021. The NOP provided a general description of the Proposed Project and identified possible environmental impacts that could result from implementation of the Project. Eight (8) comments were received from agencies, groups and individuals. The main topic of concern from stakeholder is the potential impact to the Burrowing Owl, a California State Species of Special Concern, which has been known to occur on Airport property during certain periods. ***Appendix A, NOP and IS*** of this SEIR includes the NOP and June 2021 IS, and ***Appendix B, NOP Comments*** contains the comments received on the NOP.

1.4.2 Draft SEIR Public Review and Comment Period

This Draft SEIR will be available to local, state, and federal agencies and to interested organizations and individuals for a 45-day public review and comment period. During this period, Notice of this Draft SEIR will be sent directly to every agency, person, and organization that commented on the NOP. Written comments concerning the

environmental review contained in this Draft SEIR during the 45-day public review period should be sent to:

Nicole Walker, Environmental Planning Manager
Ontario International Airport Authority
1923 East Avion Street
Ontario, CA 91761
nwalker@flyontario.com

1.4.3 Final SEIR/Responses to Comments

Following the conclusion of the 45-day public review period, OIAA will prepare a Final SEIR in conformance with CEQA Guidelines Section 15132. The Final SEIR will consist of the following:

- Revisions to the Draft SEIR text, as necessary;
- List of individuals and agencies commenting on the Draft SEIR;
- Responses to comments received on the Draft SEIR, in accordance with CEQA Guidelines (Section 15088);
- Copies of letters received on the Draft SEIR.

Section 15091(a) of the CEQA Guidelines stipulates that no public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings. If the lead agency approves a project despite it resulting in significant adverse environmental impacts that cannot be mitigated to a less than significant level, or reduced or avoided by adopting a feasible alternative, the agency must state the reasons for its action in writing. This Statement of Overriding Considerations must be included in the record of project approval.

1.4.4 Notice of Determination

If the Proposed Project is approved, OIAA will file a Notice of Determination (NOD), which will be available for public inspection and posted within 24 hours of receipt at the Office of Planning and Research – State Clearinghouse for 30 days. The filing of the NOD starts a 30-day statute of limitations on court challenges to the approval under CEQA.[4]

1.5 Aviation Activity Forecast and Years Reviewed in Environmental Analysis

An aviation activity forecast (forecast) was developed, including a detailed fleet mix to provide input into the analysis of environmental impact categories that require review of aircraft operations. A detailed fleet mix was developed to represent the existing/base condition and the years of construction, which include 2023, 2024 and 2025. Construction of the Proposed Project is estimated to begin January 2023 and continue into 2025, with a pause to accommodate holiday traffic in November and

December of 2023 and 2024. The environmental analysis for this SEIR also includes the analysis of three years of construction for air emission purposes.[5] Once the construction is completed, the airfield would operate as it has prior to construction of the Proposed Project.

The base year fleet mix uses a hybrid of 2019 and 2020 operations and was based on the ONT Airport Noise Monitoring System (ANOMS) radar data from 2019 and 2020, and FAA's Traffic Flow Management System Count (TFMSC) and Operations Network (OSPNET). Passenger air carriers, air taxi, and General Aviation (GA) operations were obtained from the 2019 ANOMS data and the all-cargo operations were obtained from the 2020 ANOMS data. The military operations were obtained from the FAA TFMSC data. This approach serves to normalize operations to represent baseline conditions recognizing that the temporary reduction in passenger air carrier and air taxi operations, due to the COVID-19 pandemic, is not indicative of existing conditions at ONT. Refer to *Section 3.2.2, Baseline Conditions* for additional details. The fleet mixes for years 2023, 2024 and 2025 are based on the hybrid base year fleet mix and supplemented with announced airline aircraft replacement and retirement plans, as well as announced new airlines and destinations. The future forecast of operations and enplanements in the 2020 Draft Terminal Area Forecast (TAF) were used as the future scenarios' base operations and enplanements numbers. **Table 1-1** summarizes the aircraft activity for the existing and construction years.

1.6 Document Organization

This document includes the main SEIR report and appendices consisting of supporting documentation. Volume I consists of the main document, including *Chapters 1.0 through 11.0*. An *Executive Summary* chapter precedes *Chapter 1.0* of the report. *Chapter 1.0* provides an introduction and an overview of this SEIR. *Chapter 2.0* provides background for the project, a detailed project description, and the project objectives. *Chapter 3.0* provides the environmental setting. *Chapter 4.0* provides impacts and mitigation measures associated with the resources with potential for impact. *Chapter 5.0* includes cumulative impacts of the Proposed Project when combined with other projects, *Chapter 6.0* includes discussion of growth-inducing impacts, and *Chapter 7.0* summarizes the environmental resources that would have no impact, or less than significant impacts and describes other effects of the Proposed Project. *Chapter 8.0* discusses the alternatives carried forward and dismissed from detailed evaluation. *Chapter 9.0* includes the mitigation monitoring and reporting program, *Chapter 10.0* documents consultation completed throughout the preparation of this SEIR, *Chapter 11.0* includes the list of preparers and *Chapter 12.0* includes abbreviations and acronyms. Volume II contains the Appendices which contain various reference materials, technical information, and record of coordination activities.

Table 1-1: Summary of Aircraft Activity

Annual Operations Type	Year 2019/2020		Year 2023		Year 2024		Year 2025	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Passenger Carrier	24,472	24,472	24,738	24,738	25,627	25,627	26,605	26,605
All- Cargo Carrier	20,978	20,978	21,240	21,240	22,031	22,031	22,902	22,902
Air Taxi	542	542	506	506	524	524	545	545
General Aviation	6,868	6,868	8,541	8,541	8,570	8,570	8,600	8,600
Military	154	154	161	161	161	161	161	161
All Operations	**53,013**	**53,013**	**55,184**	**55,184**	**56,913**	**56,913**	**58,812**	**58,812**

Note: Totals may not sum due to rounding.

Source: ONT ANOMS, FAA TFMSC, OPSNET, TAF, and HNTB analysis, 2021.

ENDNOTES

[1] ONT, Pavement Management Plan, March 2020, p. 51.

[2] Office of Planning and Research (OPR), "Frequently Asked Questions Regarding the Proposed Updates to the CEQA Guidelines," https://opr.ca.gov/ceqa/docs/20171127_FAQs_Nov_2017.pdf (accessed 9/17/21).

[3] OPR, Title 14, Division 6, Chapter 3 of the California Code of Regulations ("CEQA Guidelines"), 2018, Section 15163(c)(b).

[4] OPR, CEQA Guidelines, 2018, Section 15094(g).

[5] HNTB Construction Phasing Schedule, July 2020.

2.0 Proposed Project Description

This chapter includes background information related to ONT's location, airfield layout and airfield operations. Also included in this chapter are the Proposed Project objectives, detailed description of the Proposed Project and its components, and the intended use of the SEIR.

2.1 Project Location

ONT is located in San Bernardino County, approximately 35 miles east of Downtown Los Angeles in the center of Southern California and is considered part of the Inland Empire. The Airport resides on 1,741 acres of land with an elevation of 944 feet above mean sea level. The Airport is generally bounded by Southern Pacific Railroad on the north, and Mission Boulevard and Union Pacific Railroad on the south. S. Grove Avenue borders the airfield to the west and S. Haven Avenue borders the airfield to the east, however, the Airport property is bounded to the west by S. Cucamonga Avenue and to the east by S. Commerce Parkway and Doubleday Avenue. Primary access to the Airport is from Interstate 10 (I-10) via Archibald Avenue from the north and California State Route 60 (SR-60) via Haven Avenue from the South. Land uses immediately surrounding the Airport are primarily airport-related, industrial and commercial uses. The regional and project location is shown on **Figure 2-1**.

2.2 Site Description, Existing Land Uses and Airfield Operations

The Proposed Project would be developed entirely within airport property.

2.2.1 Site Description

Facilities on the Airport include two passenger terminals, general aviation facilities, air freight buildings, parking lots, and numerous airport and aircraft maintenance and support services. ONT has two parallel runways that are oriented in the east-west direction, Runways 8L-26R and 8R-26L. Runway 8R-26L, the primary runway during low visibility conditions, is 10,200' x 150' and is served by a full-length, parallel taxiway to the south (Taxiway S). Runway 8L-26R is 12,197' x 150' and is served by a full-length, parallel taxiway to the north (Taxiway N). There are 27 taxiways/taxilanes on the airfield which make up the taxiway system. There are also two commercial terminal aprons, a general aviation apron and two primary air cargo ramps. UPS facilities are located in the southeast quadrant of the Airport (with most of their facilities outside of and adjacent to Airport property) and FedEx facilities are in the northwest quadrant. **Figure 2-2** illustrates the Airport facilities.

The project site supports three drainages that flow beneath the work area through covered concrete channels and ultimately combine to form the Cucamonga Creek Channel. The drainages include Deer Creek Channel in the eastern portion of the project site, Cucamonga Creek Channel in the center of the project site, and West Cucamonga Creek Channel in the western portion of the project site. Each of these channels are considered jurisdictional non-wetland waters of the U.S. based on

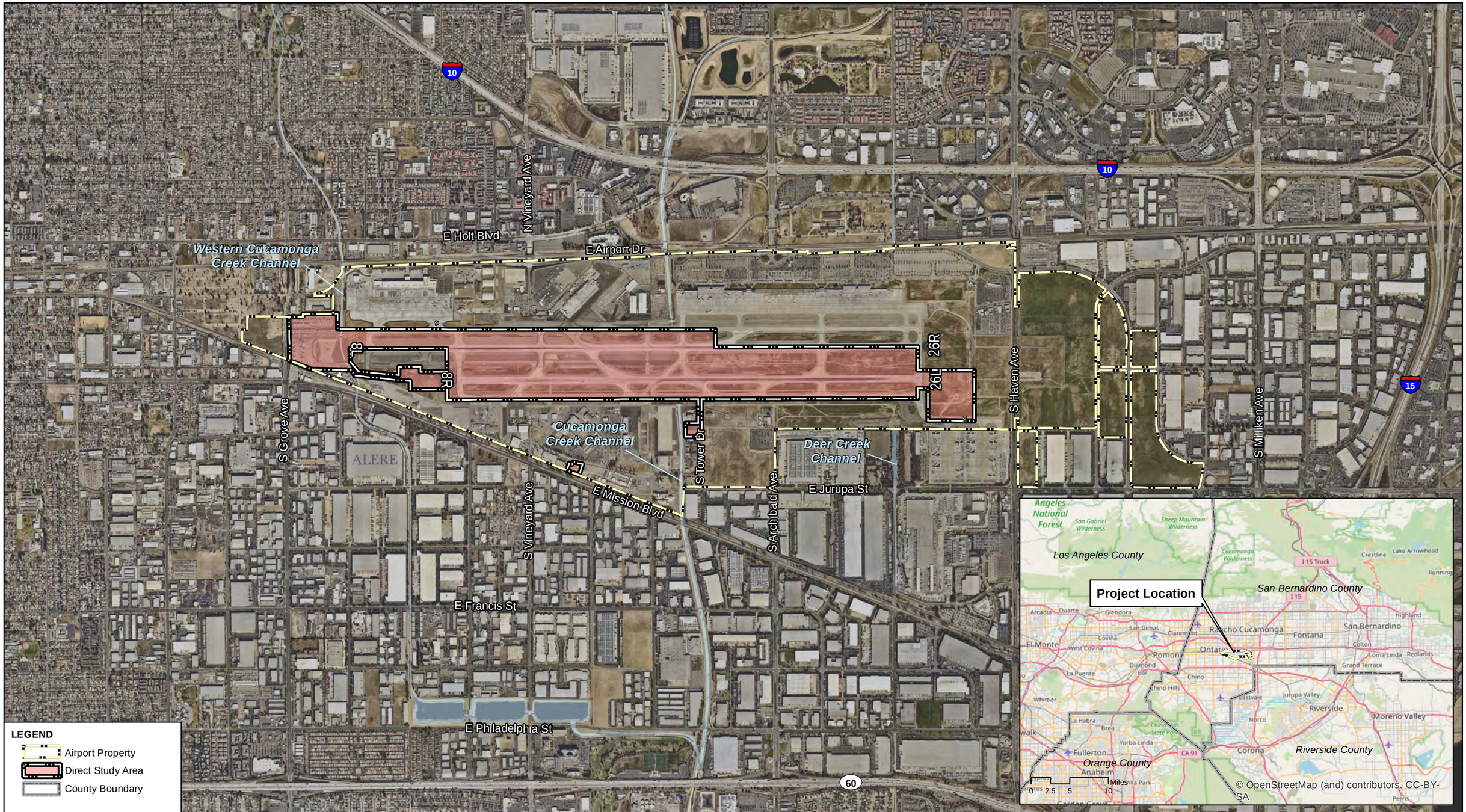


Figure 2-1

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

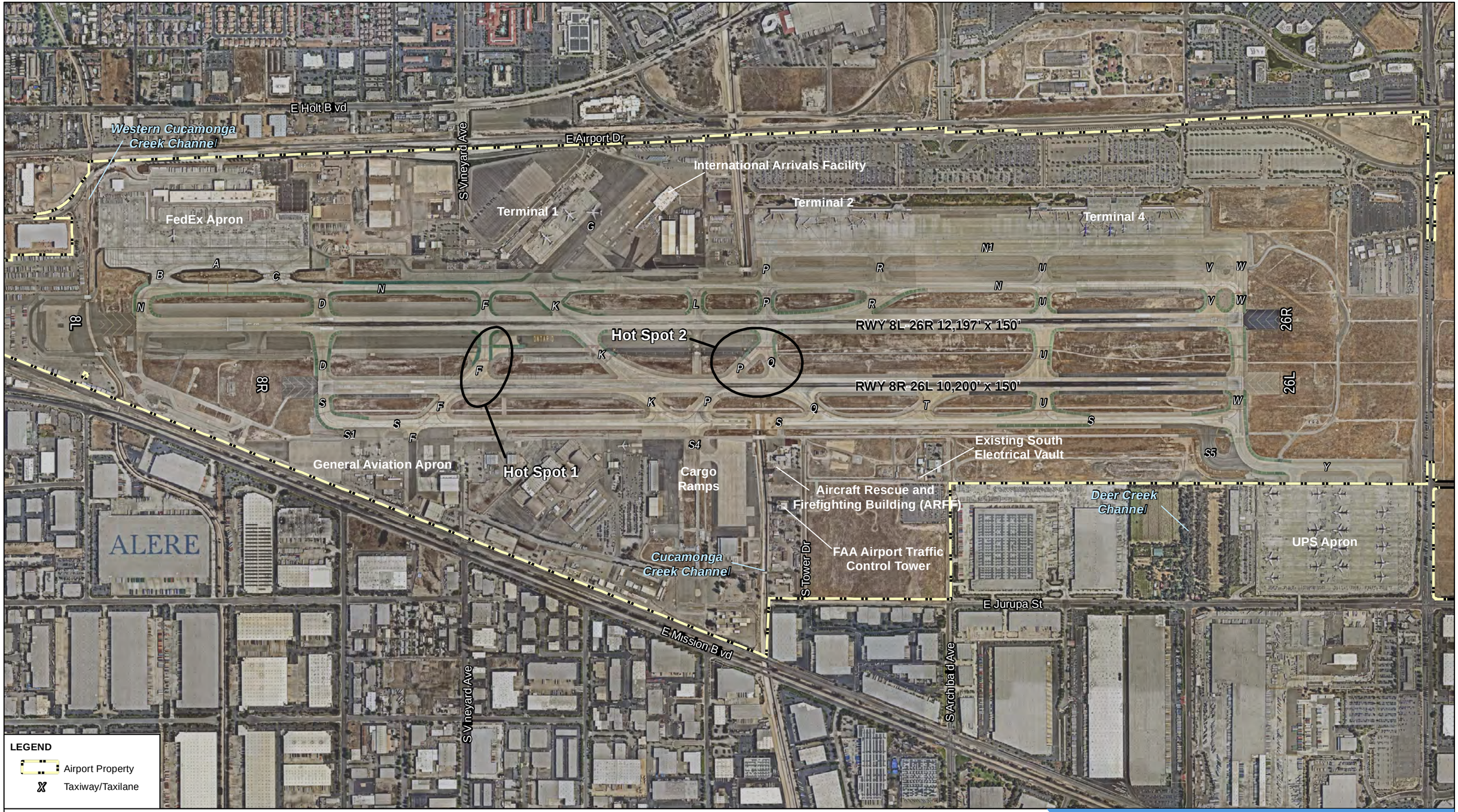
0 500 1,000 2,000 Feet

N

HNTB

Project Location

Sources: OIAA, Nearmap, HNTB Analysis



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 250 500 1,000 Feet

N

HNTB

Figure 2-2

Airport Facilities

Sources: OIAA, Nearmap, HNTB Analysis

criteria defined by the U.S. Army Corps of Engineers (USACE) and the Regional Water Quality Control Board (RWQCB), Region 8.

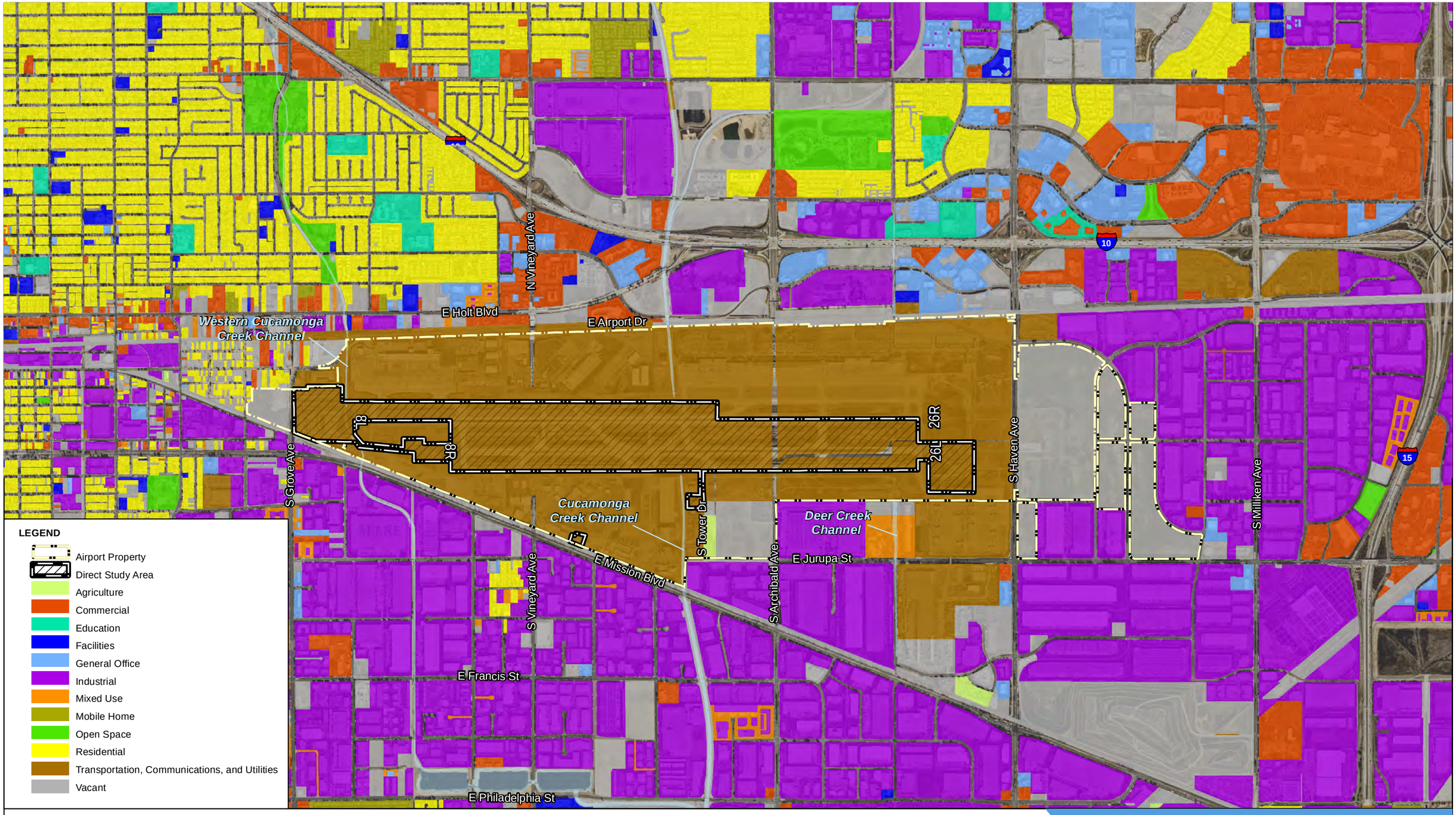
2.2.2 Existing Land Uses

Land uses immediately surrounding the project site primarily include industrial and commercial uses. Surrounding land uses and designations are described below and shown on **Figure 2-3**. Specifically, land uses in relation to the Airport are as follows:

- **North**: The Airport is bordered to the north by E. Airport Drive and Southern Pacific (operated by Amtrak) railroad tracks. Land uses include business park, hospitality mixed-use (multi-modal and Guasti, a mixed-use district with plans for redevelopment), and office commercial land uses. Beyond the industrial, mixed use, and business uses to the west and northwest of the Airport are low- and medium-density residential land uses.
- **South**: The Airport is bordered by industrial land uses to the south, many of which are related to airport operations and cargo. Union Pacific (operated by BNSF Railway and Metrolink) railroad tracks and Mission Boulevard run from the northwest to the southeast along airport property. There is a small pocket of residential uses and mixed uses located south of the Airport, between S. Vineyard Avenue and S. Baker Avenue.
- **West**: S. Grove Avenue and industrial, vacant and commercial land uses are adjacent to the Airport to the west. A mixed-use development (E. Holt) is northwest of the Airport. Land use data[1] indicates residential land uses exist west of ONT however much of this area has been converted to Part 150 noise lands and for non-residential land uses in recent years. The industrial area west of the Airport is consistent with aircraft departure patterns at ONT and makes use of the nearby railroad.
- **East**: Industrial land uses are located to the east of Airport property, with multiple vacant land uses. A commercial overlay district is located southeast as well, south of E. Jurupa Street and east of N. Haven Avenue.

2.2.3 Airfield Operations

The three primary runway use configurations at ONT are (1) East Flow (depart and arrive on Runways 8L and 8R), (2) West Flow (depart and arrive on Runways 26L and 26R), and (3) Contra Flow. FAA Orders 1050.11 and 8400.9, require the FAA to promote, encourage, and cooperate with airport proprietors in development and implementation of noise abatement procedures including any associated runway use programs. In accordance with these Orders FAA developed a preferred runway use program for noise abatement that uses a procedure known as Contra Flow. Contra Flow is an operational noise mitigation strategy used at ONT to minimize noise over residential areas at night and thus occurs daily between 10:00 PM and 7:00 AM when weather and wind conditions allow. Under certain circumstances in the interest of safety, airport efficiency, or aircraft operational necessity, pilots and FAA Air Traffic Control may deviate from noise abatement procedures.



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 500 1,000 2,000 Feet

N

HNTB

Figure 2-3

Existing Land Uses

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis

Contra Flow during nighttime operations was first implemented at ONT in 1988, and has been reinforced through FAA Records of Approval for ONT's first Noise Compatibility Program (NCP) in 1990 and has been approved for continuation in subsequent updates, initially through FAA Order ONT 7110.5E and now by ONT Order 7110.65B. As stated in ONT Rules and Regulations (August 2019), "By FAA Letter of Agreement (LOA), ATC [Air Traffic Control] shall employ the noise abatement preferential runway use procedures…" including Contra Flow operations. Under Contra Flow operations at ONT, jet departures take off to the east (from Runways 8L and 8R) and arrivals land to the west (on Runways 26L and 26R). It is important to note that while jet aircraft depart to the east under Contra Flow, propeller aircraft (turboprop and piston aircraft) will primarily depart to the west. It should be noted that FAA has exclusive authority to control the operation of aircraft both in the air and on the airport taxiways and runways. The ONT Rules and Regulations also state that "Contra-flow procedures shall be discontinued when atmospheric conditions (wind and low cloud ceilings), or when aircraft operations and construction activities require."

Figure 2-4 illustrates the corresponding arrival and departure runways and **Table 2-1** identifies the runway use configuration paired with the corresponding arrival and departure runways.

Table 2-1: Primary Runway Use Configurations

	East Flow	West Flow	Contra Flow
Arrival Runway(s)	8L, 8R	26L, 26R	26L, 26R
Departure Runway(s)	8L, 8R	26L, 26R	8L, 8R (1)

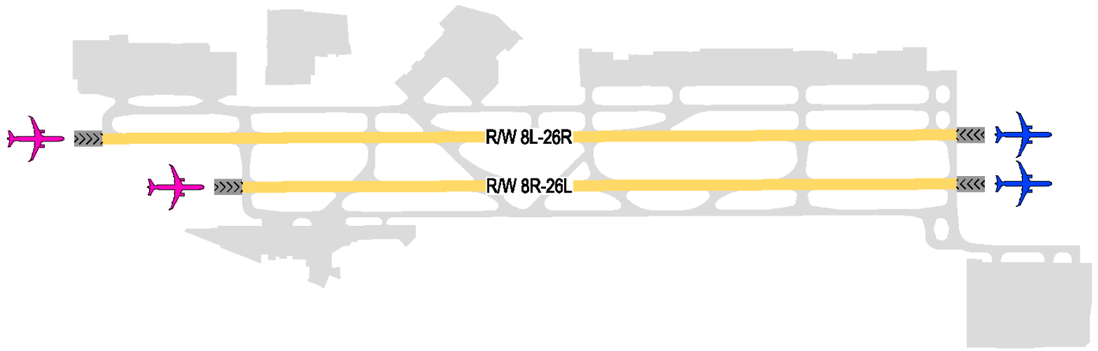
Note: [1]Jet aircraft are required to depart to the east from Runways 8L and 8R under Contra Flow; propeller aircraft can depart to the west.

Source: Airport Traffic Control Tower (ATCT) coordination meeting held on March 31, 2021, and HNTB analysis.

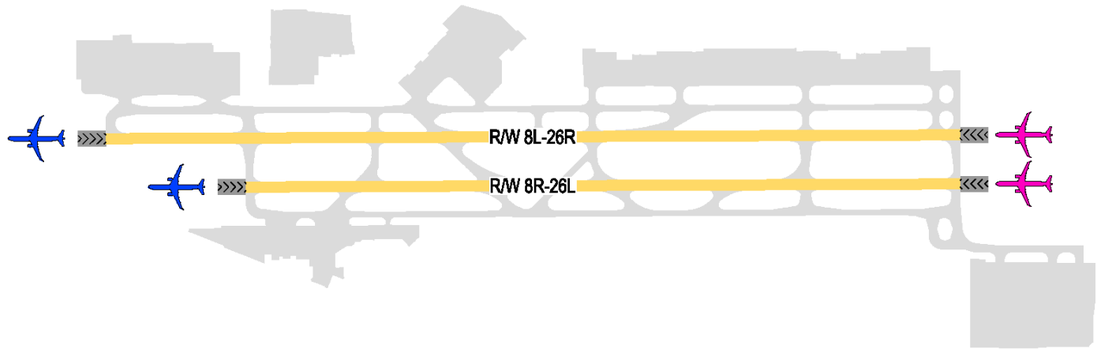
2.3 Project Objectives

The objectives of this Proposed Project are to make improvements to the ONT airfield via rehabilitation and reconstruction of pavement and relocation and facilities that would:

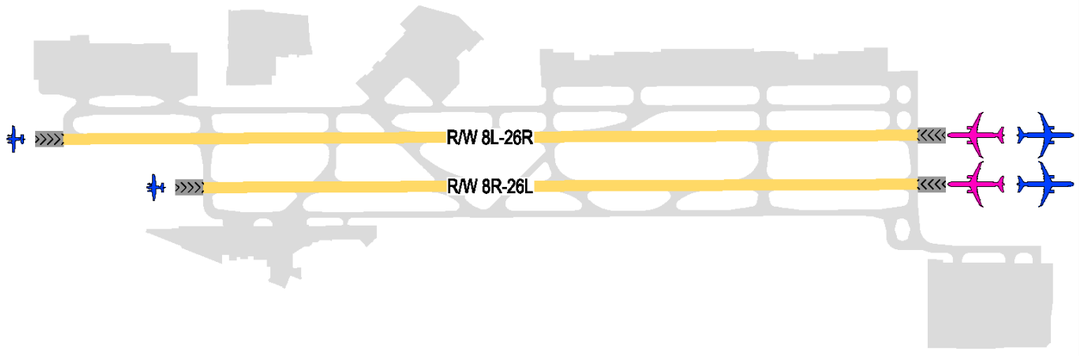
- Prioritize future maintenance, rehabilitation and/or reconstruction projects for airside pavement in accordance with the 2020 ONT PMP;
- Meet current FAA standards;
- Improve safety on the airfield;
- Enhance airfield efficiency;
- Provide adequate infrastructure to support airfield and navigational power requirements; and
- Maximize available FAA funding for construction.



EAST FLOW



WEST FLOW



CONTRA FLOW

DRAWING LEGEND	
ARRIVAL RUNWAY	
DEPARTURE RUNWAY	
RUNWAY PAVEMENT	
BLAST PAD	
TAXIWAY / APRON PAVEMENT	

NOTES

(1) PROPELLER AIRCRAFT ARE ALLOWED TO DEPART TO THE WEST FROM RUNWAYS 26L AND 26R DURING CONTRA FLOW.

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

Not to Scale

N

HNTB

Figure 2-4

Primary Runway Use Configurations

Prioritize future maintenance, rehabilitation and/or reconstruction projects for airside pavement in accordance with the 2020 ONT PMP: The maintenance, rehabilitation and/or reconstruction aspect of the Proposed Project is based on the 2020 ONT PMP's assessment of current airfield pavement conditions and assigned pavement condition index (PCI) values for all runways, taxiways, aprons and vehicle service roads. The report sequences this maintenance based on the priority of the pavements, severity of distresses, and available funding. The 2020 ONT PMP is provided in ***Appendix C, Pavement Management Program (PMP)***.

Meet current FAA standards: Connector taxiways would be reconstructed to align more closely with current FAA standards, as well as to improve pavement conditions for air traffic throughout the airfield. Objects located within the RSA and ROFA need to be relocated to meet FAA standards.

Improve safety on the airfield: Several taxiways need to be modified to address Hot Spots at ONT. A Hot Spot is defined as a location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary. The rehabilitation of the runway and several taxiways, as well as the relocation of objects and the VSR outside the RSA and ROFA would also improve safety on the airfield.

Enhance airfield efficiency: Runway 8R-26L requires rehabilitation and reconstruction as it was built in 1979 and has exceeded the intended design service life of 20-years. Runway shoulder replacement is also proposed along sections of Runway 8L-26R in the vicinity of taxiway improvements. The proposed pavement sections would be designed for a 20-year life for all runways, shoulder pavements, blast pad pavement, and for the new taxiway pavement. Relocations, rehabilitations and new or modified taxiway connections would also enhance efficiency on the airfield.

Provide adequate infrastructure to support airfield and navigational power requirements: The airfield improvements would result in electrical power requirements that cannot be accommodated with the existing south electrical vault, which is outdated and difficult to maintain. A replacement south electrical vault in a new location (in order to not have a lapse in operation) is needed to accommodate the electrical needs of the Proposed Project.

Maximize available FAA funding for construction: OIAA is reliant on FAA funding through the Airport Improvement Program (AIP) for large scale construction needs such as the Proposed Project. FAA has indicated that AIP funding is expected to be available to support the Proposed Project if completed over a three-year period (2023, 2024 and 2025). Although construction of the project would be physically possible over a shorter duration, FAA funding availability dictates construction timeframes.

2.4 Project Description

The Proposed Project focuses on the rehabilitation and reconstruction of Runway 8R-26L, taxiway connector improvements and other associated airfield improvements,

the relocation of objects located within the RSA and ROFA, and relocation of the south electrical vault. The individual project components, that in total make up the Proposed Project, their justification, and connected actions are described in detail according to the type of improvement (e.g., runway, taxiway/airfield, relocation need) and are illustrated on **Figure 2-5.**

The Proposed Project would not result in increased runway capacity. Runway use and flight patterns would not be impacted after the Proposed Project is implemented However, during runway closure periods as part of construction, all operations would occur on a single runway. Because the two runways are parallel and closely spaced, temporarily operating on a single runway would not significantly alter flight patterns. The only change in flight patterns during temporary runway closure periods may result from FAA Air Traffic Control (ATC) imposed restrictions on the use of Contra Flow operations during nighttime (10:00 PM to 7:00 AM), as defined in *Section 2.2.3, Airfield Operations*. Since Contra Flow would not be used by ATC when operating on a single runway, there would be temporary increases in noise exposure to the west of the Airport during nighttime operations.

The airfield drainage includes tributary areas on the airfield located between the runways and taxiways. The proposed taxiway improvements would not modify the basic drainage pattern within the airfield, however the drainage areas between the runways and taxiways 'S' and 'N' are being modified to accommodate existing connector taxiways and construction of the new connector taxiways.

A concrete batch plant is proposed in the industrial area south of the airfield on ONT property on the south side of E. Avion Street on a partially paved and flat parcel that is, flanked by E. Mission Boulevard (and railroad tracks) to the south, and industrial abandoned (industrial) uses on either side as shown in Figure 2-5. The batch plant would enable the Airport to mix concrete onsite, thereby reducing project costs significantly. A new concrete pad would be constructed on which to place the batch plant equipment. It is assumed that once the project is completed, the pad constructed for the batch equipment will be left in place until such time that the land is needed for other uses

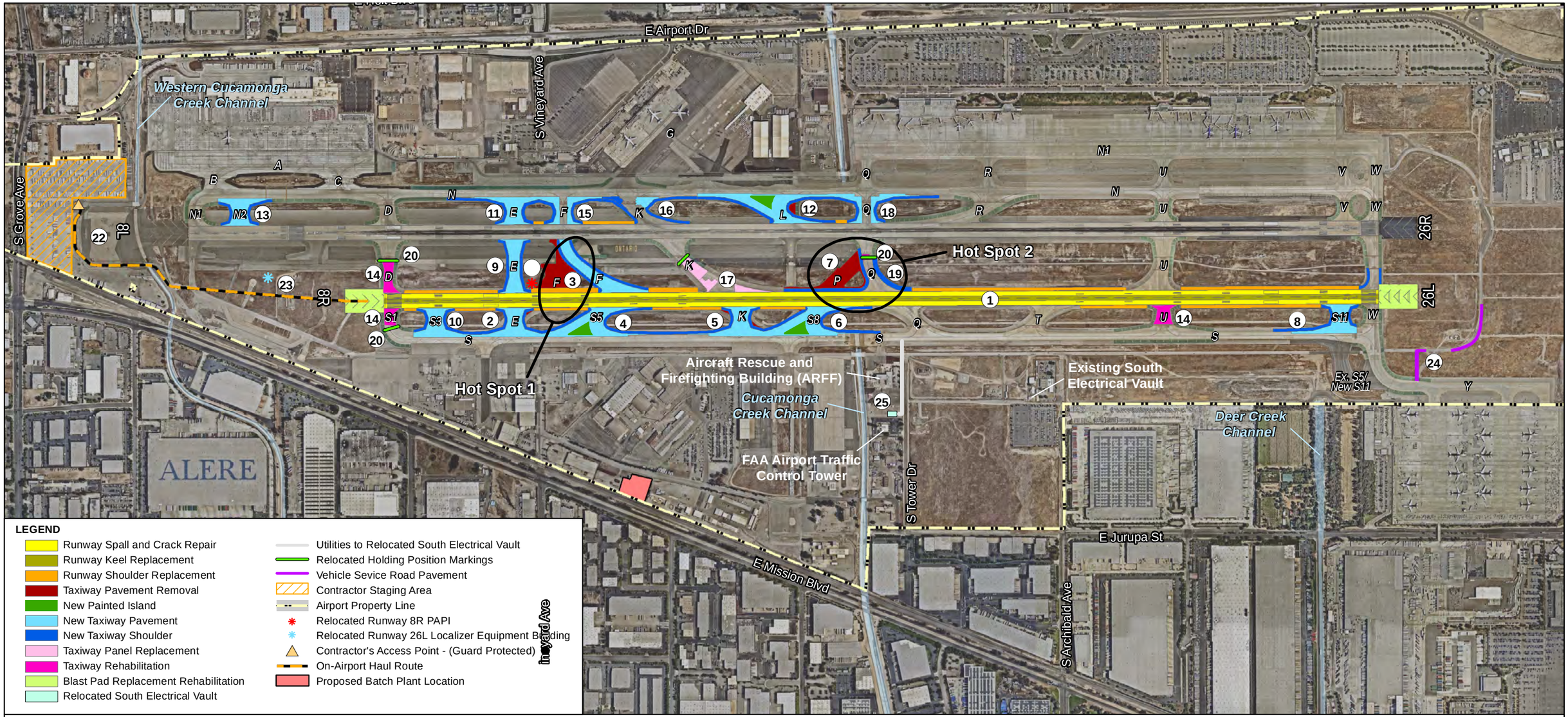
The runway program would be constructed over a three-year period in 2023, 2024 and 2025 due to FAA AIP funding availability.

2.4.1 Runway Improvements

The runway improvements would meet the objectives to improve safety on the airfield and enhance airfield efficiency.

Project Element #1 - Rehabilitate Runway 8R-26L:

As noted in the 2020 ONT PMP, Runway 8R-26L requires rehabilitation and reconstruction after 40 plus years of use. According to the PMP, due to the age and the type of distresses, full reconstruction of the keel section and maintenance and



LEGEND

- Runway Spall and Crack Repair
- Runway Keel Replacement
- Runway Shoulder Replacement
- Taxiway Pavement Removal
- New Painted Island
- New Taxiway Pavement
- New Taxiway Shoulder
- Taxiway Panel Replacement
- Taxiway Rehabilitation
- Blast Pad Replacement Rehabilitation
- Relocated South Electrical Vault
- Utilities to Relocated South Electrical Vault
- Relocated Holding Position Markings
- Vehicle Sevice Road Pavement
- Contractor Staging Area
- Airport Property Line
- Relocated Runway 8R PAPI
- Relocated Runway 26L Localizer Equipment Building
- Contractor's Access Point - (Guard Protected)
- On-Airport Haul Route
- Proposed Batch Plant Location

PROPOSED PROJECT ELEMENTS

(1) REHABILITATE RUNWAY 8R-26L
(2) MODIFY EXISTING CONNECTOR TAXIWAY F AND REDESIGNATE AS TAXIWAY E
(3) REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F
(4) CONSTRUCT EXIT TAXIWAY S5
(5) RECONSTRUCT EXISTING EXIT TAXIWAY K
(6) RECONSTRUCT EXISTING EXIT TAXIWAY P TO A HIGH-SPEED EXIT AND REDESIGNATE AS TAXIWAY S8
(7) REMOVE EXISTING TAXIWAY P BETWEEN RUNWAYS 8L-26R AND 8R-26L
(8) CONSTRUCT BYPASS TAXIWAY S11
(9) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8R-26L AND 8L-26R
(10) CONSTRUCT BYPASS TAXIWAY S3
(11) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8L-26R AND TAXIWAY N
(12) RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED EXIT TAXIWAY
(13) CONSTRUCT BYPASS TAXIWAY N2
(14) RESURFACE TAXIWAY D, TAXIWAY S1 AND TAXIWAY U PAVEMENT
(15) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(16) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(17) REPLACE/REHABILITATE PANELS ON TAXIWAY K BETWEEN RUNWAYS
(18) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(19) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAYS
(20) RELOCATE HOLDING POSITION MARKINGS*
(21) RELOCATE RUNWAY 8R PAPI
(22) RELOCATE PERIMETER FENCE AND REMOVE OBJECTS WITHIN ROFA
(23) RELOCATE RUNWAY 26L (8R END) LOCALIZER EQUIPMENT BUILDING
(24) MODIFY EXISTING VEHICLE SERVICE ROAD
(25) RELOCATE SOUTH ELECTRICAL VAULT

* DEPICTED IN MULTIPLE LOCATIONS

Figure 2-5

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 250 500 1,000 Feet

N

HNTB

Proposed Project

Sources: OIAA, Nearmap, HNTB Analysis

rehabilitation projects repairing the large amount of joint seal damage and spalling of the outboard sections are necessary at this time.

For the 2020 ONT PMP, the runways were split into three distinct pavement sections (i.e., outboard northern section, a center keel section and an outboard southern section). This project element would replace or reconstruct the concrete keel section (center section) of the runway and associated centerline (CL) lights and striping. Spall and crack repair on concrete on the north and south sides of the runway's keel section is also proposed. Approximately 714,000 SF of existing runway shoulder asphalt concrete (AC) would be replaced or reconstructed and associated edge lights would be replaced.

Project Element #1 has the following connected actions:

- The CL lights replacement includes the lights, pavement light cans, underground conduit and wiring.
- For runway edge lighting and signage, the affected existing airfield signage, edge lights, pavement light cans, underground conduit and wiring would be replaced.
- Replace or reconstruct the asphalt concrete blast pads, 200' Wide (W) x 400' Long (L) at both ends of Runway 8R-26L and associated striping (160,000 square feet (SF) total).
- Replace runway shoulder as shown in Figure 2-5.

The runway improvements would meet the objectives to improve safety on the airfield, enhance airfield efficiency and provide adequate infrastructure to support airfield and navigational power requirements.

2.4.2 Taxiway and Other Airfield Improvements

The taxiway and other improvements would meet the objectives to meet current FAA standards, improve safety on the airfield, and enhance airfield efficiency

Taxiway and other airfield improvements are needed both to meet FAA design standards such as taxiway geometry and hold bar locations, as well as to address deterioration as discussed in the 2020 ONT PMP. Construction, reconstruction, or modification of several taxiways, taxiway connectors and bypass taxiways is proposed to improve safety and enhance efficiency on the airfield.

Taxiway improvements also include fillet modifications and panel rehabilitation or replacement. The taxiways connect the runways (e.g., F, K, P and Q) and are deteriorating. The age of these taxiways is now exceeding their 20-year design pavement life and structural issues such as linear cracking and shattered slabs were seen during the pavement inspection. While full reconstruction of these taxiways may not be necessary at this time, rehabilitation repairs need to be made. This includes

several runway hold bar locations that need to be relocated to meet FAA design standards. This includes Project Elements #2 through 20, as discussed below:

Project Element #2 - Modify Existing Connector Taxiway F and Redesignate as Taxiway E

The existing connector Taxiway F between Taxiway S and Runway 8R-26L does not meet the runway at a 90-degree angle and there is an elevation change of approximately five feet between the runway centerline and the Taxiway S centerline. These are contributing factors to Hot Spot 1 at ONT, resulting in a potential loss of situational awareness.

Project Element #2 is to modify the existing Taxiway F to a standard 90-degree runway exit taxiway by changing the fillet geometry and shifting Taxiway F's centerline start of curvature with Runway 8R-26L further to the west. The proposed new crossing Taxiway would be redesignated as Taxiway E (depicted as Project Element #9) would connect to this connector taxiway. This project element would result in a net increase of approximately 8,100 SF of pavement.

Project Element #2 has the following connected actions:

- Replace centerline striping with CL lights;
- Replace taxiway edge striping with taxiway edge lights;
- Shorten Runway Hold Bar by 50 feet (ft.) and relocate runway guard lights; and
- Relocate six above ground directional signs.

Project Element #3 - Remove Existing Taxiway F between Runways 8L-26R and 8R-26L and Construct New Exit Taxiway F

This is the location of Hot Spot 1 at ONT. The removal of the existing Taxiway F would mitigate the Hot Spot. The new exit Taxiway F would allow aircraft landing on Runway 26L to exit and cross Runway 8L-26R to reach Taxiway N. Fillet modifications are proposed on new Taxiway F between Runway 8L-26R and Taxiway N to meet FAA design standards. This project element would result in a net increase of approximately 33,650 SF of pavement.

Project Element#3 has the following connected actions:

- Replace centerline striping with CL lights;
- Replace taxiway edge striping with taxiway edge lights;
- Install 300 ft. of Runway Hold Bar with Runway Guard Lights; Remove 315 ft. of Runway Hold Bar with Runway Guard Lights; and
- Relocate ten above ground directional signs.

Project Element #4 - Construct Exit Taxiway S5

Exit Taxiway S5 would be located between Taxiways K and E, south of Runway 8R-26L and is a high-speed exit providing access to Taxiway S for heavy cargo arriving aircraft. This project element includes 116,535 SF of additional pavement and a painted island (19,000 SF).

Project Element #4 has the following connected actions:

- New centerline striping with CL lights;
- New taxiway edge striping with taxiway edge Lights;
- Install 280 ft. of Runway Hold Bar with Runway Guard Lights; and
- Install six above ground directional signs.

Project Element #5 - Reconstruct Existing Exit Taxiway K (South)

The existing exit Taxiway K between Runway 8R-26L and Taxiway S does not meet the runway at a 90-degree angle. Project Element #5 is to modify the existing taxiway to a standard 90-degree runway exit taxiway by changing the fillet geometry and shifting Taxiway K's centerline start of curvature with Runway 8R-26L further to the east. This project element would not result in a change in pavement area.

Project Element #5 has the following connected actions:

- Replace centerline striping with CL lights;
- Replace taxiway edge striping with taxiway edge lights;
- Relocate 250 ft. of Runway Hold Bar with Runway Guard Lights; and
- Relocate four above ground directional signs.

Project Element #6 - Reconstruct Existing Exit Taxiway P to a High-Speed Exit and Redesignate as Taxiway S8

Project Element #6 would utilize the existing portion of the exit Taxiway P alignment to construct a high-speed exit between Runway 8R-26L and Taxiway S. This project element would also assist in mitigating Hot Spot 2 by eliminating the ability to cross both runways at an acute angle in conjunction with the other improvements to Taxiways P and Q included in Project Elements #7 and #19. Taxiway S8 would meet FAA geometric standards through a change to the fillet design to allow for both west bound and eastbound movements on Taxiway S after exiting Runway 26L. This project element would result in a net increase of 65,647 SF of pavement and includes a new painted island (19,016 SF).

Project Element #6 has the following connected actions:

- Replace centerline striping with CL lights;
- Replace taxiway edge striping with taxiway edge lights;

- Install 280 ft. of Runway Hold Bar with Runway Guard Lights; Remove 225 ft. of existing Runway Hold Bar with Runway Guard Lights; and
- Relocate six above ground directional signs.

Project Element #7 - Remove Existing Taxiway P between Runways 8L-26R and 8R-26L

The existing wide expanse of pavement formed by the intersection of Taxiways P and Q between Runways 8L-26R and 8R-26L would be removed. This intersection encompasses the location of Hot Spot 2, and is a wide expanse of pavement where pilots can experience a loss of situational awareness, which would be mitigated in conjunction with Project Elements #6 and #19. Aircraft exiting Runway 8R to the north would now be directed to exit at Taxiway U, which is outside of the high-energy portion of Runway 8L-26R. This project element would result in removal of 124,275 SF of pavement.

Project Element #7 has the following connected actions:

- Remove centerline striping with CL lights;
- Remove taxiway edge striping with TW edge lights;
- Remove 485 ft. of Runway Hold Bar with Runway Guard Lights; and
- Remove 12 above ground directional signs.

Project Element #8 - Construct Bypass Taxiway S11

The construction of bypass Taxiway S11, which would connect Runway 8R-26L to Taxiway S, would further enhance ATC staging and flexibility by ensuring that there is a bypass entrance onto Runway 26L within 500 feet west of Taxiway W. Existing Taxiway S5 south of Taxiway S, which directly aligns with new S11 would be redesignated as Taxiway S11 as well. This project element would result in the addition of 59,875 SF of pavement.

Project Element #8 has the following connected actions:

- New centerline striping with CL lights;
- New taxiway edge striping with TW edge lights;
- Install 250 ft. of Runway Hold Bar with Runway Guard Lights; and
- Install 10 above ground directional signs.

Project Element #9 - Construct Crossing Taxiway E between Runways 8R-26L and 8L-26R

The construction of crossing Taxiway E between Runway 8R-26L and Runway 8L-26R would enhance ATC staging and ground maneuvers by facilitating a north-south airfield crossing without encumbering aircraft that are queued to depart the full length

of Runway 8R-26L. This project would result in the addition of 145,100 SF of pavement.

Project Element #9 has the following connected actions:

- New centerline striping with CL lights;
- New taxiway edge striping with TW edge lights;
- Install 500 ft. of Runway Hold Bar with Runway Guard Lights; and
- Install 16 above ground directional signs.

Project Element #10 - Construct Bypass Taxiway S3

This project would provide a bypass entrance to Runway 8R from Taxiway S and would enhance ATC staging and flexibility by allowing for departures to the east to access Runway 8R within 500 feet of Taxiway S1, qualifying it as a full-length departure point and not subject to additional wake turbulence separation penalties. This would afford the ability to bypass aircraft that are queued at Taxiway S1 either waiting for clearance to depart Runway 8R or to transit to the north side of the field. This project element would result in the addition of 63,300 SF of pavement.

Project Element #10 has the following connected actions:

- New centerline striping with CL lights;
- New taxiway edge Striping with TW edge lights;
- Install 250 ft. of Runway Hold Bar with Runway Guard Lights; and
- Install six above ground directional signs.

Project Element #11 - Construct Crossing Taxiway E between Runway 8L-26R and Taxiway N

The construction of crossing Taxiway E between Runway 8L-26R and Taxiway N would enhance ATC staging and ground maneuvers by facilitating a north-south airfield crossing without encumbering aircraft that are queued to depart the full length of Runway 8R-26L. This project element would result in the addition of 145,100 SF of pavement.

Project Element #11 has the following connected actions:

- New centerline striping with CL lights;
- New taxiway edge striping with TW edge lights;
- Install 500 ft. of Runway Hold Bar with Runway Guard Lights; and
- Install 16 above ground directional signs.

Project Element #12 - Reconstruct Existing Taxiway L as a High-Speed Exit Taxiway

Existing Taxiway L is proposed to be reconstructed as a high-speed exit taxiway to allow aircraft landing on Runway 26R to efficiently exit the runway when landing in west flow. This project element would allow aircraft to clear the runway environment to avoid a loss of separation. This reconstruction project element includes new concrete pavement, a painted island (19,000 SF), and pavement demolition. The project element would result in a net increase of 79,990 SF of pavement.

Project Element #12 has the following connected actions:

- New Centerline Striping with CL Lights; Remove Centerline Striping with CL Lights;
- New Taxiway Edge Striping with TW Edge Lights; Remove Taxiway Edge Striping with TW Edge Lights;
- Install 290 ft. of Runway Hold Bar with Runway Guard Lights; Remove 115 ft. of Runway Hold Bar with Runway Guard Lights; and
- Relocate six above ground directional signs.

Project Element #13 - Construct Bypass Taxiway N2

This project element would provide a bypass entrance to Runway 8L from Taxiway N and would enhance ATC staging and flexibility by allowing for departures to the east to access Runway 8L within 500 feet of Taxiway N1, qualifying it as a full-length departure point and not subject to additional wake turbulence separation penalties. This would afford the ability to bypass aircraft that are queued at Taxiway N1 waiting for clearance to depart Runway 8L. The project element would result in 58,280 SF of additional pavement.

Project Element #13 has the following connected actions:

- New Centerline Striping with CL Lights;
- New Taxiway Edge Striping with TW Edge Lights;
- Install 250 ft. of Runway Hold Bar with Runway Guard Lights; and
- Install six new above ground directional signs.

Project Element #14 - Rehabilitate Taxiway D, Taxiway S1 and Taxiway U Pavement

Portions of Taxiway D, Taxiway S1 and Taxiway U (south of Runway 8R-26L) pavement need to be rehabilitated, as indicated in 2020 ONT PMP. In total, approximately 165,000 SF of existing pavement would be rehabilitated.

Project Element #15 - Construct Fillet Modifications on Taxiway F between Runway 8L-26R and Taxiway N

Fillet widening modifications are proposed on Taxiway F between Runway 8L-26R and Taxiway N to meet FAA design standards for Taxiway Design Group (TDG) 6 aircraft. This project element would result in an additional 28,350 SF of pavement.

Project Element #15 has the following connected actions:

- New Taxiway Edge Striping with TW Edge Lights; Remove Taxiway Edge Striping with TW Edge Lights;
- Install 250 ft. of Runway Hold Bar with Runway Guard Lights; Remove 115 ft. of Runway Hold Bar with Runway Guard Lights; and
- Relocate five above ground directional signs.

Project Element #16 - Construct Fillet Modifications on Taxiway K (North) between Runway 8L-26R and Taxiway N

Fillet widening modifications are proposed on Taxiway K between Runway 8L-26R and Taxiway N to meet FAA design standards for TDG 6 aircraft. This project element would result in a net decrease of 22,080 SF of pavement.

Project Element #16 has the following connected action:

- New Taxiway Edge Striping with TW Edge Lights; Remove Taxiway Edge Striping with TW Edge Lights.

Project Element #17 - Rehabilitate/Replace Panels on Taxiway K (Middle) between Runways

Panel rehabilitation/replacement is proposed on Taxiway K between Runway 8L-26R and Runway 8R-26L based on low PCI values, as indicated in 2020 ONT PMP.

Project Element #18 - Construct Fillet Modifications on Taxiway Q between Runway 8L-26R and Taxiway N

Fillet modifications are proposed on Taxiway Q between Runway 8L-26R and Taxiway N to meet FAA design standards for TDG 6 aircraft. The project element would result in an increase of 8,500 SF of additional pavement.

Project Element #18 has the following connected actions:

- New Taxiway Edge Striping with TW Edge Lights; Remove Taxiway Edge Striping with TW Edge Lights;
- Install 250 ft. of Runway Hold Bar with Runway Guard Lights; Remove 115 ft. of Runway Hold Bar with Runway Guard Lights; and
- Relocate six above ground directional signs.

Project Element #19 - Construct Fillet Modifications on Taxiway Q between Runways

Fillet modifications are proposed on Taxiway Q between the runways to meet FAA design standards for TDG 6 aircraft. The project element would not result in any additional pavement.

Project Element #19 has the following connected actions:

- New Taxiway Edge Striping with TW Edge Lights; Remove Taxiway Edge Striping with TW Edge Lights;
- Install 250 ft. of Runway Hold Bar with Runway Guard Lights; Remove 115 ft. of Runway Hold Bar with Runway Guard Lights; and
- Relocate two above ground directional signs.

Project Element #20 - Relocate Hold Bar Position Markings

Project Element #20 would standardize the runway hold bar locations to meet FAA design standards for runway centerline to hold bar position marking. This improvement would be made at the following locations: Taxiway D holding short of Runway 8L, Taxiway K holding short of Runway 8L, Taxiway Q holding short of Runway 8R, and Taxiway S1 holding short of Runway 8R.

Project Element #20 has the following connected action:

- Install in-pavement and above ground elevated runway guard lights.

This project element enhance situational awareness of approaching a runway environment and reduce the likelihood of a runway incursion to occur.

The taxiway and other airfield improvements would meet the objectives to meet current FAA standards, improve safety on the airfield, enhance airfield efficiency and provide adequate infrastructure to support airfield and navigational power requirements.

2.4.3 Relocation of Objects to Outside of the Runway Safety Area (RSA), Runway Object Free Area (ROFA) and Taxiway Object Free Area (TOFA)

The relocation of objects would meet the objectives to meet current FAA standards, improve safety on the airfield, and enhance airfield efficiency.

Several objects and navigational aids (NAVAIDS) are currently located within the RSA or ROFA. The objects need to be removed and/or relocated clear of the ROFA. This includes Project Elements #21 through 24.

Project Element #21 - Relocate Runway 8R PAPI

The existing Runway 8R precision approach path indicator (PAPI) is located within the alignment designated for crossing Taxiway E. This project element would relocate the Runway 8R PAPI approximately 250 feet east of its current position to be clear of the Taxiway E TOFA while still maintaining a threshold crossing height within the standard range.

Project Element #22 - Relocate Perimeter Fence and Remove Objects within the Runway 8L-26R ROFA

Approximately 1,570 LF of existing perimeter fence is located within the ROFA beyond the end of Runway 8L and would be relocated outside of the ROFA. The existing light poles, temporary concrete barriers (K-rail), parking lot and several ornamental trees that line the parking lot would be removed and/or relocated clear of the ROFA.

Project Element #23 - Relocate Runway 26L (8R End) Localizer Equipment Building

The Runway 26L (8R End) localizer equipment building is currently located within the RSA for Runway 8R-26L. This project element would relocate the building approximately 165 feet west of its current location to clear both the RSA and ROFA.

Project Element #24 - Modify Existing Vehicle Service Road

The existing VSR beyond the end of Runway 26L is located within the ROFA. The Proposed Project realigns the VSR to remain clear of the ROFA. The existing VSR pavement to be removed is 17,890 SF. The VSR pavement to be added is 32,810, a net increase of 14,920 SF.

The relocation of objects to outside of the RSA, ROFA and TOFA would meet the objectives to meet current FAA standards and improve safety on the airfield.

2.4.4 Relocation of the South Electrical Vault

The relocation of the south electrical vault would meet the objectives to provide adequate infrastructure to support airfield and navigational power requirements.

Project Element #25 – Relocate South Electrical Vault

To support the taxiway improvements and future rehabilitation of Runway 8R-26L, the existing south electrical vault must be replaced. The airfield improvements would result in electrical power requirements that cannot be accommodated with the existing south electrical vault, which is outdated and difficult to maintain. The existing south electrical vault was built in 1980 and does not meet the latest building code (Ventilation) and Air Quality Management District (AQMD) requirements. Additionally, the parts needed to maintain and repair the existing system to meet the new electrical requirements are not readily available due to its age. As a result, the

existing south electrical vault would be replaced and relocated. The south electrical vault is proposed to be relocated to an area between the ATCT and the Aircraft Rescue and Firefighting (ARFF) building, in the ARFF Auxiliary Lot. The new location for the vault is needed in order to build and commission the new vault before the existing vault can be decommissioned. Utility service to the relocated new south electrical vault would be provided along Tower Drive, tying into airfield utilities along Taxiway S. The new south electrical vault would be constructed at grade, however the utility service connection to the relocated vault would require placement of underground conduit to contain the electrical feed. The conduit would be within four feet of the surface, which requires trench excavation to a maximum depth of six feet to construct the ductbank. The ductbank would be encased in concrete.

The relocation of the south electrical vault would meet the objective to provide adequate infrastructure to support airfield and navigational power requirements.

2.5 Intended Uses and Purpose of the Supplemental EIR

The SEIR is intended to:

- Supplement the 1991 Certified FEIR and address project modifications, changed circumstances, or new information that was not known and could not have been known with the exercise of reasonable diligence at the time the prior document was certified, as described in CEQA Guidelines Section 15163;
- Address new or substantially changed significant environmental effects related to proposed project modifications;
- Recommend mitigation measures to avoid or lessen impacts associated with any new or substantially more severe significant environmental effects; and
- Update the impact analysis and mitigation measures where conditions have changed since the certification of the 1991 Certified FEIR.

OIAA has principal responsibility for approving the Proposed Project. Agencies and City entities which may be required to take actions associated with the Proposed Project include, but may not be limited to, the following:

- U.S. Department of Transportation Federal Aviation Administration (FAA)
- South Coast Air Quality Management District (SCAQMD)
- Regional Water Quality Control Board (RWQCB), Region 8
- San Bernardino County Flood Control District
- City of Ontario (regarding ministerial building permit and related matters)
- Other Federal, State or local approvals, permits, or actions as may be deemed necessary.

ENDNOTES

[1] Southern California Association of Governments (SCAG) Annual Land Use Data, 2019.

3.0 Environmental Setting

This chapter provides a description of the physical environmental conditions in the vicinity of the Proposed Project from both a local and regional perspective. Per CEQA Guidelines Section 15125(a), "An EIR must include a description of the physical environmental conditions in the vicinity of the project. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." Also, per CEQA Guidelines Section 15125(a)(1), physical conditions are generally described "as they exist at the time the notice of preparation is published… Where existing conditions change or fluctuate over time, and where necessary to provide the most accurate picture practically possible of the project's impacts, a lead agency may define existing conditions by referencing historic conditions, or conditions expected when the project becomes operational, or both, that are supported with substantial evidence." This chapter provides rationale for the adjusted Baseline Conditions used in the review of air quality, greenhouse gas emissions (GHGs), and noise.

Additionally, the Proposed Project was compared to the project analyzed in the Certified 1991 FEIR to determine which CEQA environmental issue areas warranted further analysis in this SEIR. The Certified 1991 FEIR studied aircraft operations at ONT needed to serve 12 million annual passengers, which is a greater number of aircraft operations than in the existing conditions or baseline studied in this SEIR.

3.1 Regional Setting

Pursuant to CEQA Guidelines Section 15125(a), this section provides information on the regional setting. Refer to discussions of individual topics in *Sections 3.4* through *3.10* of this chapter and brief overviews of other environmental factors in *Chapter 7.0*, Effects Found Not to be Significant. In addition, overviews of the existing Project site and ONT are provided in *Chapter 1.0, Introduction* and *Chapter 2.0, Project Description*.

3.1.1 Local Jurisdictions

OIAA is a separate and independent public agency under California law. ONT is located in the City of Ontario, which encompasses approximately 50 square miles in southwestern San Bernardino County. As shown in Figure 2-1, the City of Ontario has a population of approximately 180,000 people.[1] The City is surrounded by the cities of Chino and Montclair, and unincorporated areas of San Bernardino County to the west; the cities of Upland and Rancho Cucamonga to the north; the City of Fontana and unincorporated land in San Bernardino County to the east; and unincorporated Riverside County land to the south.

San Bernardino County encompasses approximately 20,100 square miles in an area of southern California known as the "Inland Empire" and has a population of over 2.2 million people. According to the Southern California Association of Governments (SCAG), the Metropolitan Planning Organization (MPO) for the region, between 2000

and 2018, the total population of San Bernardino County increased by 464,799 to 2,174,938.[2] The Inland Empire consists of southwestern San Bernardino County and western Riverside County. The cities of Riverside and San Bernardino, both of which are located east of Ontario, are the major population centers of the Inland Empire.

3.1.2 Regional Land Use Patterns

ONT is located in a highly developed and mostly urban/suburban environment. In general, commercial and mixed-use development are north and east of the Airport, and commercial shopping centers generally align with the I-15 and I-10 corridors. Northeast of the interchange of the two interstates is primarily industrial. Further north is dominated by single family residential neighborhoods which extend to the southern edge of the San Bernardino National Forest, approximately seven miles north of the Airport.

Approximately two miles west of ONT is the historic downtown, civic center, and SR-83 (Euclid Avenue). This area contains smaller lots, a grid street pattern, single- and multi-family homes.

The area south of State Route 60 (SR-60) is characterized by large single-family and master-planned communities (which are approximately 1.5 miles away from the south boundary of ONT) with commercial shopping centers at major intersections. Beyond this area to the south of Riverside Drive includes the New Model Colony mixed-use centers and residential neighborhoods focused around centers of employment, commercial, cultural, and residential uses largely connected by greenways and trails, and the Great Park, a linear open space facility.

Regional circulation to and through the City is provided by I-10 and SR-60 east–west, and by I-15 and SR-83 north–south. Uses and designations immediately surrounding the Airport are discussed in S*ection 2.2.2, Existing Land Uses* and shown on Figure 2-3.

3.1.3 Regional Topography

ONT is located in the upper Santa Ana Valley, which is surrounded by the San Gabriel Mountains to the north, the San Bernardino Mountains to the northeast, the Puente Hills and Chino Hills to the southwest and the San Jose Hills to the west. The City of Ontario is approximately 925 feet above sea level, and ONT's surveyed elevation is 944.1 feet above sea level. Major drainages in the Ontario portion of the upper Santa Ana Valley are San Antonio and Cucamonga creeks, which flow south and join the Santa Ana River at the Prado Flood Control Basin. The Santa Ana River (when flowing) discharges to the Pacific Ocean just south of Huntington Beach in Orange County.

3.2 Use of Existing Conditions vs. Baseline Conditions

3.2.1 Existing Conditions

This section describes the existing physical conditions in the year 2021 for the following resource categories that could be affected by the Proposed Project: biological resources, cultural resources, transportation/traffic and tribal cultural resources. See *Section 3.2.2, Baseline Conditions* for discussion of existing conditions utilized for air quality, GHGs, and noise resource categories.

3.2.2 Baseline Conditions

The term "Baseline Conditions" is applied for discussion of the hybrid 2019/2020 base year (baseline) condition, as it relates to the air quality, GHG, and noise environments, as introduced in *Section 1.5, Aviation Activity Forecast and Years Reviewed in Environmental Analysis*. Per CEQA Guidelines Section 15125(a)(1), "where necessary to provide the most accurate picture practically possible of the project's impacts, a lead agency may define existing conditions by referencing historic conditions, or conditions expected when the project becomes operational, or both, that are supported with substantial evidence." Due to the COVID-19 pandemic, existing conditions in 2021 do not represent activity levels that have been, or will be, typical of ONT or that are reasonably expected to exist during the timeframe for project implementation.

Specifically, the FAA advised, as part of their annual Terminal Area Forecast (TAF) "In 2020 there was a major decrease in passenger enplanements and commercial operations as a result of the COVID-19 pandemic. There is uncertainty associated with the forecasts because of the uncertainty regarding the path of the pandemic and its economic impacts."[3] FAA estimated that medium hub airports (ONT is a medium hub airport) would have an aggregate recovery to 2019 levels of aircraft operations and enplanements by 2025, however the projections for ONT indicate operations will exceed 2019 levels by 2023.[4] These estimates were developed prior to the extensive uptake in passenger activity in mid to late 2021 and are thus likely under-representative of the recovery expected at ONT. Importantly, the recovery estimated by FAA in their TAF released in May of 2021 does not incorporate the additional cargo activity that occurred in 2020 in response to the world's reliance on cargo carriers during the pandemic. ACI-NA reported an increase of approximately 17% in cargo operations between 2019 and 2020[5] and ONT ranked 10th in North American airports for cargo activity, growing approximately 21% in total cargo when compared to 2019.

Thus, to more accurately represent historically consistent existing conditions at ONT, and to avoid a potentially misleading comparison of project impacts, these resource categories (noise, air quality, and GHGs) are described and compared using a hybrid of 2019 and 2020 operations. The Baseline Conditions noise contour for this SEIR was developed using calendar year 2019 aircraft operations with modifications to reflect increased cargo operations experienced during 2020 and continuing into 2021. As explained in *Section 1.5, Aviation Activity Forecast and Years Reviewed in Environmental Analysis*, the existing/base year fleet mix is a hybrid of 2019 and 2020

operations and was based on the ONT ANOMS radar data from 2019 and 2020, and FAA Traffic Flow TFMSC and OSPNET. Specifically, passenger air carriers, air taxi, and GA operations were obtained from the 2019 ANOMS data and the all-cargo operations were obtained from the 2020 ANOMS data. The military operations were obtained from the FAA TFMSC data.

This approach serves to normalize operations to represent Baseline Conditions recognizing that the temporary reduction in passenger air carrier and air taxi operations, due to the COVID-19 pandemic, is not indicative of baseline/existing conditions at ONT.

3.3 Environmental Factors with Potential for Impact

It was determined that the following environmental factors would be potentially affected by this Proposed Project and thus the existing conditions of each are evaluated in detail in this chapter:

- Air Quality
- Biological Resources
- Greenhouse Gas Emissions
- Cultural Resources
- Noise
- Transportation/Traffic
- Tribal Cultural Resources

Note that while the findings included in the June 2021 IS remain valid that Cultural Resources and Transportation/Traffic have less than significant impact, and Biological Resources and Tribal Resources findings have less than significant impact with mitigation incorporated, additional discussion of these resources is included in this chapter and *Chapter 4.0, Environmental Impacts and Mitigation* to support that determination. These environmental factors are organized into the following sections:

- Regulatory Setting
- Existing Conditions or Baseline Conditions

The remaining environmental factors were determined to not have new or substantially more significant direct, indirect or cumulative effects as a result of the implementation of the Proposed Project, and therefore, detailed evaluation of these environmental factors is not required in this SEIR. Discussion of the effects found not to be significant is included in *Chapter 7.0, Effects Found Not to be Significant and Appendix A* which contains the June 2021 IS, of which materials are incorporated here in full.

- Aesthetics
- Agricultural Resources
- Energy
- Geology/Soils
- Hazard and Hazardous Materials
- Hydrology and Water Quality
- Land Use/Planning
- Mineral Resources
- Population/Housing
- Public Services
- Recreation
- Utilities/ Service Systems
- Wildfire

Discussion of jurisdictional waters and wetlands is included in *Section 3.5, Biological Resources*. Additional information on hydrology and water quality is included in Appendix A which contains the June 2021 IS.

3.4 Air Quality

ONT is located in San Bernardino County within the South Coast Air Basin. The Certified 1991 FEIR studied projected aircraft operations at ONT at a 12 MAP level, which is a greater number of aircraft operations than in the Baseline Conditions relating to potential air quality impacts studied in this SEIR.

3.4.1 Pollutants of Interest

There are six criteria air pollutants evaluated in this SEIR as it relates to the proposed project. These pollutants are comprised of: ozone (O_3); carbon monoxide (CO); nitrogen dioxide (NO_2); sulfur dioxide (SO_2); particulate matter equal to or less than 10 micrometers (coarse particulates or PM_{10}); and particulate matter equal to or less than 2.5 micrometers (fine particulates or $PM_{2.5}$). Additionally, volatile organic compounds (VOCs) and nitrogen oxides (NO_x) are also evaluated as they are the two primary precursors to O_3 formation. Lead (Pb) is also considered a criteria air pollutant; however, it is not evaluated in the SEIR's air quality analysis.[6] Note, however, a discussion of lead and the trace amounts of lead emissions present at ONT is included in *Section 4.8, Health Risk Assessment*, of this SEIR. The following sections describe the criteria air pollutants, including sources of emissions and potential health impacts.

Ozone

Ozone occurring at ground level, as opposed to in Earth's upper atmosphere, is a harmful pollutant. Ground level ozone is the main component of smog. Ozone is created by a chemical reaction between two precursor pollutants, NO_x and VOCs. This chemical reaction occurs when NO_x and VOCs are emitted in the presence of heat and sunlight. Common sources of NO_x and VOC emissions are from cars, power plants and chemical plants. Ozone levels are particularly high on hot sunny days. Ozone is a pulmonary irritant that can impact the respiratory system, and trigger symptoms such as tightness in the chest, coughing, and wheezing. Ozone also negatively impacts sensitive vegetation and ecosystems at elevated levels.

Carbon Monoxide

CO is a colorless odorless gas that is released when something is burned. The main source of CO emissions is from the burning of fossil fuels from cars, trucks and other machinery. CO can be harmful when inhaled in large amounts as it reduces the amount of oxygen that can be circulated in the blood stream, and result in cardiovascular and nervous system effects.

Nitrogen Dioxide

The main source of nitrogen dioxide is from the burning of fuels, especially from cars, trucks, power plants and off-road equipment. Nitrogen dioxide emissions standards are used to protect against exposure to all NO_x, with NO_2 used as the indicator for

the larger group of gases. Nitrogen dioxide can irritate the lungs and lead to respiratory illnesses such as bronchitis and pneumonia.

Sulfur Dioxide

The main source of sulfur dioxide emissions is from fossil fuel combustion at power plants and other industrial facilities. Sulfur dioxide emissions standards are used to protect against exposure to all sulfur oxides (SO_x), with SO_2 being the component of greatest concern and other sulfur oxides found in much smaller concentrations in the atmosphere. Sulfur dioxide exposure can irritate the lungs, cause bronchial damage and exacerbate respiratory diseases such as asthma.

Particulate Matter

Particulate matter (PM) describes a mixture of solid particles and liquid droplets found in the air. Larger particulate matter, or PM_{10}, diameters 10 micrometers and smaller, are inhalable particles such as dust, dirt, soot and smoke. Smaller particulate matter, or $PM_{2.5}$, diameters 2.5 micrometers or smaller, are fine inhalable particles. Once inhaled, particulate matter can travel deep into your lungs and causing serious respiratory health issues. Fine particles, $PM_{2.5}$, pose a greater risk to human health.

In addition to the criteria air pollutants, airport-related activities also emit GHGs and hazardous air pollutants (HAPs). GHGs are described in further detail in *Section 3.6. Greenhouse Gas Emissions*. HAPs include a wide array of organic and inorganic compounds which are regulated under the federal CAA due to the potentially adverse effect on human health and the environment. **Table 3-1** summarizes the sources of airport-related emissions and the pollutants they emit.

Table 3-1: Sources of Airport Emissions

Source	Type	Pollutants
Aircraft	Main engines	CO, VOC, NO_x, PM_{10} and $PM_{2.5}$, SO_2, Pb, GHGs, and HAPs
Auxiliary Power Units (APUs)	Turbine engines	
Ground Support Equipment (GSE)	Combustion engines (e.g., aircraft tugs, air start units, loaders, tractors, fuel or hydrant trucks)	
Stationary Sources	Combustion sources (e.g., boilers, heaters, generators, snowmelters, incinerators, fire training facilities)	CO, VOC, NO_x, PM_{10} and $PM_{2.5}$, SO_2, GHGs, and HAPs
	Non-combustion sources (e.g., fuel storage tanks, painting operations, de-icing and anti-icing operations, salt/sand storage)	VOC, PM_{10}, $PM_{2.5}$, and HAPs
Ground Access Vehicles	Passenger vehicles (e.g., private autos, taxis/limos, shuttles, vans, buses, rental cars), airport and tenant employee vehicles, airport fleet, and vehicles transporting cargo to and from airport as well as circulating around the airport.	CO, VOC, NO_x, PM_{10} and $PM_{2.5}$, SO_2, GHGs

Table 3-1: Sources of Airport Emissions

Source	Type	Pollutants
Construction	Combustion sources (e.g., heavy construction equipment, on-road vehicles and off-road vehicles)	CO, VOC, NO_x, PM_{10} and $PM_{2.5}$, SO_2, GHGs
	Non-combustion sources associated with construction (e.g., materials staging, demolition, earthworks, and asphalt paving operations)	PM_{10}, $PM_{2.5}$ and VOC
Electrical Usage	The onsite generation of electricity using coal, oil, or natural gas	GHGs
Refrigerants	Compounds used for refrigeration and air conditioning.	
Waste Management	Solid waste generated and the recycling/waste disposal practices employed by the airport.	

Note: GHGs include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6

Source: Federal Aviation Administration, Office of Environment and Energy, *Aviation Emissions and Air Quality Handbook Version 3 Update 1, Table 3-2. Sources of Air Emissions and Pollutants of Concern at Airports, January 2015.*

3.4.2 Regulatory Setting

Federal

At the federal level, the U.S. Environmental Protection Agency (USEPA) establishes the guiding principles and policies for protecting air quality conditions throughout the nation. USEPA's primary responsibility in this area includes promulgating the National Ambient Air Quality Standards (NAAQS)[7] which define outdoor levels of criteria air pollutant concentrations that are considered safe for public health, welfare and the environment. USEPA sets NAAQS for O_3, CO, NO_2, $PM_{2.5}$, PM_{10}, SO_2, and Pb.

Under the federal Clean Air Act (CAA), USEPA's other responsibilities include the approval of State Implementation Plans (SIPs), as well as the establishment of emission standards for mobile and stationary sources. USEPA has adopted multiple tiers of emission standards for construction equipment, including a comprehensive national program to reduce emissions from nonroad diesel engines by setting Tier 4 emission standards (40 CFR Part 1039). Additionally, on the federal level, FAA is the primary agency involved in, and responsible for, ensuring that air quality impacts associated with proposed airport projects adhere to the reporting and disclosure requirements of NEPA as well as the General Conformity rule of the CAA.

USEPA establishes standards for the control of air pollution from aircraft and aircraft engines (40 CFR 87). USEPA consults with FAA, as FAA sets aircraft engine fuel venting and exhaust emissions certification requirements (14 CFR Part 34) to enforce compliance with USEPAs emission regulations.

FAA encourages airports to reduce emissions through federal programs, including providing Airport Improvement Program (AIP) grants for airports to develop sustainability plans, as well as FAA programs that provide funding for use of low or zero emission technologies, such as the Voluntary Airport Low Emissions (VALE) program[8] and the Airport Zero Emissions Vehicle and Infrastructure Pilot Program.[9]

State

At the state level, the CARB manages air quality, regulates mobile emissions sources, and oversees the activities of county and regional air districts within California. CARB also regulates local air quality indirectly by establishing California Ambient Air Quality Standards (CAAQS) and vehicle emissions standards, and by conducting research, planning, and coordination activities. In addition to the criteria air pollutants, CARB also measures for compliance with three other CAAQS: hydrogen sulfide, sulfates and vinyl chloride.

As it relates to construction equipment, for both on- and off-road equipment, CARB sets lower exhaust emissions standards when compared to the federal standards. See *Section 4.8, Health Risk Assessment,* for discussion of CARB regulations related to toxic air contaminants.

In June 2020, CARB adopted the Advanced Clean Trucks regulation which requires truck manufacturers to sell zero-emission vehicles in California and a one-time requirement for company and fleet reporting. The regulation aims to accelerate the transition of zero-emission medium and heavy-duty vehicles from Class 2b to Class 8, requiring manufacturers to sell zero-emission trucks at an increasing percentage of annual sales from 2024 to 2035. By 2035, zero-emission truck sales would need to be 55% of Class 2b-3 sales, 75% of Class 4-8 sales and 40% of truck tractor sales.[10]

Ambient Air Quality Standards and Attainment Status

Ambient concentrations of criteria air pollutants are measured within the Basin and compared to Federal (NAAQS) and State (CAAQS) standards to determine air quality. These standards are shown in **Table 3-2**.

General Conformity

The EPA, under the provisions of the CAA, requires each state that has not attained the NAAQS to prepare a separate local plan detailing how these standards are to be met in each local area and incorporated into a SIP. The General Conformity Rule of the federal CAA prohibits federal agencies (including the FAA) from permitting or funding projects that do not conform to an applicable SIP. The General Conformity Rule applies only to areas that are designated "nonattainment" or "maintenance."

Regional and Local

At the regional level, the South Coast Air Quality Management District (SCAQMD) has jurisdiction over the South Coast Air Basin, which includes portions of Los Angeles, Riverside and San Bernardino counties and all of Orange County. The SCAQMD is responsible for ensuring that federal and state air quality standards are met by

monitoring ambient air pollutant levels throughout the region and implementing strategies to attain the standards.

Table 3-2: Federal and State Air Quality Standards and Attainment Status for the South Coast Air Basin

Criteria Pollutant	Standard	Averaging Time	Standard Concentration	Designation
Ozone (O_3)	NAAQS	1-hour	0.12 ppm	Non-attainment (Extreme)
		8-hour	0.08 ppm (1997) 0.075 ppm (2008) 0.070 ppm (2015)	Non-attainment (Extreme)
	CAAQS	1-hour	0.09 ppm	Non-attainment
		8-hour	0.070 ppm	
Carbon Monoxide (CO)	NAAQS	1-hour	35 ppm	Maintenance (Serious)
		8-hour	9 ppm	
	CAAQS	1-hour	20 ppm	Attainment
		8-hour	9 ppm	
Nitrogen Dioxide (NO_2)	NAAQS	1-hour	0.10 ppm	Attainment
		Annual	0.053 ppm	Maintenance
	CAAQS	1-hour	0.18 ppm	Attainment
		Annual	0.030 ppm	
Sulfur Dioxide (SO_2)	NAAQS	1-hour	75 ppb	Attainment
		24-hour	0.14 ppm	
		Annual	0.03 ppm	
PM_{10}	NAAQS	24-hour	150 µg/m^3	Maintenance (Serious)
	CAAQS	24-hour	50 µg/m^3	Non-attainment
		Annual	20 µg/m^3	
$PM_{2.5}$	NAAQS	24-hour	35 µg/m^3	Nonattainment (Serious)
	NAAQS	Annual	15 µg/m^3 (1997)	Attainment
			12 µg/m^3 (2012)	Nonattainment (Serious)
	CAAQS	Annual	12 µg/m^3	Nonattainment
Lead	NAAQS	3-months rolling	0.15 µg/m^3	Attainment[1]
Hydrogen Sulfide (H_2S)	CAAQS	1-hour	0.03 ppm	Attainment
Sulfates	CAAQS	24-hour	25 µg/m^3	Attainment

Note:
[1]Partial Nonattainment designation in Los Angeles County portion of Basin only for near-source monitors.

Source: SCAQMD, http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf, September 2018

In conformance with federal requirements, the SCAQMD prepared the 2016 Air Quality Management Plan (AQMP). The AQMP is, in turn, based upon the adopted general plans (and resulting vehicular trip generation) from the local jurisdictions that were in place when the AQMP was developed. Proposed land uses that are consistent with such adopted general plans are considered consistent with the AQMP and will not conflict with or obstruct implementation of the applicable air quality plan. The 2016 AQMP includes the strategies and measures needed to meet the NAAQS and CAAQS. SCAQMD approved the 2016 AQMP on March 3, 2017 which demonstrates attainment of the 1-hr and 8-hr ozone NAAQS as well as the latest 24-hr and annual $PM_{2.5}$ standards.

The SCAQMD is currently in the process of developing an Air Quality Analysis Guidance Handbook to replace the 1993 CEQA Air Quality Handbook, as many sections of the 1993 handbook are now obsolete.[11]

In 2019, ONT developed a voluntary Air Quality Improvement Plan (AQIP) as part of a collaborative effort between SCAQMD and other airports in the South Coast Air Basin to minimize and reduce emissions from mobile source activities at the Airport. The AQIP was developed to address a measure presented in the 2016 AQMP, *Facility-Based Measure for Mobile Sources Measure for the Emissions Reductions at Commercial Airports (MOB-04).* MOB-04 requires Basin airports to reduce non-aircraft emission sources at their facilities. The ONT AQIP identifies efforts related to MOB-04 and programs to address air quality at the Airport.[12] As it relates to construction projects, the AQIP includes a Construction Equipment Policy (RM7), which requires contractors under contract with OIAA to utilize Tier 4 Final construction equipment. Use of Tier 4 Final construction equipment would result in a reduction on NOx and PM emissions from construction activities.

In December 2019, SCAQMD and ONT signed a Memorandum of Understanding (MOU) which outlines how the Airport will quantify NO_x emission reductions through implementation measures outlined in ONT's AQIP.

Table 3-3 summarizes the attainment status for the NAAQS and CAAQS at ONT, according to CARB Ambient Air Quality Standards Designation Tool.

Table 3-3: Current Nonattainment and Maintenance Designations

Level	Pollutant/Standard	Attainment Status
NAAQS	Ozone (2008 standard)	Nonattainment – Extreme
	Ozone (2015 standard)	Nonattainment – Extreme
	CO	Maintenance – Serious
	NO_2	Maintenance
	$PM_{2.5}$ (2006 standard)	Nonattainment – Serious
	$PM_{2.5}$ (2012 standard)	Nonattainment – Moderate
	PM_{10}	Maintenance – Serious
CAAQS	Ozone	Nonattainment
	$PM_{2.5}$	Nonattainment
	PM_{10}	Nonattainment

Source: CARB, Ambient Air Quality Standards Designation Tool, https://ww2.arb.ca.gov/aaqs-designation-tool, zip code 91761 (accessed 4/6/21).

3.4.3 Baseline Conditions

Aircraft Taxiing Emissions

Due to proposed runway closures during the construction period, the Proposed Project would temporarily impact aircraft taxiing times. More specifically, and of relevance to the air quality analysis, the Proposed Project would reduce the duration of taxiing times in construction years 2023 and 2024 as compared to the Baseline Conditions. In 2025, aircraft taxiing times would be slightly greater than Baseline Conditions due to additional taxiing delay associated with background growth in operations. The Proposed Project would not result in any other changes to the landing take off (LTO) cycle accounted for in air quality analysis. For this reason, Baseline Conditions emissions are determined for aircraft taxiing operations as this is the only operational factor that would be affected by the Proposed Project.

The Baseline Conditions aircraft taxiing emissions were determined using the hybrid base year (2019/2020) approach explained in *Section 3.2.2, Baseline Conditions*, which normalizes the temporary impact of the COVID-19 pandemic in order to correctly represent typical operations levels at ONT. See ***Appendix D, Air Quality and GHG*** for air quality modeling details.

Table 3-4 summarizes the Baseline Conditions aircraft taxiing emissions for 2019/2020 based on the hybrid base year modeled in AEDT.

Table 3-4: Baseline Conditions Aircraft Taxiing Emissions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}
Baseline Conditions	517	63	96	18	2	2	2,832	346	527	101	9	9

Source: FAA ASPM and HNTB analysis, 2022.

Air Monitoring Stations

The SCAQMD maintains a network of air monitoring stations throughout the Basin, with eight monitors located within San Bernardino County. The nearest air monitoring station, which measures NO_2 and $PM_{2.5}$, is the CA-60 Near Road station in Ontario (#5136 at 2330 S. Castle Harbour Place) located 1.5 miles south of ONT. Two additional stations nearby ONT include the Northwest San Bernardino Valley station in Upland (#5175 at 1350 San Bernardino Road) located approximately three miles north of ONT, which measures CO, O_3, NO_2 and PM_{10}, and the Central San Bernardino Valley 1 station in Fontana (#5197 at 14360 Arrow Boulevard) located seven miles northeast of ONT, which measures SO_2 and $PM_{2.5}$. **Tables 3-5, 3-6, and 3-7** summarize ambient air quality monitoring data at these stations between 2018-2020. Note that while the nearest air monitoring station to ONT is the CA-60 station, this station is designated to focus primarily on roadway emission sources.

The air monitoring data from 2018-2020 indicate:

- $PM_{2.5}$: Minimal exceedance of the federal 24-hour standard (35 µg/m^3) (both stations), and exceedance of the federal and state annual standard (12 µg/m^3) each year (at CA-60 station only).
- NO_2: Exceedance of federal 1-hour standard (100 ppb) in 2020 and exceedance of state annual standard (30 ppb) in 2018, both at the CA-60 station.
- Ozone: On average between 2018 and 2020, the 2015 federal and state 8-hour standard is exceeded 20% of the time (14-31%). On average between 2018 and 2020, the state 1-hour standard is exceeded 13% of the time (7-22%). Exceedances of all ozone standards more than doubled in 2020 as compared to 2018 and 2019 (likely due to the extensive wildfires in San Bernardino and neighboring counties in 2020).
- PM_{10}: No exceedances of the federal 24-hr standard. Exceedance of state annual standard (20 µg/m^3) each year and minimal exceedances of the state 24-hr standard each year.
- CO: No exceedances of federal or state standards (1-hour and 8-hour).

Table 3-5: CA-60 Monitoring Data

Pollutant	Averaging Time	2018	2019	2020
$PM_{2.5}$	Maximum Concentration, 24-hour (µg/m^3)	47.90	41.30	53.10
	# Samples Exceeding Federal Standard (35 µg/m^3), 24-hour	5 (1.4%)	5 (1.4%)	4 (1%)
	Annual Average Concentration, AAM (µg/m^3) (NAAQS/CAAQS: 12 µg/m^3)	14.31	12.70	14.36

Table 3-5: CA-60 Monitoring Data

Pollutant	Averaging Time	2018	2019	2020
NO_2	Maximum Concentration, 1-hour (ppb) (NAAQS: 100 ppb, CAAQS: 180 ppb)	79.4	87.7	101.6
	Annual Average Concentration, AAM (ppb) (NAAQS: 53 ppb, CAAQS: 30 ppb)	30.4	29.0	29.1

Note: While CA-60 monitoring station is the nearest to ONT, it is primarily designated to focus on roadway emission sources.
AAM = Annual Arithmetic Mean

Source: SCAQMD, Historical Data By Year, 2018-2020, http://www.aqmd.gov/home/air-quality/historical-air-quality-data/historical-data-by-year

Table 3-6: Northwest San Bernardino Valley Monitoring Data

Pollutant	Averaging Time	2018	2019	2020
Ozone	Maximum Concentration, 1-hour (ppm)	0.133	0.131	0.158
	Maximum Concentration, 8-hour (ppm)	0.111	0.107	0.123
	# Days Standard Exceeded			
	Federal, 1-hour (0.124 ppm)	6	1	15
	2015 Federal, 8-hour (0.070 ppm)	52	52	114
	2008 Federal, 8-hour (0.075 ppm)	32	34	87
	State, 1-hour (0.09 ppm)	25	31	82
	State, 8-hour (0.070 ppm)	52	52	114
PM_{10}	Maximum Concentration, 24-hour ($\mu g/m^3$)	73	125	63
	Annual Average Concentration, AAM ($\mu g/m^3$) (CAAQS: 20 $\mu g/m^3$)	32.3	28.1	30.5
	# Samples Exceeding Federal Standard, 24-hour (150 $\mu g/m^3$)	0	0	0
	# Samples Exceeding State Standard, 24-hour (50 $\mu g/m^3$)	14 (4%)	7 (2%)	12 (4%)
CO	Maximum Concentration, 1-hour (ppm) (NAAQS: 35 ppm, CAAQS: 20 ppm)	1.7	1.5	1.5
	Maximum Concentration, 8-hour (ppm) (NAAQS/CAAQS: 9 ppm)	1.2	1.1	1.1
NO_2	Maximum Concentration, 1-hour (ppb) (NAAQS: 100 ppb, CAAQS: 180 ppb)	58.7	57.9	55.4
	Annual Average Concentration, AAM (ppb) (NAAQS: 53 ppb, CAAQS: 30 ppb)	14.7	14.0	13.9

Note: AAM = Annual Arithmetic Mean

Source: SCAQMD, Historical Data By Year, 2018-2020, http://www.aqmd.gov/home/air-quality/historical-air-quality-data/historical-data-by-year

Table 3-7: Central San Bernardino Valley 1 Monitoring Data

Pollutant	Averaging Time	2018	2019	2020
$PM_{2.5}$	Maximum Concentration, 24-hour (µg/m^3) (NAAQS: 35 µg/m^3)	29.20	46.50	46.10
	# Samples Exceeding Federal Standard (35 µg/m^3), 24-hour	0	2(1.8%)	1(1%)
	Annual Average Concentration, AAM (µg/m^3) (NAAQS/CAAQS: 12 µg/m^3)	11.13	10.84	11.95
SO_2	Maximum Concentration, 1-hour (ppb) (NAAQS: 75 ppb)	2.9	2.4	2.5
	99th Percentile Concentration, 1-hour (ppb)	2.5	1.9	1.7

Source: SCAQMD, Historical Data By Year, 2018-2020, http://www.aqmd.gov/home/air-quality/historical-air-quality-data/historical-data-by-year

3.5 Biological Resources

This section provides current biological data required to review the potential impacts of the Proposed Project and documents the existing biological conditions on and in the immediate vicinity of the project with respect to local, state, and federal policy.

3.5.1 Regulatory Setting

Biological resources located within the study area are subject to regulatory review by federal, state, and local agencies. Biological resources-related laws and regulations that apply to the project include the Federal Endangered Species Act (FESA), Migratory Bird Treaty Act (MBTA), Clean Water Act (CWA), California Endangered Species Act (CESA), and California Fish and Game (CFG) Code.

Federal

Federal Endangered Species Act

Administered by the U.S. Fish and Wildlife Service (USFWS), the FESA provides the legal framework for the listing and protection of species and their habitats, identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered a "take" under the FESA. Section 9(a) of the FESA defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct." "Harm" and "harass" are further defined in federal regulations and case law to include actions that adversely impair or disrupt a listed species' behavioral patterns.

Sections 4(d), 7, and 10(a) of the FESA regulate actions that could jeopardize endangered or threatened species. Section 7 describes a process of federal interagency consultation for use when federal actions may adversely affect listed species. A biological assessment is required for any major construction activity if it may affect listed species. In this case, take can be authorized via a letter of biological opinion issued by the USFWS for non-marine related listed species issues. A Section 7 consultation is required when there is a nexus between federally listed species' use of the site and impacts to U.S. Army Corps of Engineers (USACE) jurisdictional areas.

Section 10(a) allows issuance of permits for "incidental" take of endangered or threatened species. The term "incidental" applies if the taking of a listed species is incidental to and not the purpose of an otherwise lawful activity.

In addition, the USFWS issued Permit No. MBPER0037939 (USFWS Permit) for ONT, which USFWS Permit allows the trapping and relocation of certain birds at ONT, including the burrowing owl, "to resolve or prevent threats to human safety and/or aircraft safety" at ONT. (See ***Appendix E***, ***Biological Resources,*** *Attachment 1*.)

Federal Clean Water Act

Federal wetland regulation (non-marine issues) is guided by the Rivers and Harbors Act of 1899 and the CWA. The Rivers and Harbors Act deals primarily with discharges into navigable waters, while the purpose of the CWA is to restore and maintain the chemical, physical, and biological integrity of all waters of the U.S. Permitting for projects that may discharge fill materials into U.S. waterways, including wetlands and vernal pools, is overseen by USACE under Section 404 of the CWA. Projects may be permitted on an individual basis or may be covered under one of several approved Nationwide Permits. Individual Permits are assessed individually based on the type of action, amount of fill, etc. Individual Permits typically require substantial time (often longer than six months) to review and approve, while Nationwide Permits are pre-approved if a project meets the appropriate conditions. A CWA Section 401 Water Quality Certification, which is administered by the State Water Resources Control Board, must be issued prior to any 404 Permit.

Migratory Bird Treaty Act

All migratory bird species that are native to the United States or its territories are protected under the federal MBTA, as amended under the Migratory Bird Treaty Reform Act of 2004 (FR Doc. 05-5127). The MBTA is generally protective of migratory birds but does not actually stipulate the type of protection required. In common practice, the MBTA is used to place restrictions on disturbance of active bird nests during the nesting season, which is generally defined as February 15 to August 31 for songbirds. In addition, the USFWS commonly places restrictions on disturbances allowed near active raptor nests, which the nesting season is generally defined as January 15 to August 31.

In addition, USFWS Permit was issued for ONT, which Permit allows the trapping and relocation of certain birds at ONT, including the burrowing owl, "to resolve or prevent threats to human safety and/or aircraft safety" at ONT (See *Appendix E, Attachment 1*).

Critical Habitat

As described by the FESA, critical habitat is the geographic area occupied by a threatened or endangered species essential to species conservation that may require special management considerations or protection. Critical habitat also may include specific areas not occupied by the species but that have been determined to be essential for species conservation.

The study area is located outside of any USFWS-designated critical habitat. The nearest critical habitat is for the coastal California gnatcatcher and occurs over five miles to the southeast of the study area.

State

California Environmental Quality Act

Primary environmental legislation in California is found in CEQA and its implementing guidelines (State CEQA Guidelines), which require that projects with potential adverse effects (i.e., impacts) on the environment undergo environmental review. Adverse environmental impacts are typically mitigated because of the environmental review process in accordance with existing laws and regulations.

California Endangered Species Act

The CESA is similar to the FESA in that it contains a process for listing of species and regulating potential impacts to listed species. Section 2081 of the CESA authorizes the CDFW to enter into a memorandum of agreement for take of listed species for scientific, educational, or management purposes. For example, the golden eagle (*Aquila chrysaetos*) and white-tailed kite (*Elanus leucurus*) are considered State Fully Protected (SFP) species. A SFP species may not be taken or possessed at any time, and no state licenses or permits may be issued for their take except for collecting the species necessary for scientific research and relocation of the bird species for the protection of livestock (CFG Code Sections 3511, 4700, 5050, and 5515).

The Native Plant Protection Act (NPPA) enacted a process by which plants are listed as rare or endangered. The NPPA regulates the collection, transport, and commerce of plants that are listed. The CESA followed the NPPA and covers both plants and animals that are determined to be endangered or threatened with extinction. Plants listed as rare under NPPA were designated threatened under the CESA.

Rare plant species are those listed or candidate listed as federally threatened or endangered by the USFWS; State listed as threatened or endangered or considered rare by the CDFW; and/or are California Native Plant Society (CNPS) California Rare Plant Rank (CRPR) List 1A, 1B, 2A, 2B, or 3 species, as recognized in the CNPS's Inventory of Rare and Endangered Vascular Plants of California.

California Fish and Game Code

Protection of Raptor Species

Raptors (birds of prey) and owls and their active nests are protected by CFG Code Section 3503.5, which states that it is unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird unless authorized by the CDFW.

Streambed Alteration Agreement

The CFG Code (Section 1600 et seq.) requires an agreement with the CDFW for projects affecting riparian and wetland habitats through the issuance of a Streambed Alteration Agreement.

Local

ONT Wildlife Hazard Management Plan (WHMP)

Pursuant to CFR Title 14 Part 139.337(f), ONT developed a WHMP in cooperation with the U.S. Department of Agriculture Wildlife Services (USDA/WS) program in 2016. The plan places emphasis on identification and abatement of wildlife hazards within the airfield environment. The plan outlines steps for monitoring, documenting and reporting potential wildlife hazards and bird strikes at ONT. Additionally, the plan provides some coverage of migratory species related to ongoing operations, and is focused on flight safety rather than construction project activity.

3.5.2 Existing Conditions

Topographically, the study area consists of a large, relatively flat, open area in a highly developed landscape. Three concrete channels run north to south, through the east, center, and western portions of the site. The drainage features observed within the study area (Deer Creek, Cucamonga Creek Channel, and West Cucamonga Creek Channel) coalesce into Cucamonga Creek, and eventually drain into the Santa Ana River to the south. Elevations on the study area range from 900 feet (247 meters) above mean sea level (AMSL) within the northeastern portion to 935 feet (284 meters) AMSL along the southwestern portion. The remainder the study area consists of developed, disturbed, and ornamental habitat. Six soil types are mapped on the study area and shown on **Figure 3-1**, Soils, including Delhi fine sand (Db), Hanford coarse sandy loam (HaC, 2 to 9 percent slopes), Hilmar loamy fine sand (Hr), Tujunga loamy sand (TuB, 0 to 5 percent slopes), and Tujunga gravelly loamy sand (TvC, 0 to 9 percent slopes).[13]

Vegetation Communities

The study area supports three vegetation communities, which are shown on **Figure 3-2**, Vegetation and Sensitive Resources and listed in **Table 3-8**, Vegetation Communities. Plant communities are classified in accordance with Holland[14] and Oberbauer.[15] Community names consistent with A Manual of California Vegetation, Second Edition are also provided.[16] Sensitive habitats pursuant to CDFW's Natural Communities List were not observed on site.[17]

Table 3-8: Vegetation Communities

Habitat Type (Holland/Oberbauer)	Habitat Type (MCV)[1]	Acres
Developed	N/A	290.33
Disturbed/Non-native Vegetation	N/A	132.95
Ornamental	N/A	0.63
	TOTAL	**423.91**

Note: (1) Manual of California Vegetation.

Source: HELIX Environmental Planning, 2022.

Developed

Developed land consists of areas where permanent structures and/or pavement have been placed, which prevents the growth of vegetation, or where landscaping is clearly

tended and maintained. Within the study area, developed land consists of runways, paved roads, buildings, and other impervious surfaces and covers approximately 288.88 acres.

Disturbed

Disturbed habitat includes land cleared of vegetation (e.g., dirt roads) or actively maintained, or heavily disturbed areas, that are mostly unvegetated but may support scattered non-native plant species, such as ornamentals or ruderal exotic species that take advantage of disturbance. Disturbed habitat is similar to the vegetation community non-native vegetation, except disturbed habitat generally supports little to no vegetative cover.

Disturbed habitat was observed throughout the study area and was dominated by ripgut brome (*Bromus diandrus*), Mediterranean grass (*Schismus barbata*), and foxtail brome (*Bromus madritensis*), as well as several non-native forbs, and totals approximately 132.95 acres. This area is frequently mowed by the Airport.

Ornamental

The ornamental vegetation community is typically associated with land that has been heavily influenced by human activities, including areas adjacent to roads, manufactured slopes, and abandoned lots. This non-native community is dominated by ornamental and non-native species that take advantage of previously cleared or abandoned landscaping, or land with past or present animal usage, that prevents it from providing viable habitat for native vegetation.

Ornamental vegetation was observed along the western portion of the study area adjacent to South Grove Avenue, and totals 0.63 acre. The area was dominated by jacaranda (*Jacaranda sp*.) and myoporum (*Myoporum sp.*).

Plants

A total of 12 plant species were identified within the study area during surveys to date, of which 11 (92 percent) are non-native species (*Appendix E, Attachment 2*).

Animals

A total of 12 animal species were identified on the study area during biological surveys, including 11 bird species and one reptile species (*Appendix E, Attachment 2*). Common mammal species expected to use the study area species such as California ground squirrel (*Otospermophilus beecheyi*).

Sensitive Biological Resources

Rare Plant Species

Rare plant species are uncommon or limited in that they: (1) are only found in a particular region; (2) are a local representative of a species or association of species not otherwise found in the region; or (3) are in severe decline within their ranges or within the region. Rare plant species include those species listed by CNPS with a California Rare Plant Rank (CRPR) of 1, 2, or 3 or federally and state listed

endangered and threatened species. Species with CRPR of 4 may be considered rare if a population is locally uncommon, at the periphery of the species' range, sustained heavy losses, shows unusual morphology, or occurs on unusual substrates.[18]

Eight rare plant species were recorded within the Guasti database search conducted on California Natural Diversity Database (CNDDB)[19] and CNPS.[20] These species are included in *Appendix E, Attachment 2*, Rare Plant Species Potential to Occur. None of the eight species have potential to occur on the study area based on the lack of suitable habitat and high level of disturbance within the study area.

Sensitive Animal Species

Sensitive wildlife species are those listed or candidate listed as federally threatened or endangered by USFWS; and/or state listed or candidate listed as threated or endangered or considered Species of Special Concern (SSC) by CDFW.

The study area is located outside of any USFWS-designated critical habitat. The critical habitat closest to the study area is for coastal California gnatcatcher (*Polioptila californica californica*) and occurs over five miles to the southeast of the study area. Sixteen sensitive animal species were recorded within the Guasti quadrangle database search conducted on CNDDB.[21] These species are included in *Appendix E, Attachment 2,* Sensitive Animal Species Potential to Occur. An evaluation of each sensitive animal species' potential to occur on the study area is also provided in *Appendix E, Attachment 2* and discussed in further detail below.

Present

The Burrowing Owl (*Athene cunicularia*) (BUOW) is listed as a state SSC. This species is associated with grasslands, open scrublands, agricultural fields, and other areas where there are small mammal burrows and prey available. BUOWs were observed on and adjacent to the study area, in limited locations, during non-breeding season focused surveys performed in 2019/ 2020 within the study area.[22]

Potential to Occur

Of the 16 sensitive animal species recorded within the vicinity of the study area, two species were considered to have potential occur. One species was determined to have a low potential to occur on the study area based on the presence of low quality habitat, and lack of recent observations within the immediate vicinity of the study area, western mastiff bat (*Eumops perotis californicus*), which is a state SSC.

One additional species, Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) (DSFLF), has moderate potential to occur based on a habitat assessment performed in December 2021 combined with negative survey results for the species, conducted in 2019 and 2020 adjacent to the study area.[23] Focused surveys for DSFLF are recommended based on the results of a habitat assessment conducted in 2021.

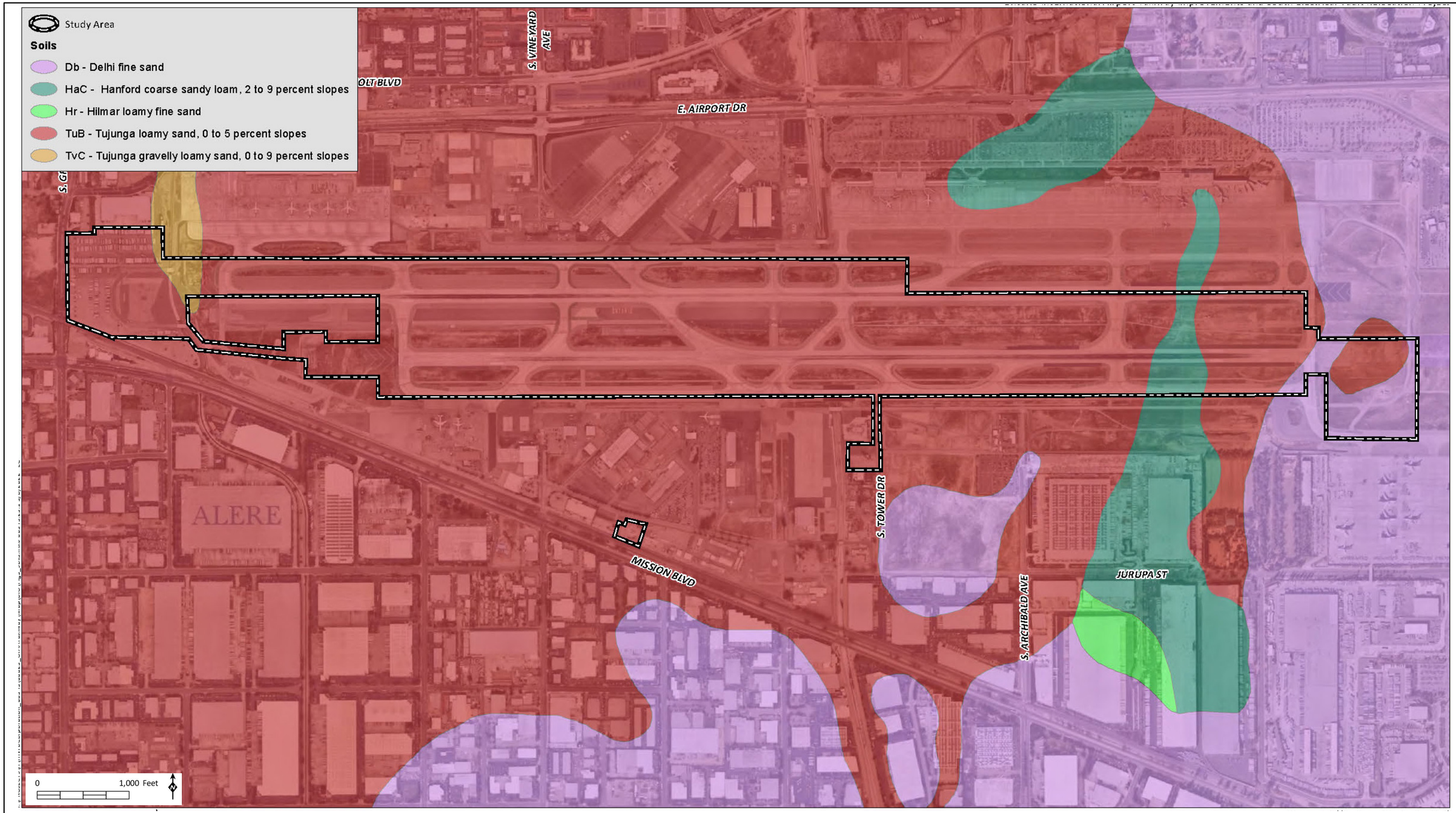


Figure 3-1

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

HNTB

Soils

Sources: Aerial - Nearmap (2022), HELIX Environmental Planning, 2022



Figure 3-2

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

HNTB

Vegetation and Sensitive Resources

Sources: Aerial - Nearmap (2022), HELIX Environmental Planning, 2022

No Potential to Occur

Twelve species (Southern California legless lizard [*Anniella stebbinsi*], California glossy snake [*Arizona elegans occidentalis*], coast horned lizard [*Phrynosoma blainvillii*], tricolored blackbird [*Agelaius tricolor*], California black rail [*Laterallus jamaicensis coturniculus*], coastal California gnatcatcher [*Polioptila californica*], northwestern San Diego pocket mouse [*Chaetodipus fallax fallax*], San Bernardino kangaroo rat [*Dipodomys merriami parvus*], Stephens' kangaroo rat [*Dipodomys stephensi*], western yellow bat [*Lasiurus xanthinus*], San Diego desert woodrat [*Neotoma lepida intermedia*], Los Angeles pocket mouse [*Perognathus longimembris brevinasus*]) have no potential to occur on the study area due to lack of suitable habitat.

Crotch's bumble bee (*Bombus crotchii*), a state endangered candidate is not expected to occur due to lack of suitable habitat and nectar sources, although transient individuals moving through the region may occasionally occur within the study area.

Sensitive Vegetation Communities/Habitats

Sensitive vegetation communities/habitats are considered either rare within the region or sensitive by CDFW.[24] Communities are given a Global and State (S) ranking on a scale of 1 to 5. Communities afforded a rank of 5 are most common while communities with a rank of 1 are considered highly periled. CDFW considers sensitive communities as those with a rank between S1 and S3.

No sensitive plant communities were observed or mapped within the study area.

Jurisdictional Waters and Wetlands

Three drainages, Cucamonga Creek Channel, Deer Creek Channel, and Western Cucamonga Creek Channel were observed on the study area (**Figure 3-3**; **Table 3-9**). A brief description of each drainage is provided below.

Table 3-9: Existing Jurisdictional Features

Feature	Linear Feet	Acres
Cucamonga Creek Channel	1,536	1.44
Deep Creek Channel	1,136	0.32
Western Cucamonga Creek Channel	1,114	0.78
TOTAL	**3,786**	**2.54**

Source: HELIX Environmental Planning, 2021.

Cucamonga Creek Chanel

Cucamonga Creek Channel is a concrete rectangular channel that runs north to south through the center of the study area and is considered a USACE public works facility. Based on the USGS Guasti quadrangle map, the headwaters of Cucamonga Creek originate approximately seven miles to the north of the study area at the base of Cucamonga Peak in the San Gabriel Mountains where it occurs as a natural soft-bottomed creek. Cucamonga Creek generally flows south through Cucamonga Canyon and becomes channelized once it exits the San Gabriel Mountains.

Cucamonga Creek Channel flows enter the study area near the northern boundary, south of Airport Drive. The channel continues for approximately 0.4 mile through the center of the site, flowing underneath the airport taxiway and resurfacing to the south of the taxiway. The channel exits the study area near the southern boundary of the site, just north of Avion Street. After exiting the study area, Cucamonga Creek Channel flows south for 11 miles and becomes soft-bottomed just prior to meeting the Santa Ana River at the Prado Flood Control Basin in Riverside County. The Santa Ana River ultimately drains into the Pacific Ocean approximately 35 miles to the southwest of the study area. Soils within Cucamonga Creek Channel on the study area are mapped as Tujunga loamy sand (0 to 5 percent slopes[25]; Figure 3-1). However, native soils are no longer present in Cucamonga Creek Channel due to the concrete channelization of the creek.

Deer Creek Channel

Deer Creek Channel is a concrete, rectangular channel that runs north to south along the eastern study area boundary. Based on the USGS Guasti quadrangle map, the headwaters of Deer Creek originate approximately seven miles to the northeast of the study area at the base of Cucamonga Peak in San Gabriel Mountains where it occurs as a natural soft-bottomed creek. Deer Creek generally flows south through Deer Canyon and becomes channelized once it exits the San Gabriel Mountains. The channel likely collects sheet flow from impervious surfaces in the surrounding area and storm drains that empty into the channel. The majority of flows within Deer Creek Channel empty into Cucamonga Creek Channel near Turner Basin, approximately one mile north of the study area. Some water is diverted into the channel within the historic flow path of Deer Creek, which flows south from Turner Basin as a mostly natural streambed until it reaches Airport Drive. Deer Creek flows underneath the airport and enters and exits the study area as an underground channel. Deer Creek continues south as an underground channel and surfaces as a concrete trapezoidal channel just north of State Route 60, approximately 1.6 miles to the south of the study area. The channel continues southwest as Lower Deer Creek Channel for approximately 2.1 miles, ultimately draining into Cucamonga Creek Channel. Soils within Deer Creek Channel on the study area are mapped as Tujunga loamy sand (0 to 5 percent slopes; [26] Figure 3-1). However, native soils are no longer present in Deer Creek Channel due to the concrete channelization of the creek.

Western Cucamonga Creek Channel

Western Cucamonga Channel is a concrete, rectangular channel that runs north to south along the western study area boundary. Western Cucamonga Creek Channel originates from percolating basins located where Cucamonga Creek exits Cucamonga Canyon, approximately six miles to the northwest of the study area. The channel likely collects sheet flow from impervious surfaces in the surrounding area as well as water collected in the 8th Street storm drains. Western Cucamonga Creek Channel flows mostly underground until it reaches the 8th Street Basins. The channel continues south from the basin as an above-ground rectangular concrete channel. The channel passes through the Princeton Basin and continues five miles south until it reaches the northwestern boundary of the study area. The channel flows along the western boundary and exits near the southwest corner. After exiting the site, the

channel continues south through the Ely Basins and connects with Cucamonga Creek Channel approximately seven miles south of the study area. Soils within Western Cucamonga Creek Channel within the study area are primarily mapped as Tujunga loamy sand (0 to 5 percent slopes; [27] Figure 3-1). However, native soils are no longer present in Western Cucamonga Creek Channel due to the concrete channelization of the creek.

Habitat and Wildlife Corridor Evaluation

Wildlife corridors connect otherwise isolated pieces of habitat and allow movement or dispersal of plants and animals. Corridors can be local or regional in scale; their functions may vary temporally and spatially based on conditions and species presence. Local wildlife corridors allow access to resources such as food, water, and shelter within the framework of their daily routine. Animals use these corridors, which are often hillsides or tributary drainages, to move between different habitats. Regional corridors provide these functions over a larger scale and link two or more large habitat areas, allowing the dispersal of organisms and the consequent mixing of genes between populations.

Regionally, the study area is situated within a highly developed landscape. The study area is surrounded by residential housing, industrial uses, such as warehouses, and roadways. There are no large swaths of native habitat adjacent to the Ontario International Airport. The site itself is dominated by developed and disturbed habitat which provides very limited resources to locally common wildlife. The airport is entirely fenced for human health and safety. Despite offering a somewhat open area within a developed landscape, access to the site may be limited to birds, small mammals, or reptiles able to access the study area despite the fencing. Trees occur within the study area, which may provide habitat for nesting birds or a stopover during migration.

As previously described, corridors can be local or regional in scale. The study area is not considered a regional corridor since it does not directly connect two or more large blocks of habitat that would otherwise be fragmented or isolated from one another. Development of the project would not impede wildlife access to other undeveloped land in the region since the study area is located within an area of existing development. The nearest wildlife movement corridor to the study area identified by the South Coast Missing Linkages Project is the San Gabriel – San Bernardino Connection, located approximately seven miles to the north of the study area.[28]

The study area is not considered a regional wildlife movement corridor as the study area does support habitat suitable for local wildlife movement. Bird species may fly over the surrounding development to nest and/or forage within study area. As discussed above, the study area supports very limited opportunities for local wildlife habitat and does not function as a wildlife corridor since it does not directly connect to two or more blocks of large habitat



Figure 3-3

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

HNTB

Jurisdictional Features

Sources: Aerial - Nearmap (2022), HELIX Environmental Planning, 2022

3.6 Greenhouse Gas Emissions

The 1991 Certified FEIR did not address potential impacts from GHG emissions, therefore this section provides a comprehensive analysis of GHG emissions impacts associated with the proposed project. The Certified 1991 FEIR, however, studied aircraft operations at ONT needed to serve 12 MAP, which is a greater number of aircraft operations than in the Baseline Conditions relating to potential GHG emissions impacts studied in this SEIR.

3.6.1 Greenhouse Gases and Climate Change

GHGs are those that trap heat in the Earth's atmosphere. The main GHGs include: CO_2, CH_4, N_2O, and fluorinated gases. As is customary for GHG emissions inventories, the results are reported in units of metric tons (MT) of carbon dioxide equivalents (CO_2e), by source, and on an annual basis. GHG emissions are converted to CO_2e using Global Warming Potential (GWP) values. GWP values are relative measures of how much heat a GHG traps in the atmosphere when compared to CO_2. The higher the GWP the more that gas warms the Earth compared to CO_2. Typical GWP values are of 1 for CO_2, 28-36 for CH_4, 265-298 for N_2O, and in the thousands for fluorinated gases.

Research has shown that the increase in atmospheric GHG emissions is significantly affecting the Earth's climate. These conclusions are based upon a scientific record that includes substantial contributions from the United States Global Change Research Program (USGCRP)—a program mandated by Congress in the Global Change Research Act to "assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change."[29] In 2009, based primarily on the scientific assessments of the USGCRP, as well as the National Research Council (NRC) and the Intergovernmental Panel on Climate Change (IPCC), the EPA issued a finding that it was reasonable to assume that changes in our climate caused by elevated concentrations of GHG in the atmosphere endanger the public health and public welfare of current and future generations.[30] In 2015, EPA acknowledged more recent scientific assessments that "highlight the urgency of addressing the rising concentration of CO_2 in the atmosphere."[31]

Scientifically based measurements indicate many existing and expected impacts of global climate change on the state of California. California's Fourth Climate Change Assessment, published in January 2019, presents an overview of the state of climate change and how to take action to become more resilient. The assessment indicates that temperatures in California are expected to increase between 2.5 to 8.8 degrees Fahrenheit before 2100, dependent on reductions in GHG emissions. The report details specify impacts climate change will have on the state of California, including:

- Impacts on People:
    - Climate change will impact public health in the form of heat-health events due to increased heat waves, and will result in greater impacts to disadvantaged communities and tribal and indigenous communities.
- Impacts on Infrastructure:

  - Energy: Increased coastal flooding and wildfires threaten energy resources (i.e., docks, refineries, electrical lines and distribution systems
  - Transportation: Increased wildfires threaten transportation network (roads, rails, airports, etc.) and include cascading effects from landslides and mudslides. Major flooding and storm surge threatens airports along the coast.
  - Water Infrastructure: Increased threats to the network that stores and distributes water, and reduced water supply due to droughts and reduced snowpack.
- Impacts on Natural and Working Lands and Waters
  - Forests: Increased risk of wildfires and potential for insect infestation
  - Agriculture: Lower crop yields due to increased heat waves, heat stress and increased water needs of crops and livestock, and changes in pest and disease threats
- Impacts on the Ocean and Coast
  - Ocean Warming: Climate change has resulted in historic marine heat wave, record harmful algal blooms, fisheries closures and significant loss of northern kelp forests
  - Rising Sea Levels: Climate model estimates that under mid to high sea-level rise scenarios, 31 to 67% of Southern California beaches may completely erode by 2100 without large-scale human intervention.[32]

3.6.2 Regulatory Setting

There are numerous federal, state and local regulations, policies, and guidelines in place to address climate change and the impact of GHG emissions. The following summarizes regulations and policies that are most pertinent to the proposed project.

Federal

In 2009, based primarily on the scientific assessments of the USGCRP, the NRC and the IPCC, the EPA issued a finding that it was reasonable to assume that changes in our climate caused by elevated concentrations of GHGs in the atmosphere endanger the health and welfare of current and future generations.[33] By the summer of 2016, the EPA acknowledged that scientific assessments by that time "highlight the urgency of addressing the rising concentration of CO_2 in the atmosphere" and formally announced that GHG emissions from certain classes of aircraft engines contribute to climate change.[34,35]

The USEPA and the FAA traditionally work within the standard-setting process of the International Civil Aviation Organization's (ICAO) Committee on Aviation Environmental Protection (CAEP) to establish international emission standards and related requirements, which individual nations later adopt into domestic law. In February 2016, ICAO/CAEP agreed on a preliminary international standard to regulate CO_2 emissions from aircraft, which was formally adopted at the ICAO Assembly in October 2016. The new CO_2 standard mandates that new aircraft continue to achieve the 15-20 percent fuel efficiency gains seen in recent generations of aircraft engines and will be applied in the following three stages:

- Beginning in 2020, all new aircraft designs must comply to the new standard;
- From 2023 to 2028, all aircraft models currently being produced will have to meet a less stringent "in-production" standard if they undergo modification requiring re-certification; and
- Beginning in 2028, all new aircraft will have to meet the full standards.[36]

Control of Air Pollution from Airplanes and Airplane Engines: GHG Emission Standards and Test Procedures

On January 11, 2021, EPA published a final rule "*Control of Air Pollution from Airplanes and Airplane Engines: GHG Emission Standards and Test Procedures*," adopting GHG emission standards for certain new commercial airplanes. The standards align with those adopted by ICAO in 2017, providing global consistency to ensure aircraft manufacturers meet the same emissions standards.[37]

Since publication of the final rule, critics, as well as USEPA, have projected that the standards will not result in any additional emission reductions. This is due to the fact aircraft manufacturers had already developed technologies to bring aircraft into compliance with ICAOs standards. For example, the average new aircraft delivered in 2016 were already in compliance with the 2028 standard requirements. Following the final rule, state attorney generals and environmental groups submitted comments and challenged the rule arguing that USEPA filed to consider feasible GHG reductions. The Biden administration issued an Executive Order on January 20, 2021 for USEPA to review the final rule.

Heavy Duty National Program

In August 2011, USEPA and the National Highway Traffic Safety Administration (NHTSA) adopted the Heavy-Duty National Program which aims to reduce fuel use and GHG emissions from medium and heavy-duty vehicles. The program initially included emission standards for vehicles model years 2014 through 2018. In 2016, the agencies adopted Final Phase 2 GHG and fuel efficiency standards for model years 2018 through 2027. These final standards are expected to lower CO_2 emissions by approximately 1.1 billion metric tons and reduce oil consumption by up to two billion barrels over the lifetime of the vehicles sold under the program[38]

Federal Aviation Administration

The *U.S. Aviation Greenhouse Gas Emissions Reduction Plan* was published in 2015 and provided an overview of initiatives to reduce GHG emissions from U.S. aviation. On November 8, 2021, FAA published the *U.S Aviation Climate Action Plan* which builds upon the 2015 plan and commitments made by the aviation industry to identify actions toward achieving net-zero emissions by 2050. The Plan includes specific actions and policy measures including but not limited to: development of new, more efficient aircraft and engine technologies; production and use of sustainable aviation fuels; international initiatives such as carbon offsetting; and support for further research into climate science.[39]

The FAA encourages airports to reduce GHG emissions through federal programs, including providing Airport Improvement Program (AIP) grants for airports to develop sustainability plans, as well as FAA programs that provide funding for use of low or zero emission technologies, such as the Voluntary Airport Low Emissions (VALE) program[40] and the Airport Zero Emissions Vehicle and Infrastructure Pilot Program.[41]

State

Executive Order S-3-05

On June 1, 2005, Executive Order S-3-05 established GHG emission reduction goals for the state, including reducing GHG levels to 2000 levels by 2020, to 1990 levels by 2020 and to a level 80% below 1990 levels by 2050.

Assembly Bill 32 (California Global Warming Solutions Act of 2006)

State Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, codified EO S-3-05's 2020 reduction goal. AB 32 also gave the CARB the authority to develop and oversee the statewide GHG reduction program. AB 32 further required CARB to prepare a Scoping Plan to outline strategies for reducing GHGs by 2020, update the Scoping Plan every five years, and to adopt statewide GHG reporting requirements. CARB adopted a Scoping Plan in 2009 and approved updates to the Scoping Plan in 2014 and 2017. CARB currently is in the process of preparing the 2022 Scoping Plan.

Senate Bill 97

SB 97, passed in 2007, established that GHG emissions are an environmental issue requiring analysis and identification of feasible mitigation under CEQA. In 2010, the State CEQA Guidelines were amended to incorporate requirements pertaining to the analysis of GHG emission impacts. Some of those provisions also were later amended in 2018.

Executive Order B-30-15

On April 29, 2015, EO B-30-15 set an interim GHG emissions reduction goal of 40% less than 1990 levels by 2030.

Senate Bill 32

SB 32, effective January 1, 2017, expanded upon AB 32 and codified the interim GHG reduction goal set by EO B-30-15. As such, SB 32 requires a further reduction in GHG emissions to 40% below 1990 levels by 2030.

Executive Order B-55-18

Signed in 2018, this EO established a goal of achieving statewide carbon neutrality by 2045 and to maintain net negative emissions thereafter.

Advanced Clean Truck Regulation

In June 2020, CARB adopted the Advanced Clean Trucks regulation which requires truck manufacturers to sell zero-emission vehicles in California and a one-time requirement for company and fleet reporting. The regulation aims to accelerate the transition of zero-emission medium and heavy-duty vehicles from Class 2b to Class 8, requiring manufacturers to sell zero-emission trucks at an increasing percentage of annual sales from 2024 to 2035. By 2035, zero-emission truck sales would need

to be 55% of Class 2b-3 sales, 75% of Class 4-8 sales and 40% of truck tractor sales.[42]

Regional

The SCAQMD is currently in the process of developing an Air Quality Analysis Guidance Handbook to replace the 1993 CEQA Air Quality Handbook, as many sections of the 1993 handbook are now obsolete.[43] In 2008, SCAQMD adopted interim GHG significance thresholds developed by a SCAQMD Working Group applicable to stationary source projects for which SCAQMD is the CEQA lead agency.

Local

In 2014, the City of Ontario published a Community Climate Action Plan (CAP) to establish community strategies to reduce GHG emissions consistent with CARB statewide GHG reduction efforts. The CAP included a GHG inventory for 2008 and a forecasted inventory for 2020, analyzed GHG reduction measures for effectiveness and feasibility, and presented a list of measures for inclusion in the CAP. The CAP includes a GHG emission reduction target of 30% below business-as-usual 2020 levels.[44]

In March 2021, the San Bernardino Council of Governments, led by the San Bernardino County Transportation Authority (SBCTA), developed a Regional Greenhouse Gas Reduction Plan. The final Plan includes an inventory of GHG emissions and evaluation of reduction measures to be adopted by the 25 Partnership Cities within the County.[45] The reduction measures set forth in the Plan are being and should be considered for adoption by agencies in the region that are developing jurisdiction-specific climate action plans.

As discussed above in the Air Quality portion of this Chapter, in 2019, ONT developed a voluntary AQIP as part of a collaborative effort between SCAQMD and other airports in the South Coast Air Basin to minimize and reduce emissions from mobile source activities at the Airport. As it relates to GHG emissions, the AQIP includes GSE and Fuel Truck Operation Policies (RM1 and RM2) which would likely result in a reduction of GHG pollutants.

3.6.3 Baseline Conditions

GHG are those gases that trap heat in the earth's atmosphere and warm the planet. Both naturally occurring and anthropogenic (man-made) GHG include CO_2, methane CH_4, N_2O, and fluorinated gases. Fluorinated gases are man-made powerful GHG emitted from industrial activities and include hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride. While fluorinated gases are typically emitted in smaller quantities, they have a very high global warming potential. GWP factors are assigned to non-CO_2 GHGs and they reflect the degree to which these pollutants affect climate change, as compared to CO_2. The product of each GHG emissions and its GWP is known as CO_{2e}.

The value of GWPs is periodically modified by the IPCC as climate change science is refined. Although the IPCC has completed the Fifth Assessment Report, most

mandatory and voluntary reporting registries require the use of the GWPs published in the Fourth Assessment Report (Forster et al., 2007); therefore, the GWPs from the Fourth Assessment Report (i.e. 25 for CH_4) were used in this analysis to maintain consistency with the international convention.

Aircraft Taxiing GHG Emissions

Due to proposed runway closures during the construction period, the Proposed Project would temporarily impact aircraft taxiing times. More specifically, and of relevance to the GHG emission analysis, the Proposed Project would reduce the duration of taxiing times in construction years 2023 and 2024 as compared to the Baseline Conditions. In 2025, aircraft taxiing times would be slightly greater than Baseline Conditions due to additional taxiing delay associated with background growth in operations. The Proposed Project would not result in any other changes to the landing take off (LTO) cycle accounted for GHG emission analysis. For this reason, Baseline Conditions GHG emissions are determined for aircraft taxiing operations as this is the only operational factor that would be affected by the Proposed Project. The Baseline Condition aircraft taxiing GHG emissions were determined using the hybrid base year (2019/2020) approach explained in *Section 3.2.2, Baseline Conditions*, which normalizes the temporary impact of the COVID-19 pandemic in order to correctly represent typical operations levels at ONT. See *Appendix D, Air Quality and GHG* for GHG modeling details.

Table 3-10 summarizes the Baseline Condition aircraft taxiing GHG emissions for 2019/2020, based on the hybrid base year modeled in AEDT.

Table 3-10: Baseline Conditions Aircraft Taxiing GHG Emissions

Year	Total CO_2e (MT/year)
Baseline Conditions	49,520

Note: MT = metric ton; CO_2e = carbon dioxide equivalent

The product of each GHG emission and its Global Warming Potential (GWP) is known as "carbon dioxide equivalent" (CO_2e).

Source: AEDT and HNTB analysis, 2022.

Federal

In 2020, the U.S. emitted about 5,973 million metric tons of CO_2 equivalent (CO_2e). Total U.S. emissions have decreased by 7.4 percent from 1990 to 2020 and decreased from 2019 to 2020 by 9.1 percent (599.5 million metric tons of CO_2e). The decrease in total GHG emissions between 2019 and 2020 was driven in large part by the impacts of the COVID-19 pandemic on travel and economic activity. However, the decrease in CO_2e emissions from 2019 to 2020 also reflects impacts of long-term trends, including energy market trends and technological changes including energy efficiency and the carbon intensity of energy fuel choices, such as substitution from coal to natural gas and other non-fossil energy sources in the electric power sector.[46]

Of the six major economic sectors nationwide—residential, commercial, industry, agriculture, transportation, and electric power—transportation accounts for the highest fraction of GHG emissions nationwide in 2020 (approximately 27 percent), closely followed by electric power (approximately 25 percent) and by industry (approximately 24 percent).[47]

The most recent EPA data indicate that in 2020, aircraft accounted for 10 percent of U.S. transportation GHG emissions and 3 percent of total U.S. GHG emissions.[48] Due to improvements in fuel efficiency over the years, the aviation sector has been able to move more passengers while using the same amount of energy. In 2018, the U.S. aviation sector carried approximately 32% more passengers than in the year 2000, while using almost the same amount of fuel (and producing the same amount of emissions).[49]

State

As part of their mandatory GHG reporting program, CARB tracks statewide GHG emissions and provides annual inventory reports. On July 28, 2021, CARB published an inventory for GHG emissions from 2000 through 2019.[50] In 2019, California emitted 418.2 million metric tons of CO_2e, achieving its 2020 GHG emission limit of 431 MMT CO_2e. The annual report indicated that statewide GHG emissions dropped below this 2020 GHG limit beginning in 2016 and have generally declined since 2004. The transportation sector remains the largest source of GHG emissions in California, accounting for almost 40% of emissions in 2019. **Table 3-11** summarizes the 2019 GHG emissions by economic sector, and **Table 3-12** summarizes GHG emissions in the state over the last 10 years by economic sector.

Table 3-11: 2019 GHG Emissions in California by Economic Sector

Economic Sector	2019 Emissions (MMT CO_2e)	Percentage
Transportation	170.3	40.7%
Industrial	99.9	23.9%
Electricity (In State)	37.3	8.9%
Electricity (Imports)	21.7	5.2%
Agriculture & Forestry	31.8	7.6%
Commercial	24.2	5.8%
Residential	33.0	7.9%
Total	**418.2**	**100%**

Source: CARB (2021), California Greenhouse Gas Emission Inventory - 2021 Edition.
Data available at: https://ww3.arb.ca.gov/cc/inventory/data/data.htm

Table 3-12: 2010-2019 GHG Emissions in California by Economic Sector

Economic Sector	GHG Emissions (MMT CO_2e)									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Transportation	165.1	161.8	161.4	161.3	162.6	166.2	169.8	171.2	169.6	166.1
Electric Power	90.3	89.2	98.2	91.4	88.9	84.8	68.6	62.1	63.1	58.8
Industrial	91.1	89.4	88.9	91.7	92.5	90.3	89.0	88.8	89.2	88.2
Commercial & Residential	45.9	46.0	43.5	44.2	38.2	38.8	40.6	41.3	41.4	43.8
Agriculture	33.7	34.4	35.5	33.8	34.7	33.5	33.3	32.5	32.7	31.8
High GWP	13.5	14.5	15.5	16.8	17.7	18.6	19.2	20.0	20.4	20.6
Recycling & Waste	8.3	8.4	8.3	8.4	8.4	8.5	8.6	8.7	8.7	8.9
Total	**447.9**	**443.7**	**451.3**	**447.6**	**443.0**	**440.7**	**429.1**	**424.6**	**425.1**	**418.2**

Source: CARB (2021). California Greenhouse Gas Emission Inventory - 2021 Edition. Data available at: https://ww3.arb.ca.gov/cc/inventory/data/data.htm

3.7 Cultural Resources

Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance.[51]

3.7.1 Regulatory Setting

CEQA, PRC 21084.1, and CCR Title 14 Section 15064.5, address determining the significance of impacts to archaeological and historic resources, and discuss significant cultural resources as "historical resources," which are defined as:

- Resource(s) listed or determined eligible by the State Historical Resources Commission for listing in the California Register of Historical Resources (CRHR; 14 CCR Section 15064.5[a][1])
- Resource(s) either listed in the National Register of Historic Places (NRHP) or in a "local register of historical resources" or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the PRC, unless "the preponderance of evidence demonstrates that it is not historically or culturally significant" (14 CCR Section 15064.5[a][2])
- Resource(s) determined by the Lead Agency to meet the criteria for listing on the CRHR (14 CCR Section 15064.5[a][3])

For listing in the CRHR, a historical resource must be significant at the local, state, or national level under one or more of the following four criteria:

(1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;

(2) It is associated with the lives of persons important to local, California, or national history;

(3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values;

(4) It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Under 14 CCR Section 15064.5(a)(4), a resource may also be considered a "historical resource" for the purposes of CEQA at the discretion of the lead agency. Significant resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Resource integrity, which is the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance, is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. In an archaeological deposit, integrity is assessed with reference to the preservation of material constituents and their culturally and historically meaningful spatial relationships. A resource must also be judged with reference to the particular CRHR criteria under which it is proposed for eligibility.

3.7.2 Existing Condition

A cultural resources study was produced to identify any cultural resources extant within the study area for the Project. The study included a review of site records and previous studies conducted within half-mile of the project site, accessed through the South Central Coastal Information Center (SCCIC) in August 2021, and a pedestrian field survey conducted with a Native American monitor of Gabrieleño descent to confirm the presence or absence of tribal, archaeological, and built environment resources (cultural resources) within the project area was conducted on October 5, 2021 .The project area for the project is shown in **Figure 3-4** and includes 434.6 acres within the airport property.

The SCCIC records search results identified 14 previous cultural resource studies within the search limits, two of which overlap with the project area. However, these two studies did not identify any cultural resources within the project area. The records search results identified 20 previously recorded cultural resources within a 0.5-mile radius of the project area; none of the resources are located directly within the project area. Of the 20 resources identified in the vicinity, 15 are historic-period built-environment resources, three are historic-period archaeological sites, and two are historic districts. The record search did not identify any prehistoric sites.

An intensive pedestrian survey of the project site was conducted alongside a representative from the Gabrieleño Tongva Indians of California on October 5, 2021. No cultural resources were identified during the survey.

Appendix F, Cultural Resources provides a detailed account of the prehistoric and historic background at ONT, as well as a summary of the records search, previous surveys, and fieldwork conducted for this SEIR. *Section 3.10 Tribal Cultural Resources* summarizes the Sacred Lands File record search and tribal consultation completed for this SEIR.

3.8 Noise

Noise, often defined as unwanted sound, is one of the most common environmental issues associated with aircraft operations. Aircraft are not the only sources of noise in an urban or suburban surrounding, where interstate and local roadway traffic, industrial and neighborhood sources may also intrude on the everyday quality of life. Despite other sources of noise, aircraft are readily identifiable to those affected by their noise and are typically singled out for criticism. Consequently, aircraft noise problems often dominate analyses of environmental impacts. Refer to ***Appendix G, Introduction to Noise*** for additional information on how noise is measured.

The Certified 1991 FEIR studied projected aircraft operations at ONT at a 12 MAP level, which is a greater number of aircraft operations than in the Baseline Conditions relating to potential noise impacts studied in this SEIR.

3.8.1 Noise Metrics

A "metric" is defined as something "of, involving, or used in measurement." As used in environmental noise analyses, a metric refers to the unit or quantity that quantitatively measures the effect of noise on the environment. Noise studies have typically involved a confusing proliferation of noise metrics used by individual researchers who have attempted to understand and represent the effects of noise. As a result, literature describing environmental noise or environmental noise abatement has included many different metrics.

The scientific unit of sound measurement is the decibel (dB). Our ears are sensitive to a wide range of sound pressures. The loudest sound that we hear without pain has about one trillion times more energy than the quietest sounds we hear. On a linear scale, this range is unwieldy. Therefore, we compress the total range of sound pressures to a more meaningful range by introducing the logarithmic unit of decibel.

Because decibels are logarithmic quantities, they require logarithmic math and not simple (linear) addition and subtraction. For example, if two sound sources each produce 100 dB and are operated together, they produce only 103 dB—not 200 dB as might be expected. Four equal sources operating simultaneously result in a total SPL of 106 dB. In fact, for every doubling of the number of equal sources, the SPL (of all of the sources combined) increases another three decibels. A ten-fold increase

in the number of sources makes the SPL increase by 10 dB. A hundredfold increase makes the level increase by 20 dB, and it takes a thousand equal sources to increase the level by 30 dB.

Noise impacts for this SEIR were evaluated in terms of the Community Noise Equivalent Level (CNEL) in decibels. The CNEL is the noise metric adopted by the State of California to assess cumulative noise (i.e., multiple aircraft events) near airports in California. The CNEL is a cumulative metric for an average annual day of aircraft operations with a 5- dB penalty applied to evening aircraft events (7:00 PM – 9:59 PM) and 10- dB penalty applied to nighttime aircraft events (10:00 pm – 6:59 am). The penalty applied for evening and nighttime hours is included to account for the assumption that aircraft operations occurring during those hours are more intrusive to the average person, as people are more likely to be home and/or sleeping.

3.8.2 Regulatory Setting

Federal

14 CFR Part 36 establishes noise limits for the certification of new passenger, cargo and general aviation aircraft by FAA. The FAR Part 36 standards include five "stages" that pertain to engine technology and noise level, with Stage 1 being the loudest and Stage 5 being the quietest. The main goal of FAR Part 36 is to reduce aircraft noise, with more restrictive noise limits adopted for each "stage" of certification. Through Part 36 certification, the FAA is able to phase out older, noisier aircraft and require new aircraft to meet more stringent noise standards.

14 CFR Part 150, *Airport Noise Compatibility Planning*, establishes criteria for measuring and predicting aircraft noise and a standardized airport noise compatibility planning program. The Part 150 program is voluntary and allows Airport sponsors to identify current and future noise exposure at the Airport, and to prepare a Noise Compatibility Program to identify noise abatement and mitigation projects eligible for federal funding. The purpose of the Part 150 program is to reduce noncompatible land uses and prevent the addition of noncompatible land uses around an airport. Mitigation programs under Part 150 include but are not limited to sound insultation, property acquisition, modification of flight paths and runway use patterns. ONT's most recent update to its Part 150 Study Noise Exposure Map was completed in 2015.

State

The California Division of Aeronautics sets noise standards to control noise in communities near Airports and identifies the 65 CNEL contours as the Noise Impact Boundary. The state regulations identify incompatible land uses within the noise impact boundary and require Airports to ensure land use compatibility unless certain conditions are met, including:[52]

(1) an avigation easement for aircraft noise has been acquired by the airport proprietor, or



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 250 500 1,000 Feet

N

HNTB

Figure 3-4

Cultural Resources Project Area

Sources: OIAA, Nearmap, HNTB Analysis

(2) the dwelling unit was in existence at the same location prior to January 1, 1989, and has adequate acoustic insulation to ensure an interior CNEL due to aircraft noise of 45 dB or less in all habitable rooms. However, acoustic treatment alone does not convert residences having an exterior CNEL of 75 dB or greater due to aircraft noise to a compatible land use if the residence has an exterior normally cognizable private habitable area such as a backyard, patio, or balcony. Or,

(3) the residence is a high-rise apartment or condominium having an interior CNEL of 45 dB or less in all habitable rooms due to aircraft noise, and an air circulation or air conditioning system as appropriate, or

(4) the airport proprietor has made a genuine effort as determined by the department in accordance with adopted land use compatibility plans and appropriate laws and regulations to acoustically treat residences exposed to an exterior CNEL less than 80 dB (75 dB if the residence has an exterior normally occupiable, private habitable area such as a backyard, patio, or balcony) or acquire avigation easements, or both, for the residences involved, but the property owners have refused to take part in the program, or

(5) the residence is owned by the airport proprietor.

Local

Noise management at ONT includes noise monitoring, voluntary operational and aircraft restrictions, and noise mitigation programs.

Monitoring: ONT operates an ANOMS consisting of nine noise monitors located in the surrounding communities. ANOMS measures airport-generated noise, tracks and identifies aircraft around ONT and provides data for the generation of noise impact area maps. The ONT Noise Management Office publishes California State Airport Noise Standards Quarterly Report's, in accordance with the California Noise Standards (California Code of Regulations, Title 21, Section 5000 et seq.), which summarize the ANOMS data and cumulative noncompatible land uses within noise impact areas.

Voluntary Operational Restrictions: Aircraft operators must comply with FAA regulations for noise management, including Part 36 noise standards, and City of Ontario noise management policies. Existing operational policies at ONT include[53]:

- Preferential runway and taxiway use procedures
- Operations of "contra-flow" from 10:00 PM and 7:00 AM where, depending on wind conditions and if weather permits, aircraft take off to the east while still landing to the west. Contra flow is used as a noise mitigation strategy to minimize noise over the residential areas west of the ONT at night.
- "Touch-and-go" operations by turbojet and turbo-fan aircraft are prohibited without special permissions

- Nighttime (10:00 PM and 7:00 AM) engine maintenance run-up operations are prohibited. Daytime run-up operations occur at specified locations.
- "Intersection departures" are prohibited (i.e. departures not starting at the end of the runway), except from 8L at Taxiway D and from 26R at Taxiway V. Departures must start at the end of runways to allow aircraft to pass higher over residential communities.

Voluntary Aircraft Restrictions: The City of Ontario encourages airlines to operate quieter aircraft, and to re-engine or retire older aircraft to meet more restrictive noise standards set by FAA.

Noise Compatibility Program: ONT has established a Sound Insulation and Property Acquisition program, called the Quiet Home Program, as part of the ONT Part 150 Noise Compatibility Program. The Quiet Home Program was established by the City of Ontario, City of Los Angeles and the FAA in the early 1990s to improve the quality of life in noise impacted neighborhoods. The Program provides sound insulation, avigation easements, and voluntary acquisition of eligible properties. As of 2016, the Quiet Home Program has sound insulated 1,599 dwelling units and acquired 256 properties (56 acres). As of 2016, there are 533 units which remain eligible for sound insultation and 88 parcels which remain eligible for voluntary acquisition.[54]

3.8.3 Baseline Conditions

This section describes the noise sources and levels at ONT. In addition to aircraft noise, surface level noise including interstate and local roadway traffic, and industrial and neighborhood sources also influence noise levels.

Aircraft Noise

ONT operates ANOMS which measures and collects noise and aircraft operational data in the surrounding communities. The quarterly noise report illustrates the Noise Impact Area (65 dB CNEL contour) and summarizes the total number of dwelling units and population, and mitigated[55] dwelling units and population within the Noise Impact Area.

Surface Level Noise

ONT is located in an urbanized area. Vehicular traffic, industrial and neighborhood activities contribute greatly to the background noise levels around ONT. In addition to local roadways immediately adjacent to the Airport (Airport Drive and Mission Blvd), ONT is surrounded by four freeways: Interstate 10 to the north, Interstate 15 to the east, State Route 60 to the south and State Route 83 to the west.

Baseline Conditions Noise Contour

The Baseline Conditions noise contour for this SEIR was developed using the hybrid base year (2019/2020) approach explained in *Section 3.2.2, Baseline Conditions*, which normalizes the temporary impact of the COVID-19 pandemic in order to

correctly represent typical operations levels at ONT (e.g., a reduction in passenger carrier and air taxi operations, and the increase in all-cargo operations). See ***Appendix H, Noise*** for noise model details.

The Baseline Conditions noise contours were modeled using AEDT 3d, the most currently released version of the FAA's Office of Environment and Energy tool. In addition to the 2019/2020 hybrid fleet mix, inputs to the noise model include facilities and runways at the Airport, stage length, day/evening/night split, engine maintenance run-up operations, runway use, track geometry and use, weather, and terrain. *Appendix H* provides details on the inputs of the noise model.

Figure 3-5 depicts the 65dB, 70dB, and 75dB CNEL noise contours for the Baseline Conditions. In general, the noise contours follow an east-west direction consistent with the runway orientation. The noise contour to the southeast of the Airport is primarily driven by departures from Runways 8L and 8R, especially at nighttime during the use of Contra Flow.[56]

Table 3-13 summarizes the estimated land area (acres) within CNEL contours for 2021 Baseline Conditions along with the estimated number of residential dwelling units, schools, and churches located within the contours. Table 3-13 also provides an estimate of the residential population exposed to varying degrees of noise exposure based upon average household size by Census block. Residential dwelling units and population were initially determined using U.S. Census Bureau block data, with data verified using Google Earth.[57]

Table 3-13: Baseline Conditions Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	TOTAL
Residential	4.3	0.0	0.0	**4.3**
Education	0.0	0.0	0.0	**0.0**
Mixed Use	33.8	0.2	0.0	**34.0**
Mobile Home	0.0	0.0	0.0	**0.0**
Open Space	0.0	0.0	0.0	**0.0**
Agriculture	3.0	0.0	0.0	**3.0**
Commercial	15.2	0.0	0.0	**15.2**
Facilities	0.0	0.0	0.0	**0.0**
General Office	3.2	0.0	0.0	**3.2**
Industrial	518.3	37.8	0.0	**556.2**
Transportation, Communications, and Utilities	587.7	394.3	550.6	**1,532.6**
Vacant	224.2	112.7	0.0	**336.9**
TOTAL	**1,389.7**	**545.0**	**550.6**	**2,485.3**

Table 3-13: Baseline Conditions Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	TOTAL
Noise-Sensitive Land Uses (#)				
Hospitals	0	0	0	**0**
Schools	0	0	0	**0**
Religious (e.g., Church)	0	0	0	**0**
Residential (dwelling units)	13	0	0	**13**
Population	59	0	0	**59**

Note:
Totals may not sum due to rounding.
(1) All residential dwelling units and population within the 65-69 CNEL are eligible for voluntary acquisition under ONT's Quiet Home Program, with the exception of one dwelling unit (two people) accounted for at the Hofer Ranch property directly south of ONT.
(2) Of the 13 dwelling units with the 65 dB contour, seven are single family and six are multi-family (three duplexes). Google earth was utilized to confirm housing counts and types.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2021.

3.9 Transportation/Traffic

3.9.1 Regulatory Setting

SCAG is the region's surface transportation planning agency responsible for developing long-range transportation plans and a Sustainable Communities Strategy for the region, including San Bernardino County. The Agency developed "Connect SoCal (2020–2045 Regional Transportation Plan/Sustainable Communities Strategy [RTP/SCS])" (adopted 9/3/2020) which is "a long-range visioning plan that builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern."[58] As an MPO, SCAG does not have any regulatory, developmental, operational, or planning authority over airports. Therefore, SCAG is focused on air and passenger cargo activity from the perspective of how the traffic coming and going from southern California airports affects the region's roads, highways, and transit system.[59]

3.9.2 Existing Conditions

The Airport is generally bounded by Airport Drive the north, and Mission Boulevard on the south. Airport Drive is a 6-lane minor arterial and Mission Boulevard is a 6-lane principal arterial roadway. S. Grove Avenue, which is a 6-lane principal arterial, borders the airfield to the west and S. Haven Avenue, an 8-lane principal arterial borders the airfield to the east. Primary access to the Airport is from Interstate 10 (I-10) via Archibald Avenue from the north and California State Route 60 (SR-60) via Haven Avenue from the South. Land uses immediately surrounding the Airport are primarily airport-related, industrial and commercial uses. The regional and project location is shown on Figure 2-1.

CEQA Guidelines Section 15064.3 now specifies that VMT shall be the most appropriate measure of transportation impacts. VMT refers to the amount and distance of automobile travel attributable to a project. A project's effect on automobile delay and roadway congestion, previously measured by "level of service" (LOS), will no longer constitute an environmental impact.
The Governor's Office of Planning and Research (OPR) developed a Technical Advisory on Evaluating Transportation Impacts in CEQA, which states that rehabilitation, repair, replacement, and safety improvement projects for existing transportation assets that do not add additional capacity are projects that would not likely lead to a substantial or measurable increase in VMT.[60] Caltrans' Transportation Analysis under CEQA[61] has the same standard, and ONT has a Caltrans-issued permit. Moreover, the City of Ontario Resolution No. 2020-071 adopted VMT Thresholds stating that transportation projects that do not add capacity can be screened from further VMT review during the CEQA process and are presumed to have a less than significant impact on transportation.[62]

The Proposed Project is a rehabilitation, repair, replacement, and safety improvement project that does not add or increase capacity at ONT and would therefore not increase VMT.

3.10 Tribal Cultural Resources

3.10.1 Regulatory Setting

California State Assembly Bill 52 (AB 52) revised PRC Section 21074 to include Tribal Cultural Resources (TCRs) as an area of CEQA environmental impact analysis. As a general concept, a TCR is similar to the federally defined termed Traditional Cultural Properties (TCP); however, it incorporates consideration of local and state significance and required mitigation under CEQA. According to Patricia L. Parker and Thomas F. King (1998), "Traditional" in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is derived from the role the property plays in a community's historically rooted beliefs, customs, and practices.

A TCR may be considered significant if it is:

(1) included in a local or state register of historical resources;

(2) determined by the lead agency to be significant pursuant to criteria set forth in PRC Section 5024.1;

(3) a geographically defined cultural landscape that meets one or more of these criteria;

(4) a historical resource described in PRC Section 21084.1 or a unique archaeological resource described in PRC Section 21083.2; or

(5) a non-unique archaeological resource if it conforms with the above criteria.

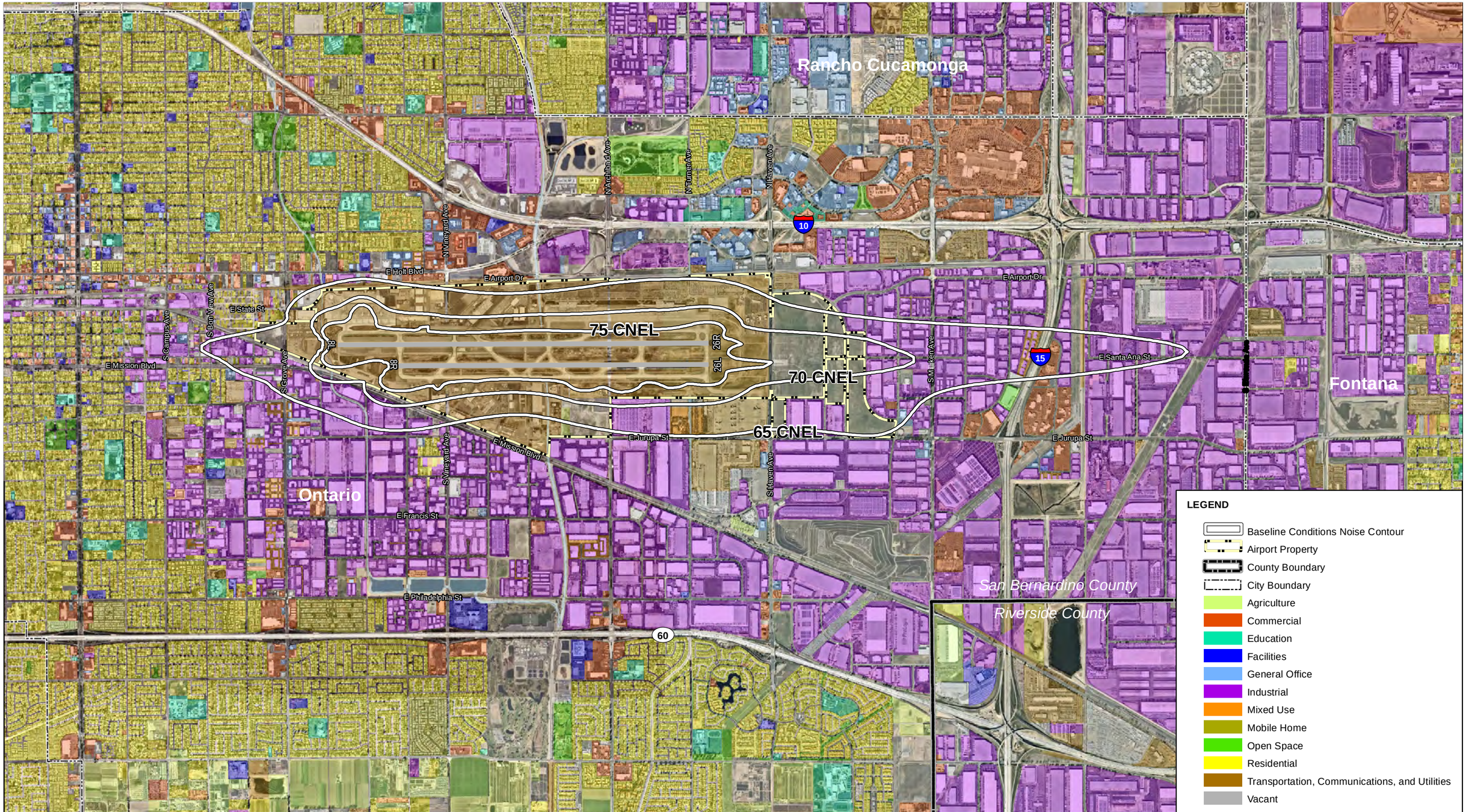


Figure 3-5

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

N

HNTB

Baseline Conditions Noise Contour

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis

3.10.2 Existing Conditions

A Sacred Lands File search was requested by OIAA through the Native American Heritage Commission (NAHC). The Sacred Lands File search results were received on April 13, 2021 (provided in *Appendix F, Attachment C, Tribal [CONFIDENTIAL]*). The results indicated that no known sacred lands of Native American Cultural Resources are within the project area. The NAHC noted that negative results may not indicate the absence of Native American cultural resources in the area and provided a contact list of 12 Native American tribal organizations that may have knowledge of cultural resources in or near the study area.

In accordance with AB 52, on August 27, 2021, OIAA sent letters to the Native American representatives and interested parties as identified by the NAHC. Three responses were received. San Manuel Band of Mission Indians (SMBMI) responded via email on September 1, 2021, and Agua Caliente Band of Cahuilla Indians (ACBCI) responded via email on September 2, 2021 to indicate the project is not located within the boundaries of the Tribes' Traditional Use Area. The Gabrieleño Band of Mission Indians – Kizh Nation (Kizh Nation) responded via email on September 17, 2021 to request a consultation with the lead agency.

OIAA initiated consultation on November 4, 2021 with Kizh Nation. Although no tribal resources have been identified within the project area, the tribe has knowledge of some isolated resources, including prehistoric isolates and fire hearths associated with habitation, within the airport property. A second meeting was held February 24, 2022 to discuss and finalize agreed upon mitigation measures. As such, the tribe requests Native American monitoring during all ground-disturbing activities related to the project. Mitigation measures intended to reduce the impact to potential tribal cultural resources were agreed upon by Kizh Nation and OIAA on March 30, 2022 and consultation was concluded.

Appendix F, Attachment C, Tribal [CONFIDENTIAL]) provides a detailed account of the prehistoric and historic background at ONT, as well as a summary of the records search, previous surveys, fieldwork and tribal consultation conducted for this SEIR. *Section 3.7 Cultural Resources* summarizes the records search, previous surveys and fieldwork conducted for this SEIR.

ENDNOTES

[1]City of Ontario, 2050 The Ontario Plan, https://www.ontarioplan.org/wp-content/uploads/sites/4/2021/08/ScopingMeeting_TOP_2050SEIR2.pdf, accessed 10/20/21.

[2]SCAG, Local Profiles, https://scag.ca.gov/data-tools-local-profiles, accessed 10/20/21.

[3] Federal Aviation Administration. 2021. Terminal Area Forecast Executive Summary Fiscal Years 2020-2045. Retrieved from https://www.faa.gov/data_research/aviation/taf/. Accessed February 16, 2022.

[4] Ibid. Data query for ONT accessed February 16, 2022.

[5] ACI Disclaimer: "The information contained in the attachments has been compiled based on information submitted to Airports Council International (ACI). No user of the data should act on the basis of any such information without referring to applicable laws and regulations and/or without taking appropriate professional advice. Although every effort has been made to ensure accuracy, ACI shall not be held responsible for loss or damage caused by errors, omission, misprints or misinterpretation of the contents hereof."

[6] Lead (Pb) is not analyzed because the Proposed Project would have minimal to zero impact on lead emissions. Construction activity would not result in lead emissions. Further, the only source of lead emissions at ONT is from aviation gasoline (AvGas) used in piston-powered general aviation aircraft. Piston-powered engine aircraft comprise a small fraction of the total aircraft operating at ONT and their activity levels would not change as a result of the Project.

[7] USEPA, National Ambient Air Quality Standards (NAAQS), https://www.epa.gov/criteria-air-pollutants/naaqs-table. (January 2017).

[8] Federal Aviation Administration, Voluntary Airport Low Emissions Program (VALE), https://www.faa.gov/airports/environmental/vale/

[9] Federal Aviation Administration, Airport Zero Emissions Vehicle and Infrastructure Pilot Program, https://www.faa.gov/airports/environmental/zero_emissions_vehicles/

[10] Advanced Clean Trucks Fact Sheet | California Air Resources Board

[11] HELIX Environmental Planning, Inc. 2020. 2019/2020 Non-breeding Burrowing Owl Survey Report for Potential Development of Ontario International Airport's Parcel Study. February 11.

[12] DRAFT, Air Quality Improvement Plan, Ontario International Airport, September 17, 2019, http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/facility-based-mobile-source-measures/draft-aqip-ont.pdf?sfvrsn=7

[13] Natural Resources Conservation Service. 2021. Web Soil Survey. United States Department of Agriculture (USDA). Retrieved from: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.Aspx. Accessed November 2, 2021.

[14] Holland R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame-Heritage Program, State of California, Department of Fish and Game, Sacramento, 156 pp.

[15] Oberbauer, T. 2008. Terrestrial vegetation communities in San Diego County based on Holland's Descriptions, San Diego Association of Governments, San Diego, CA.

[16] Sawyer, J.O., T. Keeler-Wolf, and J. Evens. 2009. A manual of California vegetation (MCV). 2nd Ed. Sacramento: California Native Plant Society.

[17] California Department of Fish and Wildlife, California Natural Community List. The Vegetation Classification and Mapping Program. Wildlife & Habitat Data Analysis Branch. August 2021. Retrieved from: FileHandler.ashx (ca.gov) Accessed November 2, 2021.

[18] California Native Plant Society. 2021a. CNPS Rare Plant Ranks. Retrieved from: https://www.cnps.org/rare-plants/cnps-rare-plant-ranks. Accessed on November 2, 2021.

[19] California Native Plant Society. 2021a. CNPS Rare Plant Ranks. Retrieved from: https://www.cnps.org/rare-plants/cnps-rare-plant-ranks. Accessed on November 2, 2021.

[20] California Native Plant Society. 2021b. Inventory of Rare and Endangered Plants of California. California Native Plant Society. Retrieved from: http://www.rareplants.cnps.org/. Accessed November 2, 2021.

[21] California Department of Fish and Wildlife. 2021a. California Natural Diversity Database and Rarefind. California Department of Fish and Wildlife: Sacramento, California. Retrieved from: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed November 2, 2021.

[22] HELIX Environmental Planning, Inc. 2020. 2019/2020 Non-breeding Burrowing Owl Survey Report for Potential Development of Ontario International Airport's Parcel Study. February 11.

[23] Osborne, Kendall H. 2021. Personal communication (email). December 20.

[24] CDFW, 2021b. California Natural Community List. The Vegetation Classification and Mapping Program. Wildlife & Habitat Data Analysis Branch. August 2021. Retrieved from: FileHandler.ashx (ca.gov) Accessed November 2, 2021.

[25] Natural Resources Conservation Service. 2021. Web Soil Survey. United States Department of Agriculture (USDA). Retrieved from: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.Aspx. Accessed November 2, 2021.

[26] Natural Resources Conservation Service. 2021. Web Soil Survey. United States Department of Agriculture (USDA). Retrieved from: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.Aspx. Accessed November 2, 2021.

[27] Natural Resources Conservation Service. 2021. Web Soil Survey. United States Department of Agriculture (USDA). Retrieved from: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.Aspx. Accessed November 2, 2021.

[28] South Coast Wildlands. 2008. South Coast missing linkages: A wildland network for the South Coast ecoregion. Retrieved from: Microsoft Word - SCMLRegionalReportFINAL.doc (scwildlands.org) March.

[29] Global Change Research Act of 1990, Pub. L. 101–606, Sec. 103 (November 16, 1990). For additional information on the United States Global Change Research Program, http://www.globalchange.gov. (January 2017)

[30] See generally Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66496 (Dec. 15, 2009).

[31] EPA, *Final Rule for Carbon Pollution Emission Guidelines for Existing Stationary Sources Electric Utility Generating Units*, 80 Fed. Reg. 64661, 64677 (Oct. 23, 2015).

[32] California Fourth Climate Change Assessment, California's Changing Climate 2018, https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf

[33] Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66496 (December 15, 2009).

[34] EPA, Final Rule for Carbon Pollution Emission Guidelines for Existing Stationary Sources Electric Utility Generating Units, 80 Fed. Reg. 64661, 64677 (October 23, 2015).

[35] EPA finalized findings that GHG emissions from certain classes of engines used in aircraft contribute to the air pollution that causes climate change endangering public health and welfare under section 231(a) of the Clean Air Act.

[36] Center for Climate and Energy Solutions. *International Civil Aviation Organization (ICAO)*. https://www.c2es.org/international/icao. (January 2017).

[37] EPA, Control of Air Pollution from Airplanes and Airplane Engines: GHG Emission Standards and Test Procedures - Final Rulemaking, January 11, 2021. https://www.epa.gov/regulations-emissions-vehicles-and-engines/control-air-pollution-airplanes-and-airplane-engines-ghg.

[38] EPA, Final Rule for Phase 2 Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, January 25, 2016, https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-phase-2-greenhouse-gas-emissions-standards.

[39] HELIX Environmental Planning, Inc. 2020. 2019/2020 Non-breeding Burrowing Owl Survey Report for Potential Development of Ontario International Airport's Parcel Study. February 11.

[40] Federal Aviation Administration, Voluntary Airport Low Emissions Program (VALE), https://www.faa.gov/airports/environmental/vale/

[41] Federal Aviation Administration, Airport Zero Emissions Vehicle and Infrastructure Pilot Program, https://www.faa.gov/airports/environmental/zero_emissions_vehicles/

[42] Advanced Clean Trucks Fact Sheet | California Air Resources Board

[43] HELIX Environmental Planning, Inc. 2020. 2019/2020 Non-breeding Burrowing Owl Survey Report for Potential Development of Ontario International Airport's Parcel Study. February 11.

[44] City of Ontario, Community Climate Action Plan, November 2014.

[45] SBCTA, Region Greenhouse Gas Reduction Plan, Final, March 2021, https://www.gosbcta.com/plan/regional-greenhouse-gas-reduction-plan/, accessed 2/23/22.

[46] EPA, Draft Inventory of U.S. Greenhouse Gas Emission and Sinks: 1990-2020, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions. The Draft U.S. Inventory of Greenhouse Gas Emissions and Sinks: 1990-2020 is under public review through March 11, 2022.

[47] EPA, Draft Inventory of U.S. Greenhouse Gas Emission and Sinks: 1990-2020, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions.

[48] EPA, EPA Finalizes Airplane Greenhouse Gas Emission Standards, EPA Proposes Airplane Greenhouse Gas Emission Standards – Resource Information (EPA-420-F-20-057, December 2020), December 2020.

[49] ICAO, "United States Efforts to Address Aviation's Climate Impact," A40-WP/531, ICAO 40th General Assembly, Executive Committee, www.icao.int/Meetings/a40/Documents/WP/wp_531_en.pdf, accessed 12/15/21.

[50] CARB, 2000-2019 GHG Inventory (2021 Edition), https://ww2.arb.ca.gov/ghg-inventory-data, accessed 11/19/2021.

[51] California Office of Historic Preservation (OHP), Instructions for Recording Historical Sources, March 1995, https://ohp.parks.ca.gov/pages/1054/files/manual95.pdf.

[52] California Code of Regulations Title 21, Division 2.5, Chapter 6, Article 1, Incompatible Land Uses Within the Noise Impact Boundary.

[53] ONT Rules and Regulations, Section 3 – Aircraft Operations, and Section 5 – Aircraft Noise Mitigation Operating Procedures and Restrictions, September 2020, https://www.flyontario.com/corporate/rules-and-regulations

[54] Ontario Quiet Home Program Status Map, 6/20/2016, "Parcels with Completed Dwelling Units" and "Acquired Properties."

[55] "Mitigated" includes both sound insulated and acquired parcels.

[56] During the nighttime hours, depending on wind condition, ONT operates contraflow where aircraft takes off to the east while still landing to the west. Contra-flow is utilized to alleviate noise impacts to the residential area to the west of the Airport.

[57] Population and housing units within the contours were first determined using 2010 U. S. Census Bureau block data (TIGER/Line with Selected Demographic and Economic Data (census.gov). At the time of this analysis, 2020 data was not available down to the block level. Total housing units and population by block were adjusted to remove the number of acquired properties in the Ontario Quiet Home Program. The population and housing units initially calculated within a contour were based on the assumption that housing units and population within a block were evenly distributed by area. (Note: These population and housing unit counts are not associated with the acreage of residential land use types.) Provided that the initial estimate of housing units based on block data was low, Google earth was then utilized to confirm the actual number of housing units occurring within the contour in a given block (2021 aerial). The average population per housing unit determined from the census block data was used to determine the estimated population. It was also noted whether the housing units within the contour have been mitigated (sound insulated) or are eligible for voluntary acquisition.

[58] SCAG , "Adopted Final Connect SoCal," https://scag.ca.gov/read-plan-adopted-final-plan (accessed 3/4/22).

[59] SCAG, "Transportation System: Aviation and Airport Ground Access," 9/3/2020, p. 1.

[60] Governor's Office of Planning and Research (OPR), Technical Advisory on Evaluating Transportation Impacts in CEQA, April 2018, p. 20.

[61] Caltrans, "Transportation Analysis Under CEQA," September 2020, p. 13.

[62] Ontario City Council, City of Ontario Resolution No. 2020-071, June 16, 2020, https://www.ontarioca.gov/sites/default/files/Ontario-Files/City-Clerk-Records-Management/Minutes%2020200616.pdf, p. 4.

4.0 Environmental Impacts and Mitigation

This chapter addresses potential environmental impacts associated with the Proposed Project described in SEIR *Chapter 2.0, Project Description*, as it relates to construction and operation of the Proposed Project. For each environmental resource or issue area included in this chapter, the following information will be provided: a summary of the methodology used to gather data and analyze potential Proposed Project impacts; a description of Existing Conditions or Baseline Conditions; listing of significance criteria by which potential Proposed Project impacts were evaluated; a description of the potential effects of the Proposed Project and, where applicable, identifies mitigation that would help to reduce the environmental effects of the Proposed Project. The significance of potential Project impacts will be addressed pre-mitigation and, as applicable, post-mitigation.

The following issue areas are addressed in detail in this chapter:

- Air Quality
- Biological Resources
- Greenhouse Gas Emissions
- Cultural Resources
- Noise
- Transportation/Traffic
- Tribal Cultural Resources
- Health Risk Assessment

Refer to *Section 3.2, Existing vs. Baseline Conditions* for detailed information on the development of the Existing Conditions or Baseline Conditions used for each resource category. As discussed, the Existing Condition describes existing physical conditions in the year 2021 for biological resources, cultural resources, transportation/traffic and tribal cultural resources, as detailed in *Section 3.2.1*. The Baseline Condition is applied for discussion of the hybrid 2019/2020 base year condition, as it relates to the air quality, GHG, and noise environments, as detailed in *Section 3.2.2*. The resource categories that use the Baseline Conditions apply a hybrid of 2019 and 2020 operations to more accurately represent historically consistent existing conditions at ONT, and to avoid a potentially misleading comparison of project impacts. These resource categories (noise, air quality, and greenhouse gas emissions) are described and compared using a hybrid of 2019 and 2020 operations as the Baseline Conditions.

In addition to this chapter of the SEIR, environmental impacts are also addressed in *Chapter 5.0, Cumulative Impacts, Chapter 6.0: Growth Inducing Impacts,* and *Chapter 7.0, Effects Found Not to be Significant*.

4.1 Air Quality

This air quality analysis examines criteria pollutant emissions that result from temporary construction activity and temporary operational changes associated with the Proposed Project during construction years 2023, 2024 and 2025. There are no emissions impacts associated with the Proposed Project beyond the construction period.

4.1.1 Methodology

Direct Construction Emissions

Direct construction-related emissions are typically associated with the exhaust from heavy-duty equipment (e.g., backhoes, graders, etc.), delivery trucks (e.g., dump trucks, construction materials delivery), and construction worker vehicles traveling to and from the construction site. There are also emissions (i.e., dust) associated with site preparation, land clearing, and equipment traversing unpaved areas. Construction emissions are temporary in nature and generally confined to the construction site and roads used to enter and exit the construction site. Emissions of CO, NO_x, VOC, SO_x, $PM_{2.5}$, PM_{10} were evaluated for the proposed project's three-year construction period, 2023, 2024 and 2025.

The Airport Construction Emissions Inventory Tool (ACEIT), developed by the Transportation Research Board's (TRB) Airport Cooperative Research Program (ACRP), was used to identify the types of construction activities and equipment/vehicle activity data for the air quality analysis. For this analysis, ACEIT was also used to derive the hours of operation for off-road construction equipment and vehicle miles traveled (VMT) for on-road trucks and employee vehicles. Construction activities are based upon conceptual phasing plans, including the known areas (square feet) associated with the various project types (i.e., proposed pavement, pavement demolition, and building area). The construction activity levels developed in the ACEIT model were then used to model emissions in California Emissions Estimator Model® (CalEEMod) version 2020.4.0.[1] See *Appendix D, Air Quality and GHG Emissions Analysis, Attachment 1 – Construction Emissions,* for more details.

A concrete batch plant also is proposed to be located on Airport property in an industrial area along E. Avion Street to facilitate Project-related construction activities. A concrete batch plant would reduce the total VMT needed for concrete delivery trucks, but would still require delivery of raw materials (i.e., Portland cement and aggregate) to mix the concrete on-site. The construction activity levels developed in ACEIT and modeled in CalEEMod do not account for the use of a concrete batch plant and instead assume a conservative 40-mile roundtrip for concrete delivery. The health risk assessment completed as part of this Supplemental Environmental Impact Report (SEIR) includes an analysis of particulate matter ($PM_{2.5}$ and PM_{10}) emissions associated with operation of the concrete batch plant. These emissions are summed with the construction emissions developed in CalEEMod to represent the full potential direct construction emissions for the Proposed Project.

Indirect Construction Emissions

Indirect construction-related emissions are associated with temporary, operational changes on the airfield necessary during Proposed Project construction. More specifically, as explained in *Chapter 2.0*, *Project Description,* the Proposed Project would require temporary runway closure periods in 2023, 2024 and 2025 to allow for runway rehabilitation and taxiway improvements. As a result, aircraft taxiing times will be impacted during the proposed runway closure periods. In order to determine the impact these temporary changes in aircraft taxiing times would have on

operational emissions, air emissions from aircraft taxiing activities were modeled using FAA's Aviation Environmental Design Tool (AEDT) version 3d. Operational emissions from engine maintenance run-up, Ground Support Equipment (GSE), and Auxiliary Power Unit (APU) usage were also modeled in AEDT, but are not discussed further herein as they would not be impacted from the temporary runway closures.

The aircraft emissions inventories were prepared for CO, NO_x, VOC, SO_2, $PM_{2.5}$, and PM_{10}. Lead (Pb) is also considered a criteria air pollutant; however, it is not evaluated in the SEIR's air quality analysis.[2] Note, however, a discussion of lead and the trace amounts of lead emissions present at ONT is included in *Section 4.8, Health Risk Assessment*, of this SEIR.

The aircraft fleet mixes were developed based on ONT's Airport Noise Monitoring System (ANOMS), FAA Terminal Area Forecast (TAF), Air Traffic Activity System (ATADS), and DOT's T100 data. Engine types were assigned to the fleet mixes based on FAA's aircraft registration database. Aircraft with at least 183 operations annually (more than 0.5 operations daily) were retained in the fleet mix for air quality analysis as they represent the majority of the operations. The retained operations were scaled up to match the total number of operations developed in the fleet mix. Default GSE and APU assignments in AEDT were applied. The existing condition taxi times were obtained from the FAA Aviation System Performance Metrics (ASPM). Simulations were conducted to project future taxi times for different scenarios. It was also assumed that the mixing height would be 2,402 feet to be consistent with previous SCAQMD analyses. See *Appendix D, Air Quality and GHG Emissions Analysis, Attachment 2 – Operational Emissions,* for more details.

Operational Emissions

The Proposed Project would have no impact on operations at the Airport beyond the three-year construction period. The Proposed Project would not increase Airport capacity and would not result in increases in local traffic as described in *Section 3.9*. Therefore, emissions associated with overall aircraft activity levels and passenger traffic arriving and departing ONT were not analyzed.

4.1.2 Baseline Conditions

ONT is located in San Bernardino County within the South Coast Air Basin. Ambient concentrations of air contaminants are measured within the Basin and compared to Federal (NAAQS) and State (CAAQS) standards to determine air quality. As it relates to NAAQS and CAAQS, the South Coast Air Basin (Basin) is currently designated:

- NAAQS: nonattainment for O_3 and $PM_{2.5}$ and maintenance for CO, NO_2 and PM_{10}
- CAAQS: nonattainment for O_3, $PM_{2.5}$, and PM_{10}

The SCAQMD maintains a network of air monitoring stations throughout the Basin, with eight monitors located within San Bernardino County. The monitors nearest to ONT have indicated exceedances of the federal and state ozone standards on average 20% and 13% of the time between 2018 and 2020. *Section 3.4.2* provides additional details on the existing ambient concentrations near ONT.

ONT's existing aircraft taxiing emissions were determined using the hybrid base year (2019/2020) approach explained in *Section 3.2, Baseline Conditions*, which normalizes the temporary impact of the COVID-19 pandemic in order to correctly represent typical operation levels at ONT. For this reason, existing conditions aircraft taxiing emissions are referred to as the Baseline Conditions.

As detailed in *Chapter 3.0, Environmental Setting*, operational emissions were modeled in AEDT for emissions from aircraft activities for the Baseline Conditions. Aircraft taxiing during construction is the only aspect of the Proposed Project that impacts emissions. Therefore, these emissions represent the Baseline Conditions aircraft taxiing emissions at ONT prior to the Proposed Project being implemented. **Table 4-1** summarizes the Baseline Conditions aircraft taxiing emissions.

Table 4-1: Baseline Conditions Aircraft Taxiing Emissions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}
Baseline Conditions	517	63	96	18	2	2	2,832	346	527	101	9	9

Source: FAA ASPM and HNTB analysis, 2022.

4.1.3 Thresholds of Significance

Air quality thresholds of significance are based on Appendix G of the CEQA Guidelines. The Proposed Project would result in significant impacts related to air quality if it would:

Impact 4.1-1 Conflict with or obstruct implementation of the SCAQMD AQMP.

Impact 4.1-2 Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Impact 4.1-3 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

Impact 4.1-4 Expose sensitive receptors to substantial pollutant concentrations.

Impact 4.1-5 Create objectionable odors affecting a substantial number of people.

With respect to Impact 4.1-2, the USEPA and SCAQMD set thresholds of significance designed to align with the NAAQS and CAAQS, respectively. USEPA criteria pollutant and precursor General Conformity de minimis thresholds for NAAQS are summarized in **Table 4-2**. SCAQMD criteria pollutant and precursor thresholds of significance for construction are summarized in **Table 4-3**.

Table 4-2: General Conformity *de minimis* Levels

Pollutant	Tons per year
O_3 (extreme)	10 for NO_x and 10 for VOCs
CO (maintenance)	100
NO_2 (maintenance)	100
PM_{10} (maintenance)	100
$PM_{2.5}$ (serious)	70

Source: EPA, *de minimis* emission levels, https://www.epa.gov/general-conformity/de-minimis-tables, December 2021.

Table 4-3: SCAQMD Thresholds of Significance for Construction Criteria Air Pollutants and Precursors

Pollutant/Precursor	Construction Daily Thresholds (lbs/day)
NO_x	100
VOC	75
PM_{10}	150
$PM_{2.5}$	55
SO_x	150
CO	550

Notes: VOC and NOx are precursors to ozone.

Source: South Coast AQMD CEQA Handbook (South Coast AQMD, 1993), https://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2

The analysis of construction emission impacts includes both direct impacts associated with Proposed Project construction activity, and indirect impacts associated with a change in aircraft taxiing patterns due to temporary construction-related runway closures in 2023, 2024 and 2025. The direct and indirect construction emissions are summed to determine total construction impacts in 2023, 2024 and 2025, and are compared to the above referenced significance thresholds to determine the Proposed Project's impact.

4.1.4 Impacts

Construction Impacts

The tables presented below summarize the direct, indirect and total construction emissions. The determination of significance was based on the Proposed Project's total construction emissions.

Direct Construction Emissions

A construction emissions inventory was prepared for the Proposed Project for the construction years 2023, 2024, and 2025. Construction emissions typically include emissions from on-road vehicles (vehicles miles traveled) and off-road equipment (equipment hours). ONT requires the use of Tier 4 final engine emission standards for all off-road construction equipment, which serves to significantly reduce NO_x and PM emissions. To ensure implementation, Tier 4 engine requirements are included by ONT in all applicable construction contracts, plans and specifications. Therefore, the construction emissions inventory was developed in CalEEMod with a Tier 4 final engines input for all off-road construction equipment. The construction emissions also include PM emissions associated with the operation of the concrete batch plant proposed to be located on Airport property in an industrial area along E. Avion Street.

Table 4-4 presents the Proposed Project's direct construction emissions, as compared to the NAAQS and SCAQMD thresholds of significance. As shown, the direct construction-related emissions are below the applicable NAAQS and SCAQMD thresholds for all pollutants/precursors and construction years. See *Appendix D, Air Quality and GHG Emissions Analysis, Attachment 1 – Construction Emissions* for details on the modeling of construction activity emissions.

Table 4-4: Proposed Project Direct Construction Emissions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023 Proposed Project	12	2	<1	<1	1	2	125	24	4	<1	8	18
2024 Proposed Project	18	3	1	<1	1	2	178	32	7	1	9	23
2025 Proposed Project	5	1	<1	<1	<1	1	56	11	2	<1	4	8
NAAQS or SCAQMD threshold of significance	*100*	*10*	*10*	--	*70*	*100*	*550*	*100*	*75*	*150*	*150*	*55*
Exceeds Thresholds?	*No*	*No*	*No*	--	*No*	*No*	*No*	*No*	--	--	*No*	*No*

Notes:
Volatile organic compounds (VOCs) are referred as reactive organic gases (ROG) in CalEEMod.

Source: CalEEMod, HNTB analysis 2022.

Indirect Construction Emissions

The Proposed Project would require the following temporary runway closures in 2023, 2024 and 2025 during construction:

- 2023 – maximum nine months of runway closure
  - Runway 8L-26R will be closed for four months (from mid-January to mid-May)
  - Runway 8R-26L will be closed for five months (from June to October)
- 2024 – maximum nine months of runway closure
  - Runway 8R-26L will be closed for nine months (from mid-January to mid-October)
- 2025 – maximum five months of runway closure
  - Runway 8L-26R will be closed for five months (from mid-January to mid-June)

While operational levels would be identical in each future year whether or not the Proposed Project is implemented, due to these necessary runway and taxiway closures, aircraft taxiing times would vary. More specifically, the Proposed Project would reduce the duration of taxiing times in construction years 2023 and 2024 as compared to the Baseline Conditions. The most prevalent reason for reduced taxi times in 2023 and 2024 is due to the fact that, without the requirement to operate with Contra Flow, aircraft that would have necessarily traveled to Runways 8L and 8R to depart will be allowed to depart on either Runway 26L or 26R, depending on the runway that is open. This will reduce taxi distance for many operations. While runway closures proposed in 2025 would also impact taxiing times, additional taxiing delay associated with background growth in operations would result in 2025 aircraft taxing times being slightly greater than Baseline Conditions.

Table 4-5 provides a comparison of the total aircraft taxiing emissions with implementation of the Proposed Project in 2023, 2024 and 2025 as compared to the Baseline Conditions aircraft taxiing emissions. These incremental differences represent the indirect Proposed Project-related construction emissions associated with temporary runway closures.

Total Construction Emissions

As presented in **Table 4-6**, when taking into consideration the temporary increases in emissions from construction equipment and the temporary decreases in aircraft taxiing emissions in 2023 and 2024, and temporary increases in aircraft taxiing emissions in 2025 associated with the temporary runway closures through the construction years, the total construction emissions remain below the applicable NAAQS and SCAQMD thresholds for all pollutants/precursors and years. Therefore, the Proposed Project would result in a ***less than significant impact*** from construction-related emissions.

Table 4-5: Proposed Project Aircraft Taxiing Indirect Construction Emissions from Temporary Runway Closures Compared to Baseline Conditions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
Baseline Conditions	517	63	96	18	2	2	2,832	346	527	101	9	9
2023 Proposed Project	490	60	90	17	1	1	2,686	328	493	95	8	8
2023 Incremental Changes	**-27**	**-3**	**-6**	**-1**	**<0**	**<0**	***-146***	***-18***	***-34***	***-5***	***-1***	***-1***
Baseline Conditions	517	63	96	18	2	2	2,832	346	527	101	9	9
2024 Proposed Project	510	63	94	18	2	2	2,790	342	511	99	8	8
2024 Incremental Changes	**-6**	**-1**	**-3**	**<0**	**<0**	**<0**	***-43***	***-4***	***-16***	***-1***	***<0***	***<0***
Baseline Conditions	517	63	96	18	2	2	2,832	346	527	101	9	9
2025 Proposed Project	563	69	103	20	2	2	3,083	379	562	110	9	9
2025 Incremental Changes	**46**	**6**	**6**	**2**	**<1**	**<1**	***251***	***33***	***35***	***9***	***1***	***1***

Source: FAA ASPM and HNTB analysis, 2022.

Table 4-6: Total Proposed Project Construction Emissions Compared to Baseline Conditions

Year	Emission Source	Pollutants (tons/year)						Pollutants (lbs/day)					
		CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023	Direct - Construction	12	2	<1	<1	1	2	125	24	4	<1	8	18
	Indirect – Aircraft Taxiing	-27	-3	-6	-1	<0	<0	-146	-18	-34	-5	-1	-1
	Total	**-14**	**-1**	**-6**	**-1**	**1**	**2**	**-21**	**6**	**-29**	**-5**	**7**	**17**
2024	Direct - Construction	18	3	1	<1	1	2	178	32	7	1	9	23
	Indirect – Aircraft Taxiing	-6	-1	-3	<0	<0	<0	-43	-4	-16	-1	<0	<0
	Total	**11**	**3**	**-2**	**<0**	**1**	**2**	**136**	**28**	**-9**	**-1**	**9**	**23**
2025	Direct - Construction	5	1	<1	<1	<1	1	56	11	2	<1	4	8
	Indirect – Aircraft Taxiing	46	6	6	2	<1	<1	251	33	35	9	1	1
	Total	**51**	**7**	**7**	**2**	**<1**	**1**	**307**	**44**	**37**	**9**	**4**	**9**
NAAQS or SCAQMD threshold of significance		*100*	*10*	*10*	--	*100*	*70*	*550*	*100*	*75*	*150*	*150*	*55*
Exceeds Thresholds?		*No*	*No*	*No*	--	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*

Source: FAA ASPM and HNTB analysis, 2022.

Additional Analysis for Informational Purposes

As noted above, CEQA requires that a proposed project be compared to baseline conditions for the purpose of making a significance determination. For the Proposed Project, the incremental aircraft taxiing emissions would be influenced by factors that are not exclusively attributable to the Project itself, specifically from background operational growth at ONT that is projected to occur with or without the Proposed Project, as well as lower emission factors for aircraft from improved engine technology. In order to remove the influence of background growth and differences in emission factors, this analysis also compares aircraft taxiing emissions of the Proposed Project in a given year with the aircraft taxiing emissions from the No Project Alternative in the same year. The No Project Alternative, in this context, acts as a modified baseline under CEQA Guidelines Section 15125(a)(1), as it allows for a comparison of the Proposed Project to the airfield conditions expected at the time of its implementation (calendar years 2023, 2024 and 2025). This comparison is made for informational purposes only.

Table 4-7 provides a comparison of the total aircraft taxiing emissions with and without implementation of the Proposed Project in 2023, 2024 and 2025, as well as the incremental differences between the two conditions each year. These incremental differences represent the indirect Proposed Project-related construction emissions associated with temporary runway closures, removing background growth and differences in emission factors. As indicated, the temporary changes in aircraft taxiing during construction of the Proposed Project result in decreases of emissions when compared to the No Project Alternative. This is a result of the suspension of Contra Flow, which improves departure taxi efficiency.

As presented in **Table 4-8**, when taking into consideration the emissions decreases associated with the temporary runway closures through the construction years, there is a net decrease in total construction emissions when comparing the Proposed Project to the No Project Alternative, and no exceedances of NAAQS or SCAQMD thresholds. As the Proposed Project itself does not induce operational growth, this comparison provides a more realistic look at the impacts of the Proposed Project aircraft taxiing emissions.

Table 4-7: Proposed Project Aircraft Taxiing Indirect Construction Emissions from Temporary Runway Closures Compared to No Project Alternative

Year	Pollutants (tons/year)						Pollutants (lbs./day)					
	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023 No Project	551	67	101	20	2	2	3,019	369	554	107	9	9
2023 Proposed Project	490	60	90	17	1	1	2,686	328	493	95	8	8
2023 Incremental Changes	**-61**	**-7**	**-11**	**-2**	**<0**	**<0**	***-333***	***-41***	***-61***	***-12***	***-1***	***-1***
2024 No Project	572	70	105	20	2	2	3,125	383	573	111	9	9
2024 Proposed Project	510	63	94	18	2	2	2,790	342	511	99	8	8
2024 Incremental Changes	**-61**	**-8**	**-11**	**-2**	**<0**	**<0**	***-336***	***-41***	***-62***	***-12***	***-1***	***-1***
2025 No Project	597	73	109	21	2	2	3,270	402	596	116	10	10
2025 Proposed Project	563	69	103	20	2	2	3,083	379	562	110	9	9
2025 Incremental Changes	**-34**	**-4**	**-6**	**-1**	**<0**	**<0**	***-187***	***-23***	***-34***	***-7***	***-1***	***-1***

Source: FAA ASPM and HNTB analysis, 2022.

Table 4-8: Total Proposed Project Construction Emissions Compared to No Project Alternative

Year	Emission Source	Pollutants (tons/year)						Pollutants (lbs./day)					
		CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023	Direct - Construction	12	2	<1	<1	1	2	125	24	4	<1	8	18
	Indirect – Aircraft Taxiing	-61	-7	-11	-2	<0	<0	-333	-41	-61	-12	-1	-1
	Total	**-49**	**-5**	**-11**	**-2**	**1**	**2**	**-208**	**-16**	**-56**	**-12**	**7**	**17**
2024	Direct - Construction	18	3	1	<1	1	2	178	32	7	1	9	23
	Indirect – Aircraft Taxiing	-61	-8	-11	-2	<0	<0	-336	-41	-62	-12	-1	-1
	Total	**-44**	**-4**	**-11**	**-2**	**1**	**2**	**-158**	**-9**	**-55**	**-11**	**8**	**22**
2025	Direct - Construction	5	1	<1	<1	<1	1	56	11	2	<1	4	8
	Indirect – Aircraft Taxiing	-34	-4	-6	-1	<0	<0	-187	-23	-34	-7	-1	-1
	Total	**-29**	**-3**	**-6**	**-1**	**<1**	**1**	**-131**	**-12**	**-32**	**-7**	**3**	**8**
NAAQS or SCAQMD threshold of significance		*100*	*10*	*10*	*--*	*100*	*70*	*550*	*100*	*75*	*150*	*150*	*55*
Exceeds Thresholds?		*No*	*No*	*No*	*--*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*

Source: FAA ASPM and HNTB analysis, 2022.

Impact 4.1-1

Summary Conclusion for Impact 4.1-1: Implementation of the Proposed Project would not conflict with or obstruct implementation of the SCAQMD AQMP or applicable portions of an SIP. The Proposed Project would not increase operational activities at the Airport and would result in a *less than significant impact* from construction emissions. As such, this would be a *less than significant impact*.

Construction of the Proposed Project would result in emissions associated with construction activities (direct emissions) as well as emissions associated with temporary changes in aircraft taxiing times from proposed runway closures (indirect emissions). The total construction emissions do not exceed NAAQS or SCAQMD thresholds of significance in any construction year and therefore would not conflict with implementation of the SCAQMD AQMP or applicable SIPs. After construction of the Proposed Project, there would be no impact to operational emissions at ONT.

Impact 4.1-2

Summary Conclusion for Impact 4.1-2: Implementation of the Proposed Project would result in direct and indirect construction-related emissions; however, as detailed in *Section 4.1.4*, the total construction emissions would be below all NAAQS and SCAQMD thresholds. Therefore, the project would have a *less than significant impact* from construction-related criteria pollutant emissions and would not violate any air quality standard.

It should be noted that the Proposed Project's incremental aircraft taxiing emissions would be influenced by factors that are not attributable to the Project itself, specifically from background operational growth at ONT that is projected to occur with or without the Proposed Project, as well as lower emission factors for aircraft from improved engine technology.

In order to remove the influence of background growth and differences in emission factors, a comparison of aircraft taxiing emissions of the Proposed Project in a given year with the aircraft taxiing emissions from the No Project Alternative in the same year was also completed (see Table 4-7). Under this comparison, the Proposed Project results in net decreases in total construction emissions and does not result in any exceedances of NAAQS or SCAQMD thresholds (see Table 4-8). This comparison is made for informational purposes only.

Impact 4.1-3

Summary Conclusion for Impact 4.1-3: Construction of the Proposed Project in conjunction with other projects anticipated to be under construction during the same period relative to cumulative emissions is discussed in *Chapter 5.0, Cumulative Impacts.*

Impact 4.1-4

Summary Conclusion for Impact 4.1-4: Implementation of the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations. As such, the Proposed Project would have a *less than significant impact*.

As detailed in *Section 4.8.4, Health Risk Assessment, Impacts*, construction of the Proposed Project would not expose sensitive receptors to pollutant concentrations that exceed SCAQMD thresholds.

The Proposed Project site is located entirely within Airport property. There are no sensitive receptors including, but not limited to homes, schools, hospitals, resident care facilities, or day-care centers, located within the Proposed Project site. The closest sensitive receptors are residential homes located along E. Airport Drive and S Grove Avenue, approximately 700 feet north and 400 feet west of the contractor staging area, respectively.[3] The closest sensitive receptors to the construction pavement area (proposed Taxiway N2) are residential homes located approximately 2,400 feet north off of E. Nocta Street. As summarized under Impact 4.1-2, when taking into consideration the totality of the Proposed Project's construction-related effects (emission increases from construction equipment and emission decreases from aircraft taxiing), the total construction emissions remain below the applicable NAAQS and SCAQMD thresholds for all pollutants/precursors and years. Therefore, construction of the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations and construction would have a *less than significant* impact.

Aircraft taxiing operations under the Proposed Project would be conducted in the same general location as with Baseline Conditions. The Proposed Project temporarily requires that operations shift between existing runways when individual runways are closed for construction purposes and when Contra Flow cannot be implemented when compared to the Baseline Conditions. The Proposed Project would not bring aircraft taxiing operations any closer to sensitive receptors, including but not limited to homes, schools, hospitals, resident care facilities, or day-care centers than Baseline Conditions. Therefore, the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations and would have a *less than significant* impact.

Impact 4.1-5

Summary Conclusion for Impact 4.1-5: Implementation of the Proposed Project would not result in objectionable odors adversely affecting a substantial number of people, therefore, the Proposed Project would result in a *less than significant impact*.

Exhaust from the use of diesel equipment during construction would generate odors within the project area. However, the closest sensitive receptors to the project area are residential homes located along E. Airport Drive and S. Grove Avenue, approximately 700 feet north and 400 feet west of the contractor staging area, respectively.[4] The closest sensitive receptors to the construction pavement area (proposed Taxiway N2) are residential homes located approximately 2,400 feet north off of E. Nocta Street. Dispersion of construction odors is variable based on wind direction and speed, but would not affect a substantial number of people given the distance from sensitive receptors. Therefore, construction of the Proposed Project would not result in objectionable odors adversely affecting a substantial number of people and impacts would be *less than significant*.

Temporary changes in aircraft taxiing times due to proposed runway closures also would not notably change existing odors at or in the vicinity of the Airport. While

total aircraft activity is projected to increase at ONT over the course of implementation of the Proposed Project (in 2023, 2024 and 2025), the increase in aircraft activity would occur regardless of the Proposed Project. Therefore, aircraft taxiing operations during implementation of the Proposed Project would not result in objectionable odors adversely affecting a substantial number of people and impacts would be *less than significant*.

4.1.5 Mitigation Measures

The Proposed Project results in a less than significant impact on air quality emissions during the construction period. Therefore, no mitigation measures are necessary.

4.2 Biological Resources

This section provides an analysis of potential impacts to sensitive biological resources with respect to local, state, and federal policy within the study area. Existing biological conditions on and in the immediate vicinity of the study area are discussed in *Chapter 3.0, Environmental Setting.*

4.2.1 Methodology

Project evaluation included a review of project plans; a literature review of biological resources occurring on the study area and the surrounding vicinity; a general biological survey, including vegetation mapping and a general habitat assessment; and a jurisdictional assessment. The methods used to evaluate the biological resources present in the study area are discussed in this section.

Nomenclature

Nomenclature for this report follows Baldwin et al. (2012) for plants. Plant communities were classified in accordance with Holland (1986) and Oberbauer (2008), with additional vegetation community information taken from Manual of California Vegetation, Second Edition (MCV; Sawyer et al. 2009). Animal nomenclature follows Emmel and Emmel (1973) for butterflies, Center for North American Herpetology (Taggart 2016) for reptiles and amphibians, American Ornithological Society (2021) for birds, and Baker et al. (2003) for mammals. Rare plant and sensitive animal statuses are from the Inventory of Rare and Endangered Plants of California (California Native Plant Society [CNPS] 2021b) and the California Natural Diversity Database (CNDDB; California Department of Fish and Wildlife [CDFW] 2021a). Rare plant species' habitats and flowering periods are from the Jepson Manual (Baldwin et al. 2012), the Inventory of Rare and Endangered Plants of California (CNPS 2021b), and California Natural Diversity Database (CDFW 2021a). Soil classifications were obtained from the Web Soil Survey (Natural Resources Conservation Service [NRCS] 2021).

Literature Review

Prior to conducting the site visit, regional planning documents, Google Earth aerials (2021), Web Soil Survey (NRCS 2021), and sensitive species database records, including the Inventory of Rare and Endangered Plants of California (CNPS 2020b), CNDDB (CDFW 2021a), and critical habitat maps for endangered and threatened

species (U.S. Fish and Wildlife Service [USFWS] 2021a) were reviewed. A one-quadrangle database search was conducted on CNDDB and CNPS, which consisted of the Guasti quadrangle.

Field Surveys

Field surveys were conducted to document the existing condition of the study area and surrounding lands. A general biological survey and habitat assessment were conducted in the study area to map existing vegetation communities and to determine habitat suitability for sensitive plant and animal species. A list of plant and animal species observed and/or detected during the field surveys are provided in *Appendix E, Attachment 2, Plant Species Observed* and *Animal Species Observed and/or Detected*. Noted animal species were identified by direct observation, vocalizations, or the observance of scat, tracks, or other signs. However, the list of animal species identified is not necessarily a comprehensive account of all species that use the study area as species that are nocturnal, secretive, or seasonally restricted may not have been observed. A habitat assessment for DSFLF and a habitat assessment for BUOW were conducted. A jurisdictional assessment was also conducted to determine the existing jurisdictional limits regulated by the USACE, Regional Water Quality Control Board (RWQCB), and CDFW.

General Biological Survey

A qualified Biologist and Regulatory Specialist conducted a general biological survey of the study area on January 12, 2021. Vegetation communities were classified and mapped in accordance with Holland (1986) and Oberbauer (2008). Vegetation was mapped on a 125-foot (1 inch = 125 feet) aerial photograph of the site. Vegetation communities were mapped to one-hundredth of an acre (0.01 acre). The entire site was surveyed on foot with the aid of binoculars. Representative photographs of the site were taken, with select photographs included in this report as *Appendix E, Attachment 2, Representative Site Photographs*. Plant and animal species observed or otherwise detected were recorded in a field notebook. Animal identifications were made in the field by direct, visual observation or indirectly by detection of calls, burrows, tracks, or scat. Plant identifications were made in the field or in the lab through comparison with voucher specimens or photographs. The DSFLF habitat assessment consisted of performing a pedestrian survey within all areas that supported Delhi Fine Sand soils and all adjacent soils to determine if the soils provide suitable habitat for DSFLF. A BUOW habitat assessment was conducted by a qualified biologist to determine whether the project site supports suitable BUOW habitat including disturbed, low growing vegetation within grassland and shrublands (less than 30 percent canopy cover), gently rolling or level terrain, areas with abundant small mammal burrows, especially California ground squirrel burrows, fence posts, rocks, or other low perching locations, and man-made structures, such as earthen berms, debris piles, and cement culverts.

Jurisdictional Assessment

Prior to beginning fieldwork, aerial photographs (1 inch = 75 feet), topographic maps (1 inch = 75 feet), USGS quadrangle maps, and National Wetlands Inventory maps (USFWS 2021b) were reviewed to assist in determining the location of potential

jurisdictional waters on the study area. A jurisdictional assessment field work was conducted on January 12, 2021. The assessment was conducted to identify any jurisdictional waters potentially subject to USACE jurisdiction pursuant to Section 404 of the Clean Water Act (CWA), RWQCB jurisdiction pursuant to Section 401 of the CWA, and streambed habitats potentially subject to CDFW jurisdiction pursuant to Sections 1600 et seq. of the CFG Code. Data collection was targeted in areas that were deemed to have the potential to support jurisdictional resources, such as the presence of an ordinary high water mark (OHWM), the presence of a bed/bank and streambed associated vegetation and/or other surface indications of streambed hydrology. The findings of the jurisdictional assessment are included as *Appendix E, Attachment 2, Jurisdictional Delineation Memo*.

U.S. Army Corps of Engineers

The USACE waters of the U.S. were determined using current USACE guidelines (Environmental Laboratory 1987, USACE 2008a). Areas were determined to be waters of the U.S. if there was evidence of regular surface flow (e.g., bed and bank). Jurisdictional limits for these areas were measured according to the presence of a discernible OHWM, which is defined in 33 Code of Federal Regulations Section 329.11 as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas." The USACE has issued further guidance on the OHWM (Riley 2005; USACE 2008b), which also was considered in this jurisdictional assessment.

The jurisdictional delineation was conducted in accordance with court decisions (i.e., Rapanos v. United States, Carabell v. United States, and Solid Waste Agency of Northern Cook County v. USACE), as outlined and applied by the USACE (USACE 2007; Grumbles and Woodley 2007); and the USACE and U.S. Environmental Protection Agency (USACE and EPA; 2007). These publications explain that the EPA and USACE will assert jurisdiction over traditional navigable waters (TNW) and tributaries to TNWs that are a relatively permanent water body (RPW), which has year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation is used to determine if the non-RPW is jurisdictional. As an alternative to the significant nexus evaluation process, a preliminary jurisdictional delineation may be submitted to the USACE. The preliminary jurisdictional delineation treats all waters and wetlands on a site as if they are jurisdictional waters of the U.S. (USACE 2008a). A significant nexus evaluation or preliminary jurisdictional delineation are typically only required for projects that propose impacts to potentially jurisdictional features and, therefore, require a Section 404 permit from the USACE.

USFWS Permit

The USFWS issued Permit No. MBPER0037939 (USFWS Permit) for ONT, which USFWS Permit allows the trapping and relocation of certain birds at ONT, including the BUOW, "to resolve or prevent threats to human safety and/or aircraft safety" at ONT. (See *Appendix E, Attachment 1*.)

Regional Water Quality Control Board

The RWQCB asserts regulatory jurisdiction over activities affecting wetland and non-wetland waters of the State pursuant to Section 401 of the CWA and the State Porter-Cologne Water Quality Control Act. Potential RWQCB jurisdiction found within the study area follows the boundaries of potential USACE jurisdiction for waters of the U.S. There are no areas supporting isolated waters of the State subject to exclusive RWQCB jurisdiction pursuant to the State Porter Cologne Water Quality Control Act.

California Department of Fish and Wildlife

The CDFW jurisdictional boundaries were determined based on the presence of riparian vegetation or regular surface flow, if present. Streambeds within CDFW jurisdiction were delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses with surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). This definition for CDFW jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., oak woodland and alluvial fan sage scrub). Jurisdictional limits for CDFW streambeds were defined by the top of bank. Vegetated CDFW habitats were mapped at the limits of streambed-associated vegetation, if present.

4.2.2 Existing Conditions

Refer to *Section 3.5.2, Biological Resources, Existing Conditions,* for discussion of the Existing Conditions for biological resources.

4.2.3 Thresholds of Significance

For the purpose of determining the significance of the project's impacts on biological resources, a significant impact would occur if the project would:

1) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;

2) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;

3) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

4) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

5) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;

6) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.2.4 Impacts

This section describes potential direct and indirect impacts associated with the Proposed Project. Direct impacts immediately alter the affected biological resources such that those resources are eliminated temporarily or permanently. Indirect impacts consist of secondary effects of a project, including noise, decreased water quality (e.g., through sedimentation, urban contaminants, or fuel release), fugitive dust, colonization of non-native plant species, animal behavioral changes, and night lighting. The magnitude of an indirect impact can be the same as a direct impact; however, the effect usually takes a longer time to become apparent.

The significance of impacts to biological resources present or those with potential to occur was determined based upon the sensitivity of the resource and the extent of the anticipated impacts. For certain highly sensitive resources (e.g., a federally listed species), any impact would be significant. Conversely, other resources that are of low sensitivity (e.g., species with a large, locally stable population in the region but declining elsewhere) could sustain some impact with a less than significant effect.

Sensitive Species

Rare Plant Species

No Impacts

No rare plant surveys were performed since no rare plant species have a potential to occur in the study area. Additionally, none have been previously documented within the study area based on CNDDB and CNPS database review. Due to high-level of disturbance within the study area, habitat suitable to support rare plant species was not present and none were observed during a recent survey conducted on January 12, 2021. Therefore, the project is not expected to impact any rare plant species.

Sensitive Animal Species

Less than Significant Impacts with Mitigation Incorporated

Of the 16 sensitive animal species recorded within the vicinity of the study area, 14 species were determined to have no potential to occur due to lack of suitable habitat and/or these areas are located outside of the species' known geographical range (*Appendix E, Attachment 2*). One species (BUOW) is considered present based on positive focused non-breeding season surveys. Subject to the USFWS Permit, to prevent direct and indirect impacts to BUOW, Mitigation Measure BIO-1 will be implemented as part of the project. Of the remaining two species, one species has a low potential to occur, and one species has a moderate potential to occur. These species are discussed in greater detail below.

Low Potential Species

One species, western mastiff bat was determined to have a low potential to occur on the study area based on the presence of low-quality habitat, and lack of recent observations within the project vicinity. Western mastiff bat is a state SSC. The study area lacks suitable rock slabs and cliff faces for this species to roost, although open areas within study area may potentially provide suitable foraging habitat. Since the study area supports limited habitat for this species, the project would not result in a significant impact to this species as suitable foraging habitat is located to the east and south of the study area.

Moderate Potential Species

One species, DSFLF, was determined to have a moderate potential to occur within the study area based on a habitat assessment conducted in December 2021 (Osborne, personal communication). To prevent direct and indirect impacts to DSFLF, Mitigation Measure BIO-3 will be implemented as part of the project.

Sensitive Vegetation Communities

California Department of Fish and Wildlife Sensitive Vegetation Communities/ Habitats

No Impacts

The study area supports developed, disturbed, and ornamental habitat. None of these vegetation communities or habitats are considered sensitive by CDFW. Impacts to these communities are not considered sensitive and do not require mitigation. Therefore, no impacts to sensitive communities will occur as a result of the project (**Figure 4-1**, Impacts to Vegetation; **Table 4-9**, Impacts to Vegetation Communities).

Table 4-9: Impacts to Vegetation Communities

Habitat Type	Existing (acres)	Permanent Impacts (acres)
Developed	290.33	290.33
Disturbed/Non-native Vegetation	132.95	132.95
Ornamental	0.63	0.00
TOTAL	**423.91**	**423.28**

Source: HELIX Environmental Planning, 2021.

California Department of Fish and Wildlife Riparian Habitat and Streambed

No Impacts

Based on the results of the jurisdictional delineation, Cucamonga Creek Channel, Deer Creek Channel, and West Cucamonga Creek Channel are considered non-wetland waters under CDFW jurisdiction (Figure 3-3). These jurisdictional features are underground through the extent of the study area.



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

Figure 4-1

Impacts to Vegetation

HNTB

Sources: Aerial (San Berrnardino County, 2020), HELIX Environmental Planning, 2022

The Proposed Project would not result in any impacts to Cucamonga Creek Channel, Deer Creek Channel, or West Cucamonga Creek Channel. The project would require removal and installation of storm drain inlets. The removal and installation of storm drain inlets would be performed in such a way that no incidental fall back to the storm drain system would occur. Since the storm drain inlet removal and installation activities would not result in direct or indirect impacts to downstream jurisdictional waters, the project would not impact CDFW jurisdictional waters. In the absence of impacts to jurisdictional waters, the project would not require regulatory permits from CDFW.

U.S. Army Corps of Engineers/Regional Water Quality Control Board Jurisdiction

No Impacts

Based on the results of the jurisdictional delineation, Cucamonga Creek Channel, Deer Creek Channel, and West Cucamonga Creek Channel are considered non-wetland waters under USACE/RWQCB jurisdiction (Figure 3-3). These jurisdictional features are underground through the extent of the study area.

The Proposed Project would not result in any impacts to Cucamonga Creek Channel, Deer Creek Channel, or West Cucamonga Creek Channel. The project would require removal and installation of storm drain inlets. The removal and installation of storm drain inlets will be performed in such a way that no incidental fall back to the storm drain system will occur. Since the storm drain inlet removal and installation activities will not result in direct or indirect impacts to downstream jurisdictional waters, the project would not impact USACE or RWQCB jurisdictional waters. In the absence of impacts to jurisdictional waters, the project would not require regulatory permits from USACE or RWQCB.

Wildlife Movement and Migratory Species

Wildlife Movement

No Impacts

The study area is not part of a regional corridor and does not serve as a nursery site. The study area is not identified as being part of a local or regional corridor or linkage by the South Coast Missing Linkages (South Coast Wildlands 2008). The study area currently has no direct connectivity to two or more large blocks of habitat and is constrained by existing development. The study area does not support native vegetation and provides very limited habitat for local wildlife and migratory birds passing through the study area. Some reptiles and small mammals may occasionally access the study area. Birds may fly over existing development to access the study area for foraging and/or nesting. Therefore, the study area may provide very limited habitat for local wildlife but does not serve as a regional wildlife corridor. Although implementation of the project may result in some temporary disturbance to local wildlife movement on site no regional movement corridors would be impacted.

Migratory Species

Less than Significant Impacts with Mitigation Incorporated

The study area has the potential to support songbird and raptor nests due to the presence of vegetation and trees in the study area. Project activities could disturb or destroy active migratory bird nests including eggs and young. Except as allowed under the USFWS Permit discussed above, disturbance to or destruction of migratory bird eggs, young, or adults is in violation of the MBTA and is considered a potentially significant impact. The nesting season is generally defined as February 15 through August 31 for songbirds and January 15 to August 31 for raptors. An avoidance and minimization measure is provided as BIO-2 in Section 6.0 below, which would ensure the project is in compliance with MBTA regulations.

Local Policies and Ordinances

No Impacts

The project would not impact any local policies or ordinances, therefore no mitigation is required.

Adopted Plans

The study area is not located within any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. The study area is located within the proposed Upper Santa Ana River Habitat Conservation Plan (SAR HCP), which was released for public review in May 2021, the review period ended in July 2021 and has not been approved as of the preparation of this report. Therefore, development within study area is not in conflict with any adopted habitat conservation plans.

Should the Upper SAR HCP be approved, future development within the study area would be required to comply with the plan implemented at the time of their entitlement, pursuant to Countywide Plan Policy NR-5.7. The Proposed Project would comply with state and federal regulations regarding protected species of animals and vegetation through the development review, entitlement, and environmental clearance processes. Implementation of Policy NR-5.7 would include compliance with Habitat Conservation Plans and/or Natural Community Conservation Plan. Therefore, impacts would be less than significant.

No Impacts

The study area is not located within any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. As such, implementation of the project would not conflict with any adopted habitat conservation plans.

4.2.5 Mitigation Measures

Subject to the USFWS Permit as to BIO-1 and BIO-2, the following provides recommended measures intended to minimize or avoid impacts to biological resources:

BIO-1 **Burrowing Owl**: Prior to commencement of construction activities (i.e., demolition, earthwork, clearing, and grubbing), focused surveys shall be conducted by a qualified biologist during the breeding season, as defined by the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012).

Take avoidance surveys for BUOW shall be conducted within the study area. The take avoidance surveys shall be conducted within 14 days and repeated 24 hours prior to construction activities (i.e., demolition, earthwork, clearing, and grubbing) to determine presence of BUOW. If take avoidance surveys are negative and BUOW is confirmed absent, then ground-disturbing activities shall be allowed to commence, and no further mitigation would be required.

If BUOW is observed during focused surveys and/or take avoidance surveys within any portion of the study area, active burrows shall be avoided by the project in accordance with the CDFW's Staff Report (CDFG 2012). CDFW shall be immediately informed of any BUOW observations. A BUOW Protection and Relocation Plan (plan) shall be prepared by a qualified biologist, which must be sent for approval by CDFW prior to initiating ground disturbance. The plan shall detail avoidance measures that shall be implemented during construction and passive or active relocation methodology. Relocation shall only occur outside of the nesting season (September 1 through January 31).

BIO-2 **Nesting Birds:** To the extent possible, construction activities (i.e., earthwork, clearing, and grubbing) shall occur outside of the general bird nesting season for migratory birds, which is February 15 through August 31 for songbirds and January 15 to August 31 for raptors.

If construction activities (i.e., earthwork, clearing, and grubbing) must occur during the general bird nesting season for migratory birds and raptors (January 15 and August 31), a qualified biologist shall be retained to perform a pre-construction survey of potential nesting habitat to confirm the absence of active nests belonging to migratory birds and raptors afforded protection under the MBTA and CFG Code. The pre-construction survey shall be performed no more than seven days prior to the commencement of construction activities. The results of the pre-construction survey shall be documented by the qualified biologist. If construction is inactive for more than seven days during the breeding season, an additional survey shall be conducted.

If the qualified biologist determines that no active migratory bird or raptor nests occur, the activities shall be allowed to proceed without any further requirements. If the qualified biologist determines that an active migratory bird or raptor nest is present, no impacts within 300 feet (500 feet for raptors) of the active nest shall occur until the young have fledged the nest and the nest is confirmed to no longer be active, as determined by the qualified biologist. The biological monitor may modify

the buffer or propose other recommendations in order to avoid indirect impacts to nesting birds.

BIO-3 **Delhi Sands Flower-loving Fly:** Focused surveys shall be conducted for DSFLF pursuant to current USFWS protocols by a qualified biologist with a DSFLF USFWS recovery permit. If the surveys are negative, no further assessments, focused surveys, or mitigation shall be required construction activities shall be allowed to proceed without any further requirements.

If focused surveys are positive, mitigation measures would be required and would be subject to review and approval by USFWS either through Section 7 of the ESA (if there is a federal action) or under Section 10(A)(1)(B) of the ESA (in the absence of a federal action). Measures may include, but are not necessarily limited to, the following:

- Avoidance of construction activities within DSFLF occupied habitat during the adult flight season, which occurs between July 1 and September 20.
- Installation of construction and post-construction fencing and signage around any avoided occupied habitat.
- Attendance of project personnel to a training program presented by a qualified biologist prior to construction activities.
- Monitoring by a qualified biologist during construction.
- Dust control adjacent to any avoided areas during construction.
- Mitigation for permanent loss of occupied DSFLF habitat.

4.3 Greenhouse Gases

This analysis examines greenhouse gas (GHG) emissions that result from temporary construction activity and temporary operational changes associated with the Proposed Project during construction years 2023, 2024 and 2025. There are no GHG emission impacts associated with the Proposed Project beyond the construction period.

4.3.1 Methodology

Direct Construction GHG Emissions

Direct construction-related GHG emissions are typically associated with the exhaust from heavy-duty equipment (e.g., backhoes, graders, etc.), delivery trucks (e.g., dump trucks, construction materials delivery), and construction worker vehicles traveling to and from the construction site. Construction emissions are temporary in nature and generally confined to the construction site and roads used to enter and exit the construction site. Emissions of GHGs (i.e., CO_2, CH_4, N_20, and CO_{2e}) were

evaluated for the Proposed Project's three-year construction period, 2023, 2024 and 2025.

For this analysis, ACEIT was also used to derive the hours of operation for off-road construction equipment and VMT for on-road trucks and employee vehicles. Construction activities are based upon conceptual phasing plans, including the known areas (square feet) associated with the various project types (i.e., proposed pavement, pavement demolition, and building area). The construction activity levels developed in the ACEIT model were then used to model GHG emissions in California Emissions Estimator Model® (CalEEMod) version 2020.4.0.[5] See *Appendix D, Air Quality and GHG Emissions Analysis, Attachment 1 – Construction Emissions,* for more details.[6]

Indirect Construction GHG Emissions

Indirect construction-related GHG emissions are associated with temporary, operational changes on the airfield necessary during Proposed Project construction. More specifically, as explained in *Chapter 2.0*, *Project Description,* the Proposed Project would require temporary runway closure periods in 2023, 2024 and 2025 to allow for runway rehabilitation and taxiway improvements. As a result, aircraft taxiing times will be impacted during the proposed runway closure periods. In order to determine the impact these temporary changes in aircraft taxiing times would have on operational GHG emissions, GHG emissions from aircraft taxiing activities were modeled using FAA's AEDT version 3d. Operational emissions from engine maintenance run-up, Ground Support Equipment (GSE), and Auxiliary Power Unit (APU) usage were also modeled in AEDT, but are not discussed further herein as they would not be impacted from the temporary runway closures.

The GHG emission inventories were prepared for CO_2 using the same methodology outlined in *Section 4.1.1* for Air Quality Indirect Construction Emissions. See *Appendix D, Air Quality and GHG Emissions Analysis, Attachment 2 – Operation Emissions,* for more details.

Operational GHG Emissions

The Proposed Project will have no impact on operations at the Airport beyond the three-year construction period. The Proposed Project would not increase Airport capacity and would not result in increases in local traffic as described in *Section 3.9, Transportation/Traffic*. Therefore, GHG emissions associated with overall aircraft activity levels and passenger traffic arriving and departing ONT were not analyzed.

4.3.2 Baseline Conditions

The existing aircraft taxiing GHG emissions were determined using the hybrid base year (2019/2020) approach explained in *Section 3.2, Baseline Conditions*, which normalizes the temporary impact of the COVID-19 pandemic in order to correctly represent typical operation levels at ONT. For this reason, existing aircraft taxiing GHG emissions are referred to as the Baseline Conditions.

As detailed in *Chapter 3.0 Environmental Setting*, operational GHG emissions were modeled in AEDT for GHG emissions from aircraft activities for the Baseline Conditions. Aircraft taxiing during construction is the only aspect of the Proposed Project that impacts GHG emissions. Therefore, these emissions represent the Baseline Conditions aircraft taxiing GHG emissions at ONT prior to the Proposed Project being implemented. **Table 4-10** summarizes the Baseline Conditions aircraft taxiing GHG emissions.

Table 4-10: Baseline Conditions Aircraft Taxiing GHG Emissions

Alternative	Total CO_2e (MT/year)
Baseline Conditions	49,520

Note: MT = metric ton; CO_2e = carbon dioxide equivalent

The product of each GHG emission and its Global Warming Potential (GWP) is known as "carbon dioxide equivalent" (CO_2e).

Source: AEDT and HNTB analysis, 2022.

4.3.3 Thresholds of Significance

GHG thresholds of significance are based on Appendix G of the CEQA Guidelines. The Proposed Project would result in significant impacts related to GHG if it would:

Impact 4.3-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Impact 4.3-2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

CEQA allows lead agencies to develop and publish thresholds of significance, or consider thresholds adopted or recommended by other public agencies. Neither USEPA nor CARB nor SCAQMD have adopted project-level numeric thresholds of significance for GHG emissions.

The analysis of construction GHG emission impacts includes both direct impacts associated with Proposed Project construction activity, and indirect impacts associated with a change in aircraft taxiing patterns due to temporary construction-related runway closures in 2023, 2024 and 2025. The direct and indirect GHG construction emissions are summed to determine total GHG construction emissions in 2023, 2024 and 2025.

In order to identify if the Proposed Project would "generate GHGs, either directly or indirectly, that may have a significant impact on the environment" (Impact 4.3-1), this analysis looks at whether the Proposed Project would result in a net increase in GHG emissions. This approach reflects the fact that neither USEPA nor CARB nor SCAQMD have established a numeric threshold for determining the significance of GHG emissions. It is noted that SCAQMD has established a general GHG threshold of 10,000 MT/yr CO_2eq for industrial facilities. To be conservative, however, that

numeric threshold is not applied here (based on the nature of the Proposed Project) and the impact determination is based on whether the Proposed Project results in a net increase in GHG emissions.

4.3.4 Impacts

Construction Impacts

The tables presented below summarize the direct, indirect and total construction GHG emissions. The determination of significance was based on the Proposed Project's total construction GHG emissions.

Direct Construction GHG Emissions

A construction GHG emissions inventory was prepared for the Proposed Project for the construction years 2023, 2024 and 2025. Construction GHG emissions typically include emissions from on-road vehicles (vehicles miles traveled) and off-road equipment (equipment hours). **Table 4-11** presents the Proposed Project's direct construction GHG emissions in units of metric tons/year.[7]

Table 4-11: Proposed Project Direct Construction GHG Emissions (MT/Year)

Year	CO_2	CH_4	N_2O	CO_2e
2023	2,869	0.6	0.1	**2,918**
2024	4,086	0.8	0.1	**4,147**
2025	1,307	0.3	0.04	**1,327**

Sources: CalEEMod and HNTB Analysis, 2022.

Indirect Construction GHG Emissions

The Proposed Project would require temporary runway closures in 2023, 2024 and 2025 during construction, as detailed in *Section 4.1.4*. While operational levels would be identical in each future year whether or not the Proposed Project is implemented, due to these necessary runway and taxiway closures, aircraft taxiing times would vary. More specifically, the Proposed Project would reduce the duration of taxiing times in construction years 2023 and 2024 as compared to the Baseline Conditions. T The most prevalent reason for reduced taxi times in 2023 and 2024 is due to the fact that, without the requirement to operate with Contra Flow, aircraft that would have necessarily traveled to Runways 8L and 8R to depart will be allowed to depart on either Runway 26L or 26R, depending on the runway that is open and this will reduce taxi distance for many operations. While runway closures proposed in 2025 would also impact taxiing times, additional taxiing delay associated with background growth in operations would result in 2025 aircraft taxiing times being slightly greater than Baseline Conditions

Table 4-12 provides a comparison of the total aircraft taxiing GHG emissions with implementation of the Proposed Project in 2023, 2024 and 2025, as compared to the Baseline Conditions aircraft taxiing GHG emissions. The incremental differences represent the indirect Proposed Project related GHG construction emissions associated with temporary runway closures.

Table 4-12: Proposed Project Aircraft Taxiing Indirect Construction GHG Emissions from Temporary Runway Closures Compared to Baseline Conditions

Alternative	CO_2e (MT/year)
Baseline Conditions	49,520
2023 Proposed Project	46,919
2023 Incremental Changes	***-2,601***
No Project	49,520
2024 Proposed Project	48,958
2024 Incremental Changes	***-562***
No Project	49,520
2024 Proposed Project	53,944
2024 Incremental Changes	***4,424***

Source: AEDT and HNTB analysis, 2022.

Total Construction GHG Emissions

As presented in **Table 4-13**, when taking into consideration the temporary increases in GHG emissions from construction equipment and the temporary decreases in aircraft taxiing GHG emissions in 2023 and 2024, and temporary increases in aircraft taxiing GHG emissions in 2025 associated with the temporary runway closures through the construction years, the total construction GHG emissions are greater than zero. Therefore, the Proposed Project would result in a ***significant, unavoidable temporary impact*** from construction GHG emissions.

Table 4-13: Total Proposed Project Construction GHG Emissions Compared to Baseline Conditions

Year	Alternative	CO_2e (MT/year)
2023	Direct - Construction	2,918
	Indirect – Aircraft Taxiing	-2,601
	Total	**317**
2024	Direct - Construction	4,147
	Indirect – Aircraft Taxiing	-562
	Total	**3,585**
2025	Direct - Construction	1,327
	Indirect – Aircraft Taxiing	4,424
	Total	**5,751**
Total Project GHG Emissions		***9,653***

Source: AEDT and HNTB analysis, 2022.

Additional Analysis For Informational Purposes

As noted above, CEQA requires that a proposed project be compared to baseline conditions for the purpose of making a significance determination. For the Proposed Project, the incremental aircraft taxiing GHG emissions would be influenced by factors that are not exclusively attributable to the Project itself, specifically from background operational growth at ONT that is projected to occur with or without the Proposed Project, as well as lower emission factors for aircraft from improved engine technology. In order to remove the influence of background growth and differences in emission factors, this analysis also compares aircraft taxiing GHG emissions of the Proposed Project in a given year with the aircraft taxiing GHG emissions from the No Project Alternative in the same year. The No Project Alternative, in this context, acts as a modified baseline under CEQA Guidelines Section 15125(a)(1), as it allows for a comparison of the Proposed Project to the airfield conditions expected at the time of its implementation (calendar years 2023, 2024 and 2025). This comparison is made for informational purposes only.

Table 4-14 provides a comparison of the total aircraft taxiing GHG emissions with and without implementation of the Proposed Project in 2023, 2024 and 2025, as well as the incremental differences between the two conditions each year. These incremental differences represent the indirect Proposed Project-related construction GHG emissions associated with temporary runway closures, removing background growth and differences in emission factors. As indicated, the temporary changes in aircraft taxiing during construction of the Proposed Project result in decreases of GHG emissions in all years when compared to the No Project Alternative. This is a result of the suspension of Contra Flow, which improves departure taxi efficiency.

As presented in **Table 4-15**, when taking into consideration the emission decreases associated with the temporary runway closures through the construction years, there is a net decrease in total construction GHG emissions when comparing the Proposed Project to the No Project Alternative. As the Proposed Project itself does not induce operational growth, this comparison provides a more realistic look at the impacts of the Proposed Project on aircraft taxiing GHG emissions.

Table 4-14: Proposed Project Aircraft Taxiing Indirect Construction GHG Emissions from Temporary Runway Closures Compared to the No Project Alternative

Year	Alternative	CO_2e (MT/year)
2023	No Project	52,700
	Proposed Project	46,919
	Project Related	**-5,781**
2024	No Project	54,849
	Proposed Project	48,958
	***Project* Related**	**-5,891**
2025	No Project	57,217
	Proposed Project	53,944
	Project Related	**-3,273**

Source: AEDT and HNTB analysis, 2022.

Table 4-15: Total Proposed Project Construction GHG Emissions Compared to the No Project Alternative

Year	Alternative	CO_2e (MT/year)
2023	Direct - Construction	2,918
	Indirect – Aircraft Taxiing	-5,781
	Total	**-2,863**
2024	Direct - Construction	4,147
	Indirect – Aircraft Taxiing	-5,891
	Total	**-1,744**
2025	Direct - Construction	1,327
	Indirect – Aircraft Taxiing	-3,273
	Total	**-1,946**
Total Project GHG Emissions		***-6,553***

Source: AEDT and HNTB analysis, 2022.

Impact 4.3-1

Summary Conclusion for Impact 4.3-1: Implementation of the Proposed Project would result in total net positive construction-related GHG emissions in years 2023, 2024 and 2025. Therefore, the Proposed Project would result in *significant, unavoidable temporary impact* due to construction-related GHG emissions.

It should be noted that the Proposed Project incremental aircraft taxiing GHG emissions would be influenced by factors that are not attributable to the Project itself, specifically from background operational growth at ONT that is projected to occur with or without the Proposed Project, as well as lower emission factors for aircraft from improved engine technology. In order to remove the influence of background

growth and differences in emission factors, a comparison of aircraft taxiing GHG emission of the Proposed Project in a given year with the aircraft taxiing GHG emissions from the No Project Alternative in the same year was completed (see Table 4-15). Under this comparison, the Proposed Project results in net decreases in total construction GHG emissions in all construction years. This comparison is made for informational purposes only.

Impact 4.3-2

Summary Conclusion for Impact 4.3-2: The Proposed Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG. Therefore, it would be a *less than significant impact*.

Several local plans address GHGs and measures to reduce GHG emissions.

First, the 2014 City of Ontario Community Climate Action Plan (CAP) establishes community strategies to reduce GHG emissions consistent with CARB's statewide GHG reduction efforts. The CAP included a GHG inventory for 2008 and a forecasted inventory for 2020, analyzed GHG reduction measures for effectiveness and feasibility, and presented a list of measures for inclusion in the CAP. The CAP includes a GHG emission reduction target of 30% below business-as-usual 2020 levels.[8]

Second, the 2016 SCAQMD AQMP is based upon the adopted general plans (and resulting vehicular trip generation) from the local jurisdictions that were in place when the AQMP was developed. Proposed land uses that are consistent with such adopted general plans are considered consistent with the AQMP and will not conflict with or obstruct implementation of the applicable air quality plan. The 2016 AQMP includes the strategies and measures needed to meet the NAAQS and CAAQS. Many of these measures and programs also serve to reduce GHG emissions.

Third, the 2019 ONT AQIP includes measures to minimize and reduce emissions from mobile source activities at the Airport. As it relates to GHG emissions, the AQIP includes GSE and Fuel Truck Operation Policies (RM1 and RM2), which would likely result in a reduction of GHG pollutants. [9]

Fourth, the 2021 San Bernardino County Regional Greenhouse Gas Reduction Plan includes an inventory of GHG emissions and evaluation of reduction measures to be adopted by 25 Partnership Cities within the County.[10] The reduction measures set forth in the Plan are being and should be considered for adoption by agencies in the region that are developing jurisdiction-specific climate action plans. The Regional GHG Reduction Plan includes reduction measures evaluated for the City of Ontario. Measures which could assist in reducing GHG emissions expected from the Proposed Project, if adopted by the relevant agencies, include State fuel efficiency measures, electric-powered construction equipment, and idling ordinances.

The Proposed Project results in significant, unavoidable temporary impacts to GHG emissions during the construction period, based on its incremental increase in GHG emissions. However, there are no specific GHG policies mandated in the above-referenced plans, as it relates to construction at ONT. Further, it is noted that

construction equipment and aircraft would be in compliance with applicable fuel efficiency and emission standards.

Based on the absence of specific construction-related policies for the reduction of GHG emissions in the referenced plans, and compliance with other existing standards for construction equipment and aircraft, the Proposed Project itself would not conflict with any applicable local plans, policies or regulations related to the reduction of GHG emissions.

Additionally, as summarized above, when compared to the Baseline Conditions, the Proposed Project construction GHG emissions would result in a significant impact due to construction activity and aircraft taxiing as compared to the Baseline Conditions. However, this comparison is influenced by factors that are not attributable to the Proposed Project itself, specifically from background operational growth at ONT that is projected to occur with or without the Proposed Project, as well as lower emission factors for aircraft from improved engine technology. In order to remove the influence of these factors, a comparison is made of aircraft taxiing GHG emissions of the Proposed Project in a given year with the aircraft taxiing GHG emissions from the No Project Alternative in the same year. In this comparison, total construction GHG emissions decrease in all construction years.

4.3.5 Mitigation Measures

As discussed above, the Proposed Project would result in a significant and unavoidable temporary impact associated with the release of additional GHG emissions during the three-year construction period (Impact 4.3-1). At this point in time, there are no feasible mitigation measures available to further reduce the Proposed Project's direct construction GHG emissions.

As discussed under Impact 4.3-2, there are several local plans which address GHGs and measures to reduce GHG emissions. While there are no feasible measures that can be assumed and quantified in this analysis, regional and local measures, if implemented, should serve to further reduce overall GHG emissions.

It is worth noting that the GHG analysis assumes a conservative 40-mile roundtrip for concrete delivery for the Proposed Project construction. However, as part of the Proposed Project, a concrete batch plant is proposed to be located on Airport property in an industrial area along E. Avion Street, which would likely reduce the total VMT assumed for concrete delivery trucks but would still include delivery of raw materials (i.e., Portland cement and aggregate) to mix the concrete on-site. A closer look at the CalEEMod output indicates CO_2 emissions specific to on-road hauling accounts for, on average, 20% of the total direct GHG construction emissions in each construction year. Utilizing a concrete batch plant on-site would likely serve to reduce total on-road hauling VMT, and thus reduce total GHG emissions, but the Proposed Project would still result in a net increase in total GHG emissions during the construction period.

As for the Proposed Project's other source of GHG emissions – indirect construction emissions from the taxiing of aircraft on the airfield, it is well established that the

regulation of aircraft tailpipe emissions is federally preempted and cannot be addressed at the local level.

4.4 Cultural Resources

This section provides an analysis of potential impacts to cultural resources with respect to local, state, and federal policy within the Cultural Resources project area. Existing cultural resources on and in the immediate vicinity of the project area are discussed in Chapter 3.0, Environmental Setting.

4.4.1 Methodology

The study included a review of site records and previous studies conducted within half-mile of the project area, accessed through the SCCIC; a pedestrian field survey conducted with a Native American representative from the Gabrieleño Tongva Indians of California to confirm the presence or absence of tribal, archaeological, and built environment resources (cultural resources) within the project area; and coordination between OIAA, its tribal resources consultant, and the Gabrieleño Band of Mission Indians – Kizh Nation (Kizh Nation), to facilitate tribal consultation.

Records Search

A confidential search of the CHRIS records at the SCCIC, located on the campus of California State University, Fullerton, on August 12, 2021. The SCCIC maintains records of previously documented cultural resources and technical studies; it also maintains copies of the OHP's portion of the statewide Historical Resources Inventory. The search included any previously recorded cultural resources within the project area and surrounding 0.5-mile area. The purpose of the CHRIS records search is to identify whether any cultural resources have been documented in the project area and assess the potential for undocumented resources to be present by comparison to adjacent areas. Due to Covid-19 protocols, the SCCIC was only able to provide data that is already digital, meaning that additional studies and resources may be present within the search radius. The results of the SCCIC record search were received on November 4, 2021.

Previous Surveys

As discussed in *Section 3.7,* the records search results identified 14 previous cultural resource studies within the record search limits, two of which overlap with the project area, however these two studies did not identify any cultural resources within the project area. *Appendix F, Cultural Resources,* details the studies.

Previously Recorded Sites

The records search results identified 20 previously recorded cultural resources within a 0.5-mile radius of the project area; none of the resources are located directly within the project area. Of the 20 resources identified in the vicinity, 15 are historic-period built-environment resources, three are historic-period archaeological sites, and two are historic districts. The record search did not identify any prehistoric sites. As only digitized resources were provided, there is the possibility of additional resources being present within a half-mile of the project area.

Fieldwork

A qualified archaeologist conducted an intensive pedestrian survey of the project area along with a Native American representative from the Gabrieleño Tongva Indians of California. The pedestrian survey consisted of a systematic surface inspection of all accessible project areas with transects walked at 15-meter intervals or less to ensure that any surface-exposed artifacts and cultural resources could be identified. The ground surface was inspected for the presence of prehistoric artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools); historic artifacts (e.g., metal, glass, ceramics); sediment discoloration that might indicate the presence of a cultural midden; roads and trails; and depressions and other features that might indicate the former presence of structures or buildings (e.g., post holes, foundations).

In inaccessible areas that were unsafe for a pedestrian survey due to airport activities, a reconnaissance-level survey was undertaken. The reconnaissance survey consisted of inspecting the area from within a vehicle and at a safe distance, looking for indications that cultural resources were present. The project area was photographed using a digital camera, and property boundaries were identified with a handheld global positioning system unit.

No cultural resources were identified during the survey. Ground visibility was excellent (76 to 100 percent) across the surveyed area. The project area is primarily level open space, though there are some buildings and a parking lot. Modern refuse, comprised of plastic fragments, was noted across the project area. Soil was consistent across the surveyed area and was imported fill used to cap the project area as part of the historic construction of the airport and associated structure.

4.4.2 Existing Conditions

Refer to *Section 3.7.2* for discussion of the Existing Conditions for cultural resources.

4.4.3 Thresholds of Significance

For the purpose of determining the significance of the project's impacts on cultural resources, a significant impact would occur if the project would:

1) Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5;

2) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5; or

3) Disturb any human remains, including those interred outside of dedicated cemeteries.

4.4.4 Impacts

A records search was requested through the SCCIC, a review of the Sacred Lands File was completed, archival research was completed, and a pedestrian field survey of the project area was conducted. The SCCIC record search did not identify any

cultural resources within the project area. Furthermore, the Sacred Lands File search, conducted through the NAHC, failed to identify any tribal cultural resources within the project area, thus no impacts to Cultural Resources are anticipated related to the Proposed Project. Refer to *Section 4.7, Tribal Cultural Resources* for discussion of potential impacts and proposed mitigation measures related to Tribal Cultural Resources.

4.4.5 Mitigation Measures

No mitigation is proposed as there are no anticipated impacts to cultural resources as a result of the Proposed Project.

4.5 Noise

This section provides an analysis of potential impacts due to noise with respect to CEQA Guidelines. Runway use and flight patterns would be temporarily impacted during runway closures due to the lack of ability to operate in Contra Flow conditions, as discussed in *Chapter 2.0, Project Description.* Therefore, noise impacts during construction in 2023, 2024 and 2025 were analyzed. There are no noise impacts associated with the Proposed Project beyond the construction period.

4.5.1 Methodology

Noise impacts were modeled using AEDT version 3d and were represented by the Community Noise Equivalent Level (CNEL). Fleet mixes for the hybrid existing condition (2019/2020), 2023, 2024, and 2025 were developed for the purposes of noise analysis which included information on aircraft types, operation types (arrival or departure), and departure flight distance (stage length). In addition, the CNEL metric takes into consideration the time of day of aircraft operations. In the noise analysis, daytime is defined as 7:00 AM to 6:59 PM, evening is defined as 7:00 PM to 9:59 PM, and nighttime is defined as 10:00 PM to 6:59 AM. The 5-dB and 10-dB penalties during evening and nighttime hours are intended to account for the added intrusiveness of aircraft noise during time periods when ambient noise due to vehicle traffic and other sources is typically less than during the daytime, and when people are more likely to be resting. There is no penalty for daytime operations (7 AM – 7 PM). Therefore, the fleet mixes included operation breakdowns by day, evening, and nighttime periods.

The engine maintenance run-up operations represent another source of noise impacts. In this study, the Baseline Conditions run-up operations were based on the run-up logs at the Airport. For future scenarios, it was assumed the number of run-up operations would increase at the same rate of the operation increase for a particular aircraft. The locations, power settings, and orientations were assumed to be the same as the existing condition.

The Baseline Conditions runway uses discussed in *Chapter 3.0, Environmental Setting*, were based on the ANOMS data. For review of future alternatives, simulation results were used to adjust runway uses. During the runway rehabilitation, Contra Flow would not be implemented.

To determine projected noise levels experienced on the ground, it is necessary to determine not only the frequency of aircraft operations, but also the altitude and location in which they fly. Flight routes to and from an airport (tracks) are generally a function of the geometry of the airport's runways and the surrounding airspace structure near the airfield. To develop representative tracks and calculate track use, eight weeks of representative radar data were selected. Track use percentages were also calculated for the noise analysis.

The Proposed Project occurs during years 2023, 2024, and 2025, encompassing the entire proposed construction periods. The Proposed Project assumes the following runway closure and construction phasing:

- 2023 – maximum nine months of runway closure
  - Runway 8L-26R will be closed for four months (from mid-January to mid-May)
  - Runway 8R-26L will be closed for five months (from June to October)
- 2024 – maximum nine months of runway closure
  - Runway 8R-26L will be closed for nine months (from mid-January to mid-October)
- 2025 – maximum five months of runway closure
  - Runway 8L-26R will be closed for five months (from mid-January to mid-June)

4.5.2 Baseline Conditions

The existing condition noise impacts were determined using the hybrid base year (2019/2020) approach explained in *Section 3.2.2, Baseline Conditions*, which normalizes the temporary impact of the COVID-19 pandemic in order to correctly represent typical operation levels at ONT. For this reason, existing conditions noise is referred to as the Baseline Conditions.

Noise exposure was modeled in AEDT for aircraft activities, engine maintenance run-up, GSE, and APU for the Baseline Conditions. Baseline Conditions noise levels are discussed in *Section 3.8.3, Noise, Baseline Conditions* and illustrated on Figure 3-5. Details on the development of the noise contours is included in *Appendix H, Noise*.

4.5.3 Thresholds of Significance

According to Appendix G of the State CEQA guidance, the noise threshold of significance is established as follows:

Impact 4.5-1	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
Impact 4.5-2	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels

Impact 4.5-3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

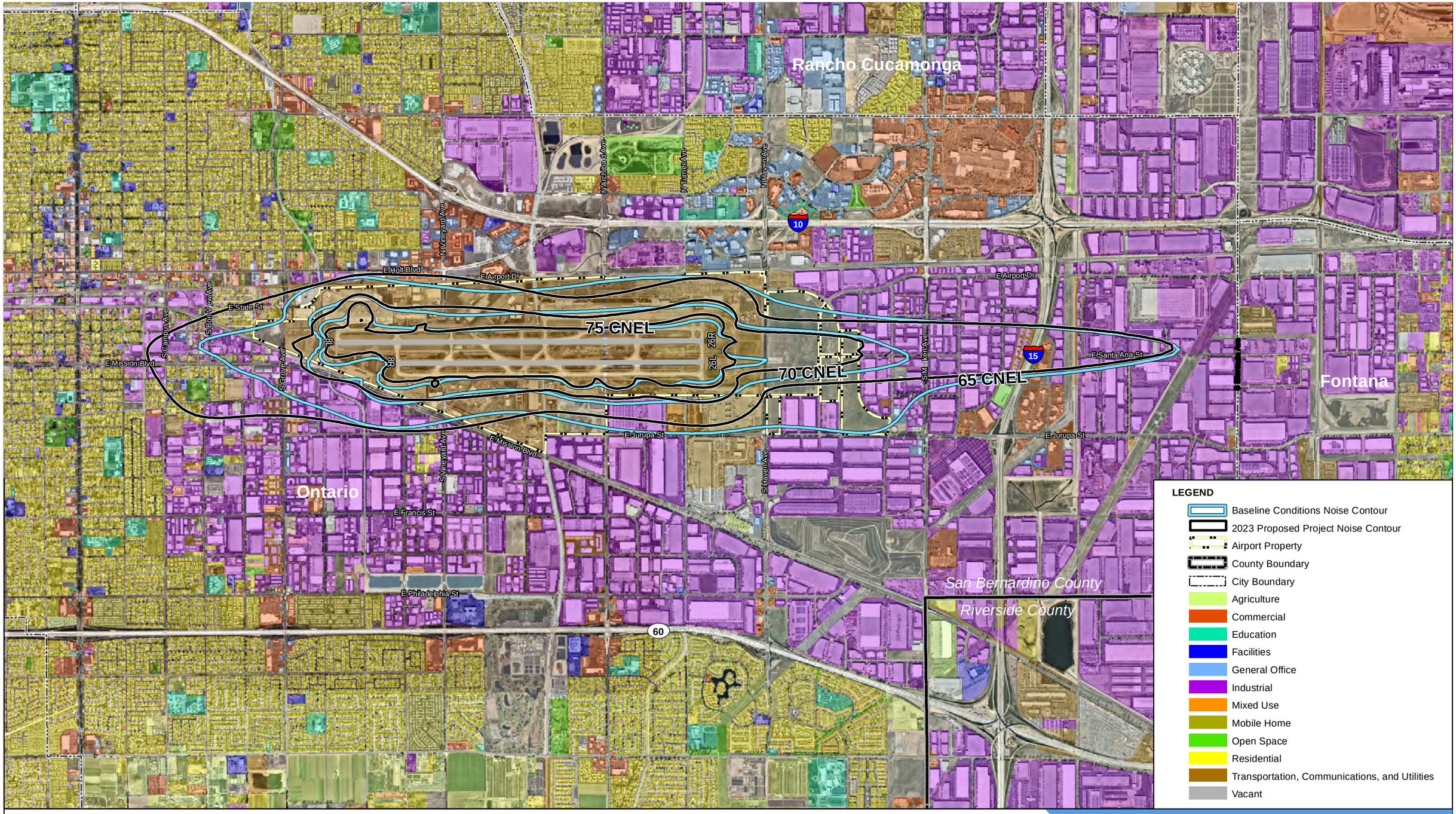
4.5.4 Impacts

Construction Impacts

Runway use and flight patterns would be temporarily impacted during construction in 2023, 2024 and 2025 due to runway closures, as detailed in *Section 4.5.1*. During these runway closure periods, all operations would occur on a single open runway. Due to the two runways being parallel and closely spaced, temporarily operating on a single runway would not significantly alter flight patterns. The only change in flight patterns during temporary runway closure periods in 2023, 2024 and 2025, may result from FAA Air Traffic Control (ATC) imposed restrictions on the use of Contra Flow operations during nighttime (10:00 PM to 7:00 AM), as defined in *Section 2.2.3, Airfield Operations*. Since Contra Flow would not be used by ATC when operating on a single open runway, the Proposed Project would result in temporary increases in noise exposure to the west of the Airport during the nighttime hours during these construction periods.

As required by CEQA, the noise levels associated with the Proposed Project in 2023, 2024 and 2025 were compared to the noise levels associated with the Baseline Conditions. **Figures 4-2, 4-3, and 4-4** show the expected noise exposure contours under the Proposed Project in 2023, 2024, and 2025 in comparison with the Baseline Conditions.

The estimated land area (acres) within CNEL contours for the Baseline Conditions and Proposed Project in 2023, 2024 and 2025 along with the estimated number of residential dwelling units, schools, churches, residential population and dwelling units located within the contours are provided in Table 3-13 (*Section 3.8.3, Noise, Baseline Conditions*) and **Tables 4-16, 4-17** and **4-18**, respectively.



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

N

HNTB

Figure 4-2

2023 Proposed Project vs. Baseline Conditions Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis

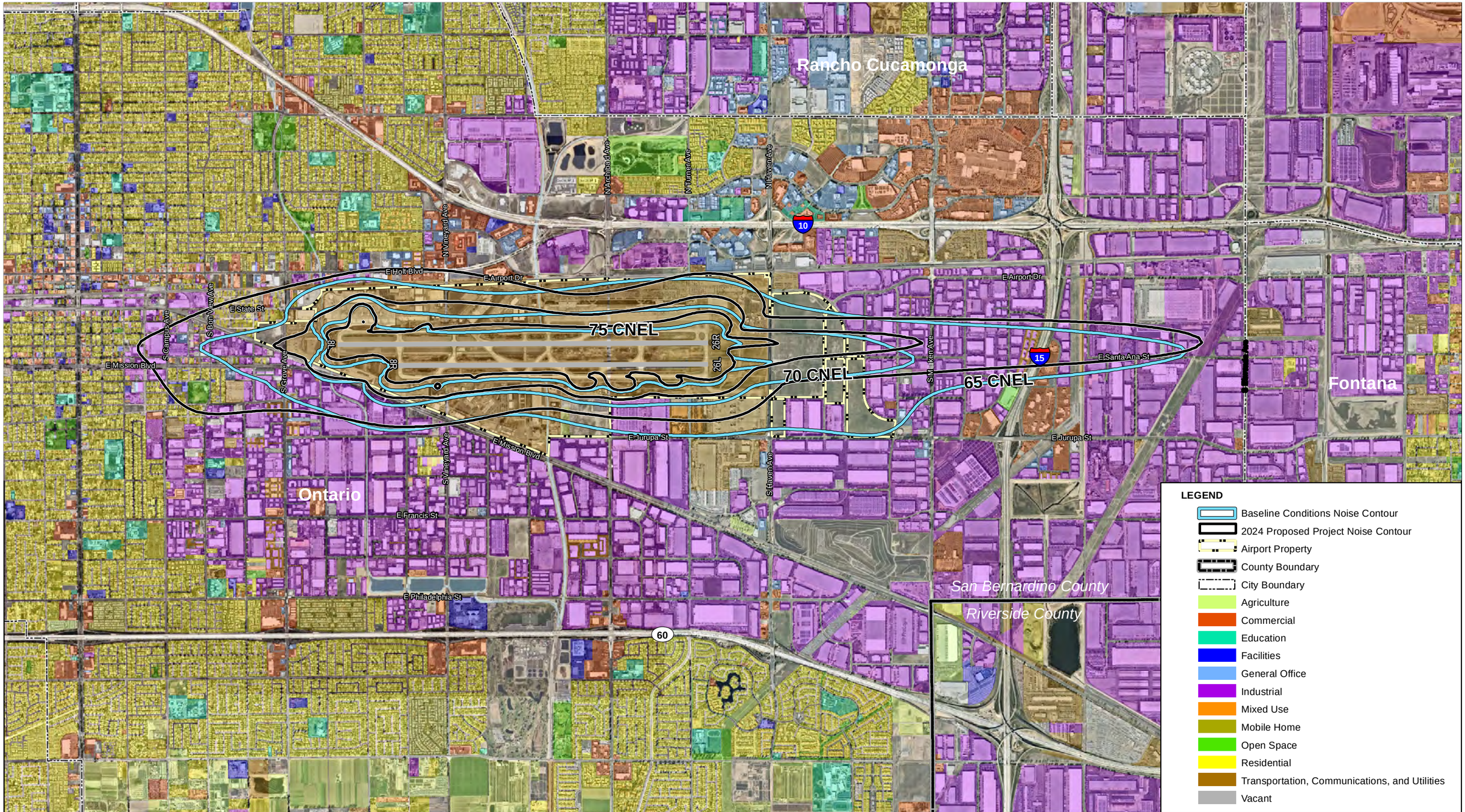


Figure 4-3

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

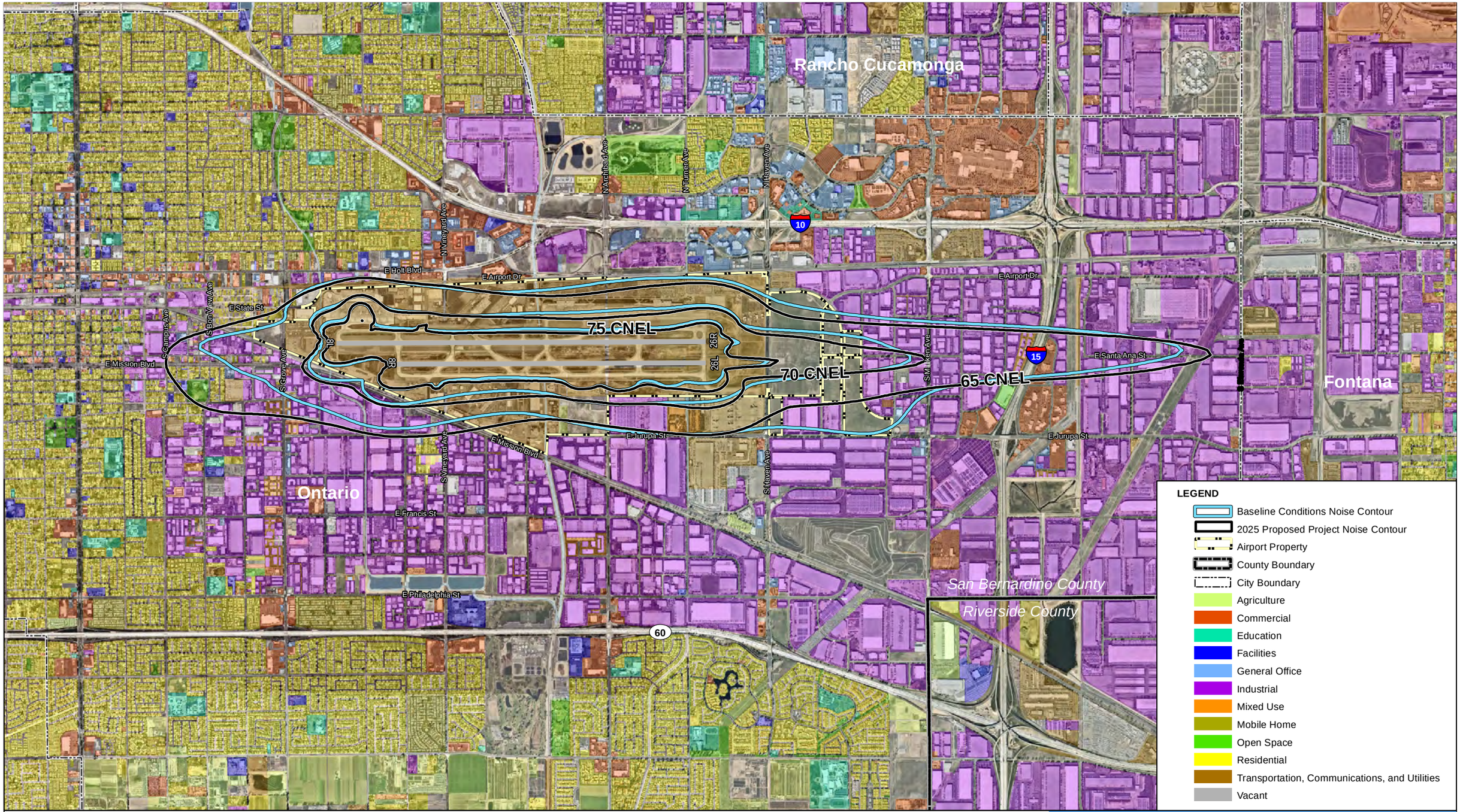
0 750 1,500 3,000 Feet

N

HNTB

2024 Proposed Project vs Baseline Conditions Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

N

HNTB

Figure 4-4

2025 Proposed Project vs. Baseline Conditions Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis

Table 4-16: 2023 Proposed Project Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	TOTAL
Residential	49.8	0	0	**49.8**
Education	0	0	0	**0.0**
Mixed Use	34.2	0.2	0	**34.4**
Mobile Home	0	0	0	**0**
Open Space	11.8	0	0	**11.8**
Agriculture	1.4	0	0	**1.4**
Commercial	19.6	0	0	**19.6**
Facilities	3.6	0	0	**3.6**
General Office	7.4	0	0	**7.4**
Industrial	516.0	6.1	0	**522.1**
Transportation, Communications, and Utilities	592.5	429.8	522.9	**1,545.2**
Vacant	194.1	82.4	0	**276.5**
TOTAL	1,430.4	518.5	522.9	**2,471.8**
Noise-Sensitive Land Uses (#)				
Hospitals	0	0	0	**0**
Schools	0	0	0	**0**
Religious (e.g., Church)	0	0	0	**0**
Residential (dwelling units)	225	0	0	**225**
Population	1,014	0	0	**1,014**

Note:
Totals may not sum due to rounding.
(1) Of the 225 dwelling units within the 65 dB contour, under ONT's Quiet Home Program:
- 147 sound insulated (~667 population)
- 27 eligible for sound insulation (~116 population)
- 34 eligible for voluntary acquisition (~161 population)
- 17 not eligible for insulation or acquisition (~70 population)
(2) Of the 225 dwelling units with the 65 CNEL contour, 213 are single family and 12 are multi-family (six duplexes). Google earth was utilized to confirm housing counts and types.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

Table 4-17: 2024 Proposed Project Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	Total
Residential	52.0	0	0	**52.0**
Education	0	0	0	**0**
Mixed Use	25.8	0	0	**25.8**
Mobile Home	0	0	0	**0**
Open Space	11.8	0	0	**11.8**
Agriculture	1.1	0	0	**1.1**
Commercial	23.6	0	0	**23.6**
Facilities	3.4	0	0	**3.4**
General Office	6.9	0	0	**6.9**
Industrial	503.0	18.9	0	**521.9**
Transportation, Communications, and Utilities	598.7	441.8	526.1	**1,566.6**
Vacant	218.2	63.6	0.3	**282.2**
TOTAL	1,444.5	524.4	526.4	**2,495.3**
Noise-Sensitive Land Uses (#)				
Hospitals	0	0	0	**0**
Schools	0	0	0	**0**
Religious (e.g., Church)	0	0	0	**0**
Residential (dwelling units)	215	0	0	**215**
Population	948	0	0	**948**

Note:
Totals may not sum due to rounding.
(1) Of the 215 dwelling units within the 65 dB contour, under ONT's Quiet Home Program:
- 128 sound insulated (~566 population)
- 26 eligible for sound insulation (~111 population)
- 44 eligible for voluntary acquisition (~202 population)
- 17 not eligible for insulation or acquisition (~70 population)
(2) Of the 215 dwelling units with the 65 dB contour, 203 are single family and 12 are multi-family (six duplexes). Google earth was utilized to confirm housing counts and types.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

Table 4-18: 2025 Proposed Project Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	TOTAL
Residential	31.6	0	0	**31.6**
Education	0	0	0	**0**
Mixed Use	38.2	1.5	0	**39.7**
Mobile Home	0	0	0	**0**
Open Space	11.3	0	0	**11.3**
Agriculture	3.0	0	0	**3.0**
Commercial	16.0	0	0	**16.0**
Facilities	2.6	0	0	**2.6**
General Office	6.0	0	0	**6.0**
Industrial	529.3	46.2	0	**575.4**
Transportation, Communications, and Utilities	616.2	390.8	546.0	**1,552.9**
Vacant	212.5	95.8	0.8	**309.1**
TOTAL	1,466.6	534.3	546.8	**2,547.7**
Noise-Sensitive Land Uses (#)				
Hospitals	0	0	0	**0**
Schools	0	0	0	**0**
Religious (e.g., Church)	0	0	0	**0**
Residential (dwelling units)	165	0	0	**165**
Population	703	0	0	**703**

Note:
Totals may not sum due to rounding.
(1) Of the 165 dwelling units within the 65 dB contour, under ONT's Quiet Home Program:
- 111 sound insulated (~465 population)
- 19 eligible for sound insulation (~78 population)
- 18 eligible for voluntary acquisition (~90 population)
- 17 not eligible for insulation or acquisition (~70 population)
(2) Of the 165 dwelling units with the 65 dB contour, 161 are single family and four are multi-family (two duplexes). Google earth was utilized to confirm housing counts and types.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2021.

Table 4-19 summarizes the total aircraft operations, runway closure periods, and the change in 65 CNEL noise contour area between each Proposed Project year and the Baseline Conditions. The total acreage within the 65+ CNEL noise contours varies between -0.5 to +2.5% in the Proposed Project contours as compared to the Baseline Condition contour. The change in Proposed Project noise conditions compared to the Baseline Conditions is attributable to three factors:

1. Background growth in passenger activity and aircraft operations that is anticipated at ONT with or without the Proposed Project.

2. Changes in fleet mix projected in future years that can impact overall noise levels. Generally, operations from older and noisier aircraft are expected to decrease in future years.
3. Runway closure periods associated with the Proposed Project construction that results in ONT operating on a single-runway for periods of 2023, 2024 and 2025, as compared to the 2019/2020 Baseline Conditions where both runways are operational. The impact of these runway closure periods is detailed and illustrated under the following section, Construction Impacts.

Table 4-19: Noise Inputs and Outputs for Baseline Conditions and Proposed Project

Year	Alternative	Aircraft Operations[1]	Runway Closure	65 CNEL Noise Contour Area (acres)	Change in Area Compared to Baseline Conditions
2019/ 2020	Baseline Conditions	106,026	No closure	2,485	--
2023	Proposed Project	110,368	8L-26R – 4 months 8R-26L – 5 months	2,472	-0.5%
2024	Proposed Project	113,826	8R-26L – 9 months	2,497	+0.5%
2025	Proposed Project	117,625	8L-26R – 5 months	2,548	+2.5%

Note: (1) Aircraft operations are not influenced by the Proposed Project. Background growth in passenger activity and aircraft operations are anticipated at ONT with or without the Proposed Project.

Source: HNTB analysis, 2022.

Table 4-20 provides the population, number of housing units and acreage within the various CNEL ranges that would be affected in each Proposed Project year and provides a comparison of the Proposed Project in each year to the Baseline Conditions.

As indicated in Table 4-20, there would be a net increase in population and housing units within the 65-69 CNEL contour for all Proposed Project construction years, as compared to the Baseline Conditions. This increase in population/housing units is largely due to increased operations due to background growth and to the shift in the Proposed Project noise contours to the west of ONT, towards residential areas, as a result of the suspension of Contra Flow operations during proposed runway closures.

Table 4-20: Estimated Population, Housing Units and Acreage within Proposed Project and Baseline Conditions Aircraft Noise Contours

Alternative	Population				Housing Units				Acreage			
	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL
Baseline Conditions	59	0	0	59	13	0	0	13	1,390	545	551	2,485
2023 Conditions												
Proposed Project	1,014	0	0	1,014	225	0	0	225	1,430	519	523	2,472
Difference Between 2023 Proposed Project and Baseline Conditions	***+955***	***0***	***0***	***+955***	***+212***	***0***	***0***	***+212***	***+41***	***-26***	***-28***	***-14***
2024 Conditions												
Proposed Project	948	0	0	948	215	0	0	215	1,444	524	526	2,495
Difference Between 2024 Proposed Project and Baseline Conditions	***+889***	***0***	***0***	***+889***	***+202***	***0***	***0***	***+202***	***+55***	***-21***	***-24***	***+10***
2025 Conditions												
Proposed Project	703	0	0	703	165	0	0	165	1,467	534	547	2,548
Difference Between 2025 Proposed Project and Baseline Conditions	***+644***	***0***	***0***	***+644***	***+152***	***0***	***0***	***+152***	***+77***	***-11***	***-4***	***+62***

Note: Aircraft operations are not influenced by the Proposed Project. Background growth in passenger activity and aircraft operations are anticipated at ONT with or without the Proposed Project.

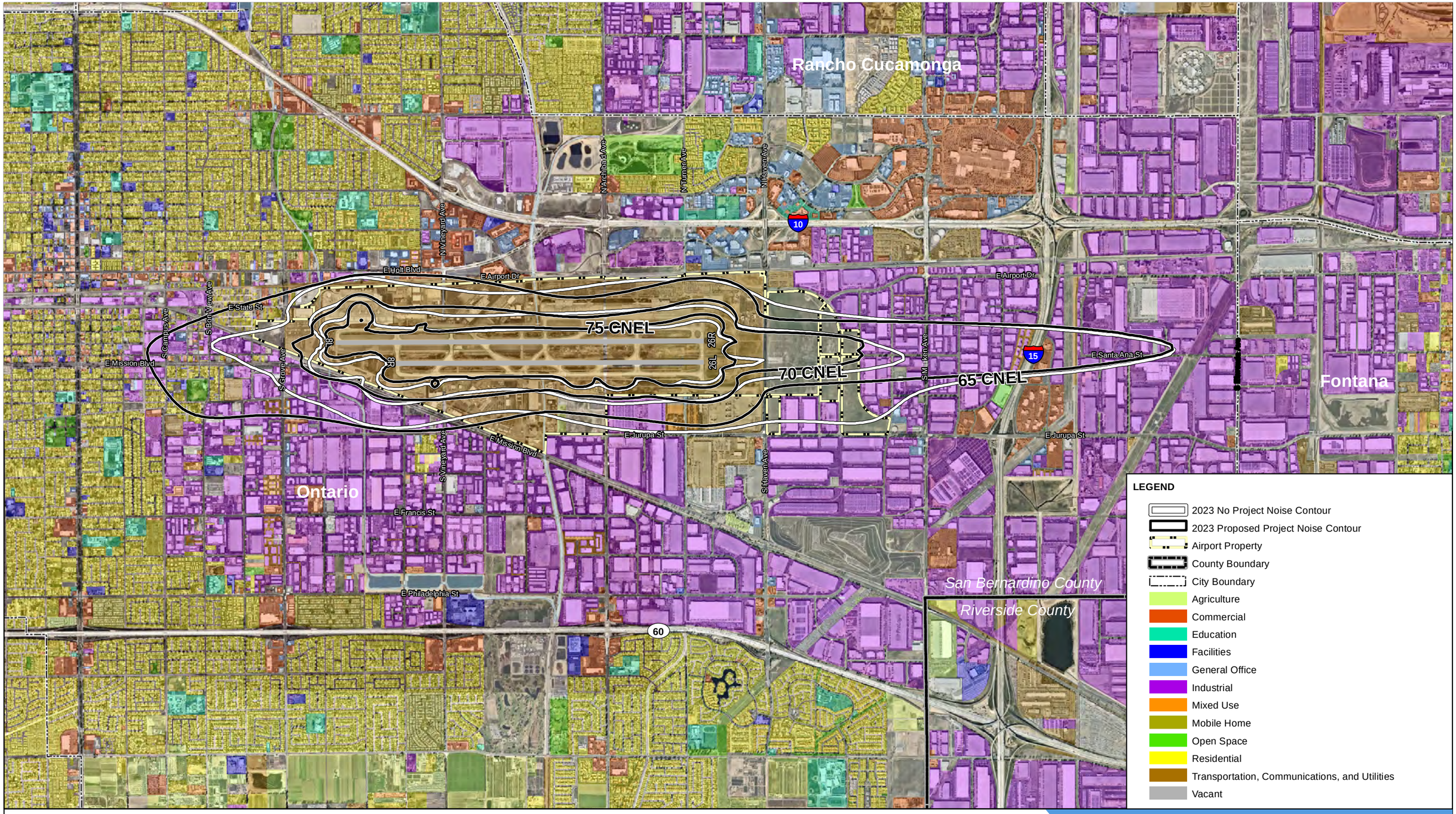
Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

For Informational Purposes

CEQA requires that a Proposed Project be compared to baseline conditions for the purpose of making a significance determination. For the Proposed Project, the future noise exposure would be influenced by factors that are not attributable to the Project itself, specifically from background operational growth that is projected to occur with or without the Proposed Project, as well changes in fleet mix that can impact overall noise levels. In order to remove the influence of background growth and differences in aircraft fleet noise levels, this analysis also compares noise exposure of the Proposed Project in a given year with the noise exposure from the No Project Alternative in the same year. This analysis is provided for informational purposes.

Figures 4-5, 4-6, and 4-7 show the expected Proposed Project noise exposure contours in 2023, 2024, and 2025 in comparison with the No Project Alternative in the same year. Under the No Project Alternative there would be no runway closures, and Contra Flow would continue during nighttime operations. In comparison with the No Project Alternative, the Proposed Project increases the size of the contours to the west of the Airport whereas the size of the contours to the east of the Airport decreases.

Tables 4-21, 4-22, and 4-23 summarize the estimated land area (acres) within CNEL contours for the No Project Alternative in 2023, 2024 and 2025 along with the estimated number of residential dwelling units, schools, and churches located within the contours (see Tables 4-16, 4-17, and 4-18 for the Proposed Project summaries). The tables also provide an estimate of the residential population exposed to varying degrees of noise exposure based upon average household size by Census block. Residential dwelling units and population were initially determined using U.S. Census Bureau block data, with data verified using Google Earth.[11]



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

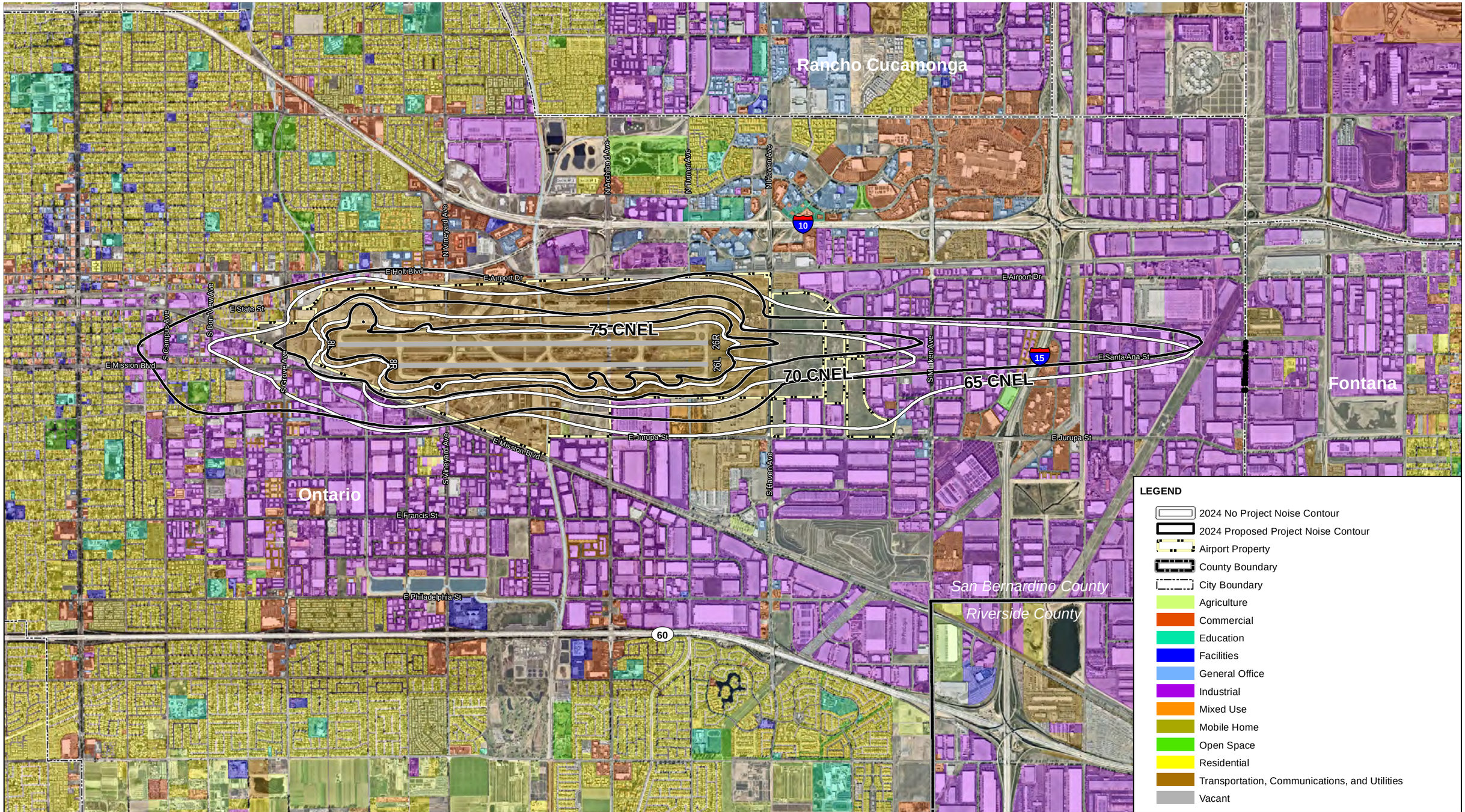
N

HNTB

Figure 4-5

2023 Proposed Project vs. 2023 No Project Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

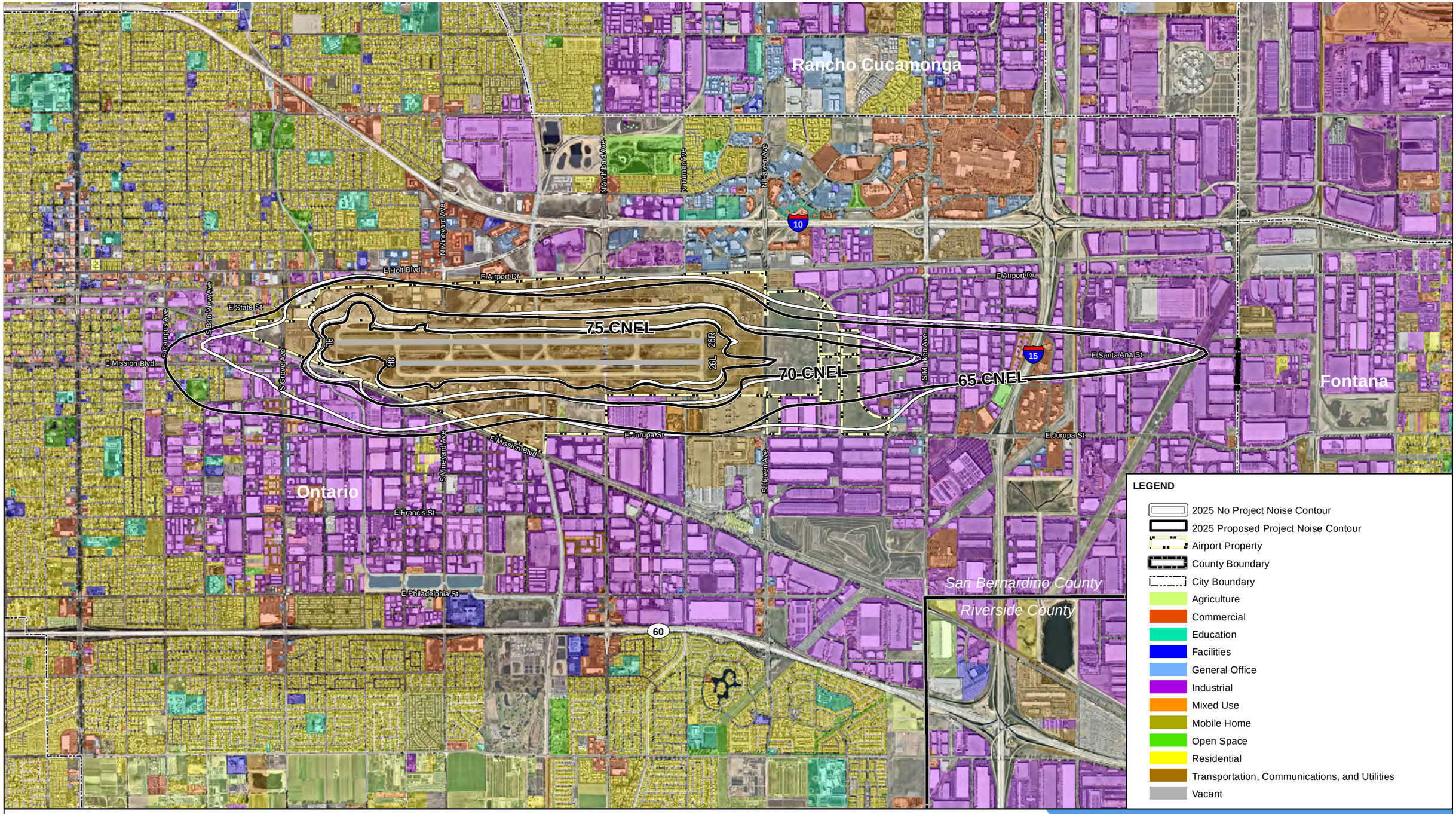
N

HNTB

Figure 4-6

2024 Proposed Project vs. 2024 No Project Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis



ONT ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

N

HNTB

Figure 4-7

2025 Proposed Project vs. 2025 No Project Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis

Table 4-21: 2023 No Project Alternative Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	Total
Residential	2.8	0	0	**2.8**
Education	0	0	0	**0.0**
Mixed Use	32.1	0.1	0	**32.1**
Mobile Home	0	0	0	**0.0**
Open Space	0	0	0	**0.0**
Agriculture	2.9	0	0	**2.9**
Commercial	14.9	0	0	**14.9**
Facilities	0	0	0	**0.0**
General Office	0.4	0	0	**0.4**
Industrial	480.7	33.2	0	**513.8**
Transportation, Communications, and Utilities	568.7	384.2	543.1	**1,496.0**
Vacant	202.7	105.5	0.0	**308.2**
TOTAL	1,305.1	523.0	543.1	**2,371.1**
Noise-Sensitive Land Uses (#)				
Hospitals	0	0	0	**0**
Schools	0	0	0	**0**
Religious (e.g., Church)	0	0	0	**0**
Residential (dwelling units)	7	0	0	**7**
Population	29	0	0	**29**

Note:
Totals may not sum due to rounding.
(1) All residential dwelling units and population within the 65-69 CNEL are eligible for voluntary acquisition under ONT's Quiet Home Program, with the exception of one dwelling unit (two people) accounted for at the Hofer Ranch property directly south of ONT.
(2) Of the seven dwelling units with the 65 CNEL contour, five are single family and two are multi-family (one duplex). Google earth was utilized to confirm housing counts and types.

Source: Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis, 2022.

Table 4-22: 2024 No Project Alternative Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	TOTAL
Residential	3.5	0	0	**3.5**
Education	0	0	0	**0.0**
Mixed Use	33.2	0.1	0	**33.3**
Mobile Home	0	0	0	**0.0**
Open Space	0	0	0	**0.0**
Agriculture	3.1	0	0	**3.1**
Commercial	15.3	0	0	**15.3**
Facilities	0	0	0	**0.0**
General Office	1.2	0	0	**1.2**
Industrial	505.0	39.1	0.0	**544.1**
Transportation, Communications, and Utilities	577.4	387.6	552.9	**1,517.8**
Vacant	210.2	110.1	0	**320.3**
TOTAL	1,348.8	536.9	552.9	**2,438.5**
Noise-Sensitive Land Uses (#)				
Hospitals	0	0	0	**0**
Schools	0	0	0	**0**
Religious (e.g., Church)	0	0	0	**0**
Residential (dwelling units)	10	0	0	**10**
Population	44	0	0	**44**

Note:
Totals may not sum due to rounding.
(1) All residential dwelling units and population within the 65-69 CNEL are eligible for voluntary acquisition under ONT's Quiet Home Program, with the exception of one dwelling unit (two people) accounted for at the Hofer Ranch property directly south of ONT.
(2) Of the 10 dwelling units with the 65 CNEL contour, six are single family and four are multi-family (two duplexes). Google earth was utilized to confirm housing counts and types.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

Table 4-23: 2025 No Project Alternative Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	TOTAL
Residential	4.0	0	0	**4.0**
Education	0	0	0	**0.0**
Mixed Use	34.2	0.2	0	**34.4**
Mobile Home	0	0	0	**0.0**
Open Space	0	0	0	**0.0**
Agriculture	3.3	0	0	**3.3**
Commercial	15.8	0	0	**15.8**
Facilities	0	0	0	**0.0**
General Office	2.3	0	0	**2.3**
Industrial	532.9	45.8	0	**578.8**
Transportation, Communications, and Utilities	585.6	391.2	563.4	**1,540.1**
Vacant	219.5	114.8	0.1	**334.3**
TOTAL	1,397.6	552.0	563.4	**2,513.0**
Noise-Sensitive Land Uses (#)				
Hospitals	0	0	0	**0**
Schools	0	0	0	**0**
Religious (e.g., Church)	0	0	0	**0**
Residential (dwelling units)	12	0	0	**12**
Population	54	0	0	**54**

Note:
Totals may not sum due to rounding.
(1) All residential dwelling units and population within the 65-69 CNEL are eligible for voluntary acquisition under ONT's Quiet Home Program, with the exception of one dwelling unit (two people) accounted for at the Hofer Ranch property directly south of ONT.
(2) Of the 12 dwelling units with the 65 CNEL contour, six are single family and six are multi-family (three duplexes). Google earth was utilized to confirm housing counts and types.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

Table 4-24 summarizes the total aircraft operations, runway closure periods, and the change in 65 CNEL noise contour area between the Proposed Project and No Project in a given year. While the total aircraft operation levels remain the same between the Proposed Project and No Project Alternatives in a given year, the total acreage within the 65+ CNEL noise contours increases between 1-4% in the Proposed Project contours as compared to the No Project Alternative contours in the same year.

Table 4-24: Noise Inputs and Outputs for No Project and Proposed Project

Year	Alternative	Aircraft Operations[1]	Runway Closure	65 CNEL Noise Contour Area (acres)	Change in Area
2023	No Project	110,368	No closure	2,371	+4.3%
	Proposed Project		8L-26R – 4 months 8R-26L – 5 months	2,472	
2024	No Project	113,826	No closure	2,439	+2.4%
	Proposed Project		8R-26L – 9 months	2,497	
2025	No Project	117,625	No closure	2,513	+1.4%
	Proposed Project		8L-26R – 5 months	2,548	

Note: (1) Aircraft operations are not influenced by the Proposed Project. Background growth in passenger activity and aircraft operations are anticipated at ONT with or without the Proposed Project, as shown with the same level of operations modeled in the No Project Alternative and Proposed Project in a given year.

Source: HNTB analysis, 2022.

Table 4-25 provides the population, number of housing units and acreage within the various CNEL ranges that would be affected in each Proposed Project construction year and provides a comparison of the Proposed Project in each construction year to the No Project Alternative in the same year.

As indicated in Table 4-25, there would be a net increase in population and housing units within the 65-69 CNEL contour for all Proposed Project construction years, as compared to the No Project Alternative. This increase in population/housing units is due to the shift in the Proposed Project noise contours to the west of ONT, towards residential areas, as a result of the suspension of Contra Flow operations during proposed runway closures.

Table 4-25: Estimated Population, Housing Units and Acreage within Proposed Project and No Project Aircraft Noise Contours

Alternative	Population				Housing Units				Acreage			
	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL
2023 Conditions												
No Project	29	0	0	29	7	0	0	7	1305	523	543	2371
Proposed Project	1,014	0	0	1,014	225	0	0	225	1,430	519	523	2,472
Difference Between Proposed Project and No Project	***+985***	***0***	***0***	***+985***	***+218***	***0***	***0***	***+218***	***+125***	***-4***	***-20***	***+101***
2024 Conditions												
No Project	44	0	0	44	10	0	0	10	1,349	537	553	2,439
Proposed Project	948	0	0	948	215	0	0	215	1,444	524	526	2,495
Difference Between Proposed Project and No Project	***+904***	***0***	***0***	***+904***	***+205***	***0***	***0***	***+205***	***+96***	***-12***	***-26***	***+57***
2025 Conditions												
No Project	54	0	0	54	12	0	0	12	1,398	552	563	2,513
Proposed Project	703	0	0	703	165	0	0	165	1,467	534	547	2,548
Difference Between Proposed Project and No Project	***+649***	***0***	***0***	***+649***	***+153***	***0***	***0***	***+153***	***+69***	***-18***	***-17***	***+35***

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

Impact 4.5-1

Summary Conclusion for Impact 4.5-1: The Proposed Project would result in temporary noise exposure changes during the construction period of 2023, 2024 and 2025 due to the suspension of nighttime Contra Flow operations during proposed runway closure periods. Therefore, the Proposed Project would have a *significant, unavoidable temporary impact* on noise levels in the vicinity of the project.

The Proposed Project would result in changes in noise exposure as compared to the Baseline Conditions. The change in Proposed Project noise conditions compared to the Baseline Conditions is attributable to three factors:

1. Background growth in passenger activity and aircraft operations that is anticipated at ONT with or without the Proposed Project.
2. Changes in fleet mix projected in future years that can impact overall noise levels. Generally, operations from older and noisier aircraft are expected to decrease in future years.
3. Runway closure periods associated with the Proposed Project construction that results in ONT operating on a single-runway for periods of 2023, 2024 and 2025, as compared to the Baseline Conditions where both runways are operational.

During the proposed runway closure periods, all operations would occur on a single runway. Due to the two runways being parallel and closely spaced, temporarily operating on a single runway would not significantly alter flight patterns. As described above, Contra Flow operations will be prohibited during construction periods. Figures 4-2, 4-3 and 4-4 illustrate the expected noise exposure contours in 2023, 2024, and 2025 in comparison with the Baseline Conditions.

The Proposed Project would result in temporary increases in noise exposure to the west of the Airport during nighttime hours during these construction periods. This would result in a *significant, unavoidable temporary impact on noise levels* in the vicinity of the project.

Impact 4.5-2

Summary Conclusion for Impact 4.5-2: The Proposed Project would result in groundborne vibration and noise levels, but construction activity would not expose sensitive receptors. The Proposed Project would result in a *less than significant impact* from groundborne vibration and noise levels.

Construction of the Proposed Project may result in substantial vibration impacts. However, the project area is located within the active airfield and adjacent airport property. The properties immediately surrounding ONT are zoned industrial or commercial. The closest sensitive receptors are residential homes located along E. Airport Drive and S. Grove Avenue, approximately 700 feet north and 400 feet west of the contractor staging area, respectively. It should be noted that these residential homes are eligible for acquisition under ONT's Quiet Home Program. The closest

sensitive receptors to construction pavement area (proposed Taxiway N2) are residential homes located approximately 2,400 feet north, off of E. Nocta Street.

Between the Proposed Project site and the residential receivers off of E. Nocta Street, there are two major roadways, industrial and commercial facilities, and a tow yard. Due to distance, the existing noise environment, and obstructions between noise sources and the residential receptors, construction noise levels would not be discernable over the existing ambient noise environment. Therefore, the Proposed Project would result in a *less than significant impact* from groundborne vibration and noise levels.

Impact 4.5-3

Summary Conclusion for Impact 4.5-3: The Proposed Project would result in *significant, unavoidable temporary impacts* to people residing or working around the Airport from excessive noise levels, as described below.

During runway closure periods in 2023, 2024 and 2025, all operations would occur on a single runway. During single runway operation, Contra Flow operations would be suspended at nighttime which is typically used as a noise mitigation strategy to minimize noise over residential areas at night. As described above, the Proposed Project would temporarily expose additional people to excessive noise during the construction period when compared to Baseline Conditions. Therefore, the Proposed Project would result in *significant, unavoidable temporary impacts* to people residing or working around the Airport from excessive noise levels.

4.5.5 Mitigation Measures

The Proposed Project would result in significant but unavoidable temporary impacts to noise levels when compared to Baseline Conditions. There are no mitigation measures proposed as the impacts are temporary and noise levels will not be impacted following completion of Proposed Project construction.

While Contra Flow operations would be suspended during the runway closure periods for construction of the Proposed Project, ONT would continue to implement other Voluntary Operational Restrictions for noise management during implementation of the Proposed Project, including but not limited to: [12]

- "Touch-and-go" operations by turbojet and turbo-fan aircraft are prohibited without special permissions
- Nighttime (10:00 PM and 7:00 AM) engine maintenance run-up operations are prohibited. Daytime run-up operations occur at specified locations.
- "Intersection departures" are prohibited (i.e., departures not starting at the end of the runway), except from 8L at Taxiway D and from 26R at Taxiway V. Departures must start at the end of runways to allow aircraft to pass higher over residential communities.

4.6 Transportation/Traffic

4.6.1 Methodology

Any potential impacts to transportation or traffic were considered as part of the Proposed Project. Because there would be less than significant impacts to this resource category, no traffic analysis was undertaken. However, consistent with Public Resources Code section 21099(b)(3), this SEIR also analyzes the Proposed Project's potentially significant transportation impacts related to air quality, noise, and greenhouse gas emissions.

4.6.2 Existing Conditions

Refer to *Section 3.9.2, Transportation/Traffic, Existing Conditions,* for discussion of the Existing Conditions for transportation/traffic resources.

4.6.3 Thresholds of Significance

The Governor's OPR developed a Technical Advisory on Evaluating Transportation Impacts in CEQA, which states that rehabilitation, repair, replacement, and safety improvement projects for existing transportation assets that do not add additional capacity are projects that would not likely lead to a substantial or measurable increase in VMT. [13] Caltrans' Transportation Analysis under CEQA[14] has the same standard, and ONT has a Caltrans-issued permit. Moreover, the City of Ontario Resolution No. 2020-071 adopted VMT Thresholds stating that transportation projects that do not add capacity can be screened from further VMT review during the CEQA process and are presumed to have a less than significant impact on transportation.[15]

Further, CEQA Guidelines section 15064.3 now specifies that VMT shall be the most appropriate measure of transportation impacts. VMT refers to the amount and distance of automobile travel attributable to a project. A project's effect on automobile delay and roadway congestion, previously measured by "level of service" (LOS), will no longer constitute an environmental impact.

4.6.4 Impacts

The Proposed Project would have less than significant impacts to transportation and traffic. Any temporary surface traffic changes associated with construction of the Proposed Project would be minor and mitigated, if necessary, by a required construction traffic plan. Construction vehicles would use existing airport roadways and service roads, and/or adjacent airfield area for access regardless of the construction staging area used.

Here, the Proposed Project is a rehabilitation, repair, replacement, and safety improvement project that does not add or increase capacity at ONT and would therefore not increase VMT. Consistent with Public Resources Code section 21099(b)(3), this SEIR also analyzes the Proposed Project's potentially significant transportation impacts related to air quality, noise, and greenhouse gas emissions.

4.6.5 Mitigation Measures

No mitigation is proposed as there are no anticipated impacts to traffic/transportation as a result of the Proposed Project.

4.7 Tribal Cultural Resources

This section provides a summary of tribal consultation and an analysis of potential impacts and mitigation measures associated with tribal cultural resources with respect to local, state, and federal policy. Tribal cultural resources on and in the immediate vicinity of the project area are discussed in Chapter 3.0, Environmental Setting.

4.7.1 Methodology

Records Search, Previous Surveys and Fieldwork Survey

Refer to *Section 4.4.1, Cultural Resources, Methodology* for details related to the records search, previous surveys, previously recorded sites within a half-mile of the project area, and the fieldwork survey.

Native American Contact Program

A Sacred Lands File search was requested by OIAA through the Native American Heritage Commission (NAHC). The Sacred Lands File search results were received on April 13, 2021 (provided in *Appendix F, Attachment C, Tribal [CONFIDENTIAL]*). The results indicated that no known sacred lands of Native American Cultural Resources are within the project area. The NAHC noted that negative results may not indicate the absence of Native American cultural resources in the area and provided a contact list of 12 Native American tribal organizations that may have knowledge of cultural resources in or near the study area.

Additionally, in accordance with AB 52, on August 27, 2021, OIAA sent letters to the Native American representatives and interested parties as identified by the NAHC. Three responses were received. San Manuel Band of Mission Indians (SMBMI) responded via email on September 1, 2021, and Agua Caliente Band of Cahuilla Indians (ACBCI) responded via email on September 2, 2021 to indicate the project is not located within the boundaries of the Tribes' Traditional Use Area. The Kizh Nation responded via email on September 17, 2021 to request a consultation with the lead agency.

OIAA initiated consultation on November 4, 2021 with Kizh Nation. Although no tribal resources have been identified within the project area, the tribe has knowledge of some isolated resources, including prehistoric isolates and fire hearths associated with habitation within Airport property. A second meeting was held February 24, 2022 to discuss and finalize agreed upon mitigation measures. As such, the tribe requests Native American monitoring during all ground-disturbing activities related to the project. Mitigation measures intended to reduce the impact to potential tribal cultural resources were agreed upon by Kizh Nation and OIAA on March 30, 2022 and consultation was concluded.

4.7.2 Existing Conditions

Refer to *Section 3.10.2, Tribal Cultural Resources, Existing Conditions* for discussion of the Existing Conditions for tribal cultural resources.

4.7.3 Thresholds of Significance

A significant impact would occur if the Proposed Project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

1) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or

2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying these criteria, the significance of the resource to a California Native American tribe shall be considered.

4.7.4 Impacts

No tribal cultural resources have been identified within the project area. During AB 52 consultation with Kizh Nation, although not recorded at the SCCIC, the Nation has knowledge of some isolated prehistoric isolates and a fire hearth located within the airport property. As such, there is potential for the Proposed Project to impact buried prehistoric archaeological and tribal cultural resources if found during construction.

4.7.5 Regulatory Requirements

As part of the project design and planning, OIAA will implement the following regulatory requirement (RR) as part of the Proposed Project:

RR-1: In the event that human remains are discovered, the County Coroner shall be contacted. If the remains are determined to be of Native American origin, the Most Likely Descendant, as identified by the NAHC, shall be contacted in order to determine proper treatment and disposition of the remains. All requirements of Health & Safety Code §7050.5 and PRC §5097.98 shall be followed prior to the implementation of a testing or treatment plan.

4.7.6 Mitigation Measures

To reduce the potential for impacting buried archaeological and tribal cultural resources (TCRs), the following mitigation measures are proposed:

TCR-1: Retain a Native American Monitor Prior to Commencement of Ground-Disturbing Activities

A. The project applicant/lead agency shall retain a Native American Monitor from or approved by the Gabrieleño Band of Mission Indians – Kizh Nation. The monitor shall be retained prior to the commencement of any "ground-disturbing activity" for the subject project at all project locations (i.e., both on-site and any off-site locations that are included in the project description/definition and/or required in connection with the project, such as public improvement work). "Ground-disturbing activity" shall include, but is not limited to, demolition, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching.

B. A copy of the executed monitoring agreement shall be submitted to the lead agency prior to the commencement of any ground-disturbing activity, or the issuance of any permit necessary to commence a ground-disturbing activity.

C. The monitor will complete daily monitoring logs that will provide descriptions of the relevant ground-disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions, materials, or discoveries of significance to the Tribe. Monitor logs will identify and describe any discovered TCRs, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., (collectively, tribal cultural resources, or "TCR"), as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs will be provided to the project applicant/lead agency upon written request to the Tribe.

D. On-site tribal monitoring shall conclude upon the latter of the following (1) written confirmation to the Kizh from a designated point of contact for the project applicant/lead agency that all ground-disturbing activities and phases that may involve ground-disturbing activities on the project site or in connection with the project are complete; or (2) a determination and written notification by the Kizh to the project applicant/lead agency that no future, planned construction activity and/or development/construction phase at the project site possesses the potential to impact Kizh TCRs.

E. Upon discovery of any TCRs, all construction activities in the immediate vicinity of the discovery shall cease (i.e., not less than the surrounding 50 feet) and shall not resume until the discovered TCR has been fully assessed by the Kizh monitor and/or Kizh archaeologist. The Kizh will recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate, in the Tribe's sole discretion, and for any purpose the Tribe deems appropriate, including for educational, cultural and/or historic purposes.

TCR-2: Unanticipated Discovery of Human Remains and Associated Funerary Objects

A. Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in Public Resources Code Section 5097.98, are also to be treated according to this statute.

B. If Native American human remains and/or grave goods discovered or recognized on the project site, then all construction activities shall immediately cease. Health and Safety Code Section 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and all ground-disturbing activities shall immediately halt and shall remain halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe they are Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission, and Public Resources Code Section 5097.98 shall be followed.

C. Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2).

D. Construction activities may resume in other parts of the project site at a minimum of 200 feet away from discovered human remains and/or burial goods, if the Kizh determines in its sole discretion that resuming construction activities at that distance is acceptable and provides the project manager express consent of that determination (along with any other mitigation measures the Kizh monitor and/or archaeologist deems necessary). (CEQA Guidelines Section 15064.5(f).)

E. Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or burial goods, if feasible. Any historic archaeological material that is not Native American in origin (non-TCR) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.

F. Any discovery of human remains/burial goods shall be kept confidential to prevent further disturbance.

TCR-3: Procedures for Burials and Funerary Remains:

A. As the Most Likely Descendant ("MLD"), the Koo-nas-gna Burial Policy shall be implemented. To the Tribe, the term "human remains" encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the preparation of the soil for burial, the burial of funerary objects with the deceased, and the ceremonial burning of human remains.

B. If the discovery of human remains includes four or more burials, the discovery location shall be treated as a cemetery and a separate treatment plan shall be created.

C. The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed

to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects. Cremations will either be removed in bulk or by means as necessary to ensure complete recovery of all sacred materials.

D. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed.

E. In the event preservation in place is not possible despite good faith efforts by the project applicant/developer and/or landowner, before ground-disturbing activities may resume on the project site, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects.

F. Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered.

G. The Tribe will work closely with the project's qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be prepared and shall include (at a minimum) detailed descriptive notes and sketches. All data recovery data recovery-related forms of documentation shall be approved in advance by the Tribe. If any data recovery is performed, once complete, a final report shall be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains

4.8 Health Risk Assessment

This analysis examines potential health risks that result from temporary construction activity and temporary operational changes associated with the Proposed Project during construction years 2023, 2024 and 2025. There are no health risk impacts associated with the Proposed Project beyond the construction period.

4.8.1 Methodology

Potential temporary changes in health risks to nearby sensitive receptors from the emission of Toxic Air Contaminants (TACs) during construction of the Proposed Project were analyzed in accordance with applicable portions of the Office of Environmental Health Hazard Assessment (OEHHA) *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*[16] and the SCAQMD *Modeling Guidance for AERMOD.*[17]

Sensitive Receptors

CARB and OEHHA have identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, infants (including in utero in the third trimester of pregnancy), and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.[18,19] Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved and are referred to as sensitive receptors. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. For health risk assessments, the health impacts are analyzed for individual residents assumed to be standing in their primary outdoor spaces closest to the source of TACs and for individual off-site workers assumed to be standing outside of a commercial or industrial building.

Land uses surrounding ONT are primarily industrial/commercial. Distances from the ONT boundary to residential zoned areas are approximately 1,200 feet (0.23 miles) to the northwest, 1,300 feet (0.25 miles) to the southwest, 2,800 feet (0.53 miles) to the north, 3,600 feet (0.68 miles) to the west, and 6,500 feet (1.2 miles) to the south. However, there also are some residences located within the industrial/ commercial areas to the west and south. The closest existing sensitive receptor to the project is a single-family residence on South Grove Avenue, approximately 200 feet north of the airport boundary (approximately 2,000 feet northwest of Runway 8L – 26R). The closest school to ONT is the Mariposa Elementary School, approximately 2,000 feet (0.38 miles) north of the airport boundary. The closest hospital to ONT is the Kaiser Permanente Ontario Vineyard hospital approximately 5,300 feet (1 mile) south of the airport boundary. See **Figure 4-8**, *Receptor Locations.*

Dispersion Modeling

Localized concentrations of pollutants were modeled using Lakes AERMOD View version 10.2.1. The Lakes program utilizes the USEPAs AERMOD gaussian air dispersion model version 21112. Plot files from AERMOD using unitized emissions (one gram per second) for each TAC source were imported into CARB's Hotspots Analysis and Reporting Program (HARP), Air Dispersion Modeling and Risk Tool (ADMRT) version 21081. Using the AERMOD plot files and the emissions inventory, The ADMRT calculates ground-level concentrations of TACs. TACs sources were modeled for those aircraft movement paths that have the potential to result in shifts of emission dispersion during Proposed Project implementation, including taxi-out, takeoff roll, climb, approach, landing roll, and taxi-in. In addition, emissions from

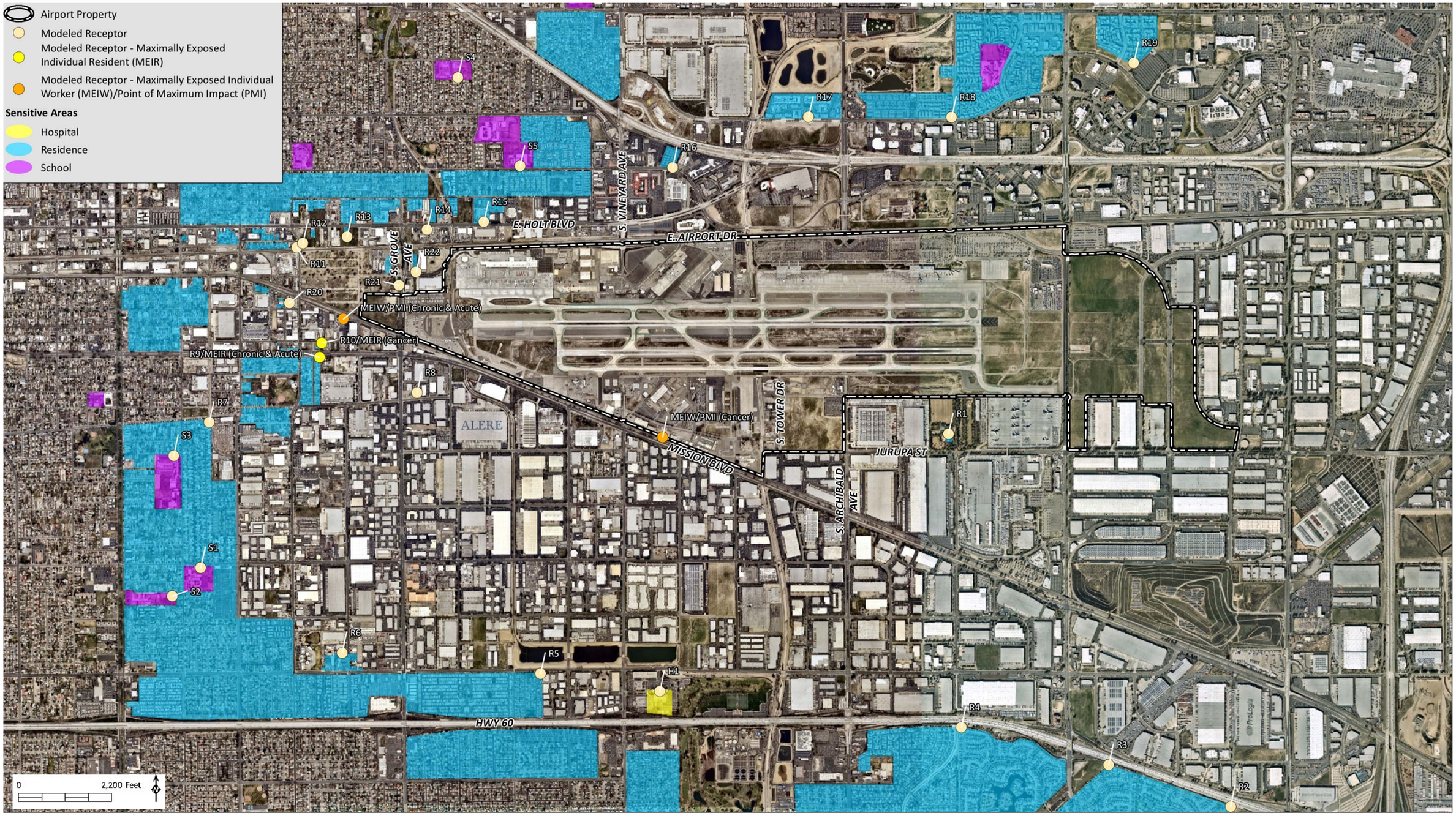


Figure 4-8

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

HNTB

Receptor Locations

Sources: Aerial (San Berrnardino County, 2020), HELIX Environmental Planning, 2021

diesel-powered construction equipment used at ONT during Proposed Project implementation and emissions from the concrete batch plant were modeled.

Note that the air quality and GHG emissions analysis prepared for this SEIR addresses those aircraft movement paths that would experience changes in mass emissions (taxi-out and taxi-in) as a result of the Proposed Project, specifically attributable to changes in aircraft taxiing times resulting from temporary runway closures and suspension of Contra Flow. The mass emissions attributable to other aircraft movement paths (takeoff roll, climb, approach, and landing roll) would not be impacted by the Proposed Project's implementation; however, the pollutant dispersion pattern would change due to shifts in aircraft flight locations during temporary runway closures and suspension of Contra Flow. Therefore, the Proposed Project's health risk analysis considers the full landing-takeoff cycle for purposes of dispersion modeling.

Operational emissions sources at ONT which are not anticipated to change substantially during construction of the Proposed Project (including helicopter operations, ground support equipment, and on-road vehicles) were not included in the modeling. Source parameters for the dispersion modeling are fully described in *Appendix I, Health Risk Assessment, Attachment A, Dispersion Modeling Input*.

Risk Determination

Health risks resulting from localized concentrations of TACs were estimated using the ADMRT. The latest cancer slope factors, chronic Recommended Exposure Limits (RELs), and exposure paths for all TACs designated by CARB are included in the ADMRT. For the residential cancer risk, each year of Proposed Project implementation was evaluated separately with an exposure duration of one year, starting with the age bin for infants in utero in the third trimester of pregnancy. The cancer risk results for each year were summed to calculate the total cancer risk during the Proposed Project construction period. The Proposed Project's incremental increase in cancer risk is based on the emissions associated with the Proposed Project's implementation. For non-cancer chronic and acute health risks, the maximum hazard index (HI) was calculated for each year of construction for the Proposed Project. The highest HI for all years would be the maximum HI during the Proposed Project construction period. The Proposed Project's incremental increase in non-cancer chronic and acute health risks is based on the emissions associated with the Proposed Project's implementation.

The model conservatively assumes that residents would be standing and breathing outdoors at the location of the property line or primary outdoor space closest to the airport or flight paths between 17 and 21 hours per day (depending on the age group), starting with infants in utero in the third trimester of pregnancy for the first year of Proposed Project implementation (2023), then infants age 0 for the second year (2024), and infants age 1 for the third year (2025). Although the Proposed Project is not subject to the *Air Toxics "Hot Spots" Information and Assessment Act*, or to the SCAQMD Rule 1402, the applicable portions of the SCAQMD's *AB 2588 and Rule 1402 Supplemental Guidelines* were followed in selecting parameters in the ADMRT[20]. In accordance with the SCAQMD's supplemental guidelines, the following

non-default ADMRT options were selected: the RMP derived intake rate percentile method (for residential risks only); mandatory minimum pathways plus the home grown produce pathway (for residential risks only); 0.02 m/s deposition rate (for non-inhalation pathways); and warm climate (for the dermal pathway). For off-site worker cancer risk, an exposure duration of one year was selected with an assumption of eight hours per day, five days per week of exposure while standing outside, in accordance with the OEHHA guidelines.

4.8.2 Existing Conditions

Health risks were not quantified for Existing Conditions as the specific health risks associated with the Airport cannot be assessed independent of all sources of pollutants which contribute to the community's overall risk. However, SCAQMD has conducted studies on carcinogenic risk from exposure to air toxics in the SCAB. The most recent is the Multiple Air Toxics Exposure Study V (MATES V). According to the MATES Data Visualization interactive tool, the area around ONT has a cumulative cancer risk of 600 in 1 million.[21]

4.8.3 Thresholds of Significance

To assess exposure to substantial TAC concentrations, the SCAQMD recommends the following thresholds for the Proposed Project's incremental contribution to community health risks:[22]

Impact 4.8-1	Maximum Incremental Cancer Risk – An increased risk equal or greater than of 10 in 1 million for the maximally exposed individual to Proposed Project emissions is considered to result in a significant impact.
Impact 4.8-2	Chronic and Acute Health Risk – An HI equal to or greater than 1 for the maximally exposed individual to Proposed Project emissions is considered to result in a significant impact.
Impact 4.8-3	Cancer Burden – 0.5 or more excess cancer cases in areas exposed to an incremental cancer risk greater than 1 in million over a 70-year exposure is considered to result in a significant impact.

4.8.4 Impacts

The incremental excess cancer risk is an estimate of the chance a person exposed to a specific source of a TAC may have of developing cancer from that exposure beyond the individual's risk of developing cancer from existing background levels of TACs in the ambient air. For context, the average cancer risk from TACs in the ambient air for an individual living in an urban area of California is 830 in 1 million.[23] The SCAQMD has conducted studies on carcinogenic risk from exposure to air toxics in the SCAB. The most recent is the Multiple Air Toxics Exposure Study V (MATES V). According to the MATES Data Visualization interactive tool, the area around ONT has a cumulative cancer risk of 600 in 1 million.[24] Cancer risk estimates do not mean, and should not be interpreted to mean, that a person will develop cancer from estimated exposures to toxic air pollutants.

Impact 4.8-1 and 4.8-2

MEIR and MEIW

The maximum estimated community health risks are determined by evaluating the increased cancer risk and non-cancer chronic risks for the maximally exposed individual resident (MEIR) and off-site maximally exposed individual worker (MEIW). To be conservative (health protective), sensitive receptors located at the closest school and closest hospital were evaluated using the residential risk parameters (age bins starting utero in the third trimester of pregnancy; 17 to 21 hours per day exposure).

The incremental excess cancer and chronic risks for the MEIR resulting from implementation of the Proposed Project are presented in **Table 4-26**. These estimates are conservative (health protective) and assume that the resident is outdoors for the entire exposure period. The locations of the MEIR are shown in Figure 4-8. As shown in Table 4-26, health risks for the MEIR would not exceed the SCAQMDs thresholds during implementation of the Proposed Project.

Table 4-26
Proposed Project Maximally Exposed Individual Resident Incremental Health Risk

	MEIR Cancer Risk	MEIR Chronic HI	MEIR Acute HI
Proposed Project	3.0 in 1 million	0.11	0.45
Threshold	10 in 1 million	1	1
Exceed Threshold?	No	No	No

Source: Lakes AERMOD View, CARB ADMRT. See *Appendix I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs and outputs.

The incremental excess cancer and chronic risks for the MEIW resulting from implementation of the Proposed Project are presented in **Table 4-27**. These estimates are conservative (health protective) and assume that the worker is outdoors for the entire exposure period. The locations of the MEIW are shown in Figure 4-8. As shown in Table 4-27, health risks for the MEIW would not exceed the SCAQMDs thresholds during implementation of the Proposed Project.

Table 4-27
Proposed Project Maximally Exposed Individual Worker Incremental Health Risk

	MEIW Cancer Risk	MEIW Chronic HI	MEIW Acute HI
Proposed Project	0.4 in 1 million	0.18	0.54
Threshold	10 in 1 million	1	1
Exceed Threshold?	No	No	No

Source: Lakes AERMOD View, CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs and outputs.

The point of maximum impact (PMI; off-site) for cancer risks would be the location of the MEIR, near the intersection of East California Street and South Greenwood Avenue, at approximately Universal Transverse Mercator (UTM) coordinates Zone 11,

441411 meters East, 3768406 meters North. The location of the PMI is shown in Figure 4-8.

Sensitive Receptor Health Risks

The estimated incremental excess cancer risks due to exposure to the Proposed Project's TAC emissions for each modeled discrete sensitive receptor (shown in Figure 4-8) are presented in **Table 4-28**. The model inputs, outputs, and risk isopleth figures are available in *Appendix I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output*. As shown in Table 4-28, the incremental increase in cancer risk would not exceed the SCAQMD threshold of 10 in 1 million for any sensitive receptor during implementation of Proposed Project.

Table 4-28
Proposed Project Discrete Sensitive Receptor Incremental Cancer Risk

Receptor	Proposed Project Risk(chances per million)
R1, Residence	-0.4
R2, Residence	-0.5
R3, Residence	-0.3
R4, Residence	-0.2
R5, Residence	-0.1
R6, Residence	0.1
R7, Residence	2.6
R8, Residence	0.4
R9, Residence	3.0
R10, Residence	3.0
R11, Residence	0.5
R12, Residence	0.4
R13, Residence	0.2
R14, Residence	0.1
R15, Residence	<0.1
R16, Residence	-0.2
R17, Residence	-0.2
R18, Residence	-0.3
R19, Residence	-0.2
R20, Residence	1.0
R21, Residence	0.6
R22, Residence	0.4
S1, School	1.7
S2, School	1.5
S3, School	1.5
S4, School	<0.1
S5, School	0.1
H1, Hospital	-0.1

Source: Lakes AERMOD View and CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs, outputs, and risk isopleths.

The estimated incremental non-cancer chronic risk due to exposure to the Proposed Project's TAC emissions for each modeled discrete sensitive receptor (shown in Figure 4-8) is presented in **Table 4-29**. The model inputs, outputs, and risk isopleth figures are available in *Appendix I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output*. As shown in Table 4-29, the incremental increase in non-cancer chronic HI would not exceed the SCAQMD threshold of 1 for any sensitive receptor during implementation of the Proposed Project.

Table 4-29
Proposed Project Discrete Sensitive Receptor Incremental Chronic Risk

Receptor	Proposed Project HI
R1, Residence	0.01
R2, Residence	<0.01
R3, Residence	<0.01
R4, Residence	<0.01
R5, Residence	<0.01
R6, Residence	0.01
R7, Residence	0.08
R8, Residence	0.02
R9, Residence	0.11
R10, Residence	0.08
R11, Residence	0.02
R12, Residence	0.02
R13, Residence	0.01
R14, Residence	0.01
R15, Residence	0.01
R16, Residence	0.01
R17, Residence	<0.01
R18, Residence	<0.01
R19, Residence	<0.01
R20, Residence	0.06
R21, Residence	0.04
R22, Residence	0.04
S1, School	0.02
S2, School	0.04
S3, School	0.05
S4, School	<0.01
S5, School	0.01
H1, Hospital	<0.01

Source: Lakes AERMOD View and CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs, outputs, and risk isopleths.

The estimated incremental non-cancer chronic risk due to exposure to the Proposed Project's TAC emissions for each modeled discrete sensitive receptor (shown in Figure 4-8) is presented in **Table 4-30**. The model inputs, outputs, and risk isopleth figures

are available in *Appendix I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output*. As shown in Table 4-30, the incremental increase in non-cancer acute HI would not exceed the SCAQMD threshold of 1 for any sensitive receptor during implementation of the Proposed Project.

Table 4-30
Proposed Project Discrete Sensitive Receptor Incremental Acute Risk

Receptor	Proposed Project HI
R1, Residence	0.07
R2, Residence	-0.05
R3, Residence	<0.01
R4, Residence	0.01
R5, Residence	0.01
R6, Residence	0.01
R7, Residence	0.14
R8, Residence	0.05
R9, Residence	0.45
R10, Residence	0.27
R11, Residence	<0.01
R12, Residence	-0.03
R13, Residence	<0.01
R14, Residence	0.05
R15, Residence	0.05
R16, Residence	0.10
R17, Residence	0.05
R18, Residence	0.03
R19, Residence	0.03
R20, Residence	0.15
R21, Residence	-0.03
R22, Residence	-0.03
S1, School	0.17
S2, School	0.18
S3, School	0.22
S4, School	0.01
S5, School	0.02
H1, Hospital	0.01

Source: Lakes AERMOD View and CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs, outputs, and risk isopleths.

Impact 4.8-3

Cancer Burden

The cancer burden is the estimated increase in the occurrence of cancer cases from a source or facility over a 70-year exposure duration. The Proposed Project would involve short-term and temporary airport runway rehabilitation and associated improvement activities, anticipated to last a maximum duration of three years. Once implementation of the Proposed Project is complete, the project would not result in

any long-term changes in emissions at ONT. Therefore, an analysis of cancer burden is not applicable to the Proposed Project.

4.8.5 Mitigation Measures

No mitigation is proposed as there are no anticipated health risks as a result of the Proposed Project.

4.9 Significant Irreversible Environmental Changes

CEQA and the CEQA Guidelines require that an EIR address "significant irreversible environmental changes which would be involved in the proposed Project, should it be implemented." The environmental effects related to the implementation of the Proposed Project are discussed in *Section 4.1 through 4.8.*

The project area is already developed and dedicated to airport uses, and the Proposed Project would not result in a new commitment of land. However, implementation of the Proposed Project would require the long-term commitment of natural resources to construct the proposed projects such as asphalt and concrete (cement and aggregate). This would represent the loss of renewable and nonrenewable resources that are generally not retrievable.

Construction and operation of the Project would also require energy resources such as electricity, natural gas, and various fuels. Operations-related energy demands would include temporary additional energy needs for a short period during the relocation of the electrical vault and taxiway lighting, however once implemented the lights will be more energy efficient. This would represent the loss of non-renewable resources, which are generally not retrievable, however there are sufficient resources to serve the Project.

Nonrecoverable materials and energy would be used during construction and operation activities; however, the amounts needed would be accommodated by existing supplies. Further, ONT is committed to construct the proposed facilities to meet high standards for efficiency and environmental design.

Implementation of best practices and standards that emphasize strategies for sustainable site development, water savings, energy efficiency, materials selection, and environmental quality would reduce the use of renewable and nonrenewable resources that would continue over time through construction and long-term operation of the Project.

Although sustainability measures would reduce the use of materials and energy during construction and operation of the Project, they would nevertheless be unavailable for other uses. The resources utilized for the Project would be permanently committed to the Airport and, therefore, be considered irreversible.

4.10 Significant and Unavoidable Impacts

A significant unavoidable impact is an impact that cannot be mitigated to a less than significant level if the project is implemented as it is proposed. The following significant unavoidable impacts have been identified as a result of the Proposed Project:

GHG Emissions: The Project would result in the following temporary significant unavoidable GHG emissions impacts:

- Net increase in construction-related GHG emissions.

Noise: The Project would result in the following temporary significant unavoidable noise impacts:

- Increased noise levels in the vicinity of the project due to construction-related aircraft operation changes (due to proposed runway closures and suspension of Contra Flow)

All other significant impacts of the Proposed Project would be reduced to a less than significant level with the implementation of mitigation measures identified in this SEIR.

4.11 Areas of Public Controversy

In accordance with Sections 15063 and 15082 of the CEQA Guidelines, OIAA prepared a Notice of Preparation (NOP) for this SEIR. In response to the NOP, five comments were received from groups and individuals related to potential impacts to the Burrowing Owl, a California State Species of Special Concern, which has been known to occur on Airport property during certain periods.

ENDNOTES

[1] CalEEMod emission factors include OFFROAD2011 emission factors for non-road equipment and EMFAC2017 emission factors for on-road vehicles.

[2] Lead (Pb) is not analyzed because the Proposed Project would have minimal to zero impact on lead emissions. Construction activity would not result in lead emissions. Further, the only source of lead emissions at ONT is from aviation gasoline (AvGas) used in piston-powered general aviation aircraft. Piston-powered engine aircraft comprise a small fraction of the total aircraft operating at ONT and their activity levels would not change as a result of the Project.

[3] The residential homes located along E. Airport Drive and S. Grove Avenue, approximately 700 feet north and 400 feet west of the contractor staging area, are eligible for voluntary acquisition under ONT's Quiet Home Program.

[4] The residential homes located along E. Airport Drive and S. Grove Avenue, approximately 700 feet north and 400 feet west of the contractor staging area, are eligible for voluntary acquisition under ONT's Quiet Home Program.

[5] CalEEMod emission factors include OFFROAD2011 emission factors for non-road equipment and EMFAC2017 emission factors for on-road vehicles.

[6] As noted in *Section 4.1.1*, *Air Quality, Methodology,* a concrete batch plant is proposed to be located on Airport property in an industrial area along E. Avion Street. Operation of the concrete batch plant results in particulate matter emissions, which are included as part of the Air Quality impact analysis. However, the concrete batch plant would not result in GHG emissions, and therefore is not analyzed as part of GHG emissions.

[7] As with the air quality emissions analysis, the construction GHG emissions inventory was developed in CalEEMod with the assumption that all off-road construction equipment would use Tier 4 final engines. However, use of Tier 4 off-road equipment does not reduce in any reduction in GHG emissions.

[8] City of Ontario, Community Climate Action Plan, November 2014.

[9] DRAFT, Air Quality Improvement Plan, Ontario International Airport, September 17, 2019, http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/facility-based-mobile-source-measures/draft-aqip-ont.pdf?sfvrsn=7,

[10] SBCTA, Region Greenhouse Gas Reduction Plan, Final, March 2021, https://www.gosbcta.com/plan/regional-greenhouse-gas-reduction-plan/, accessed 2/23/22.

[11] Population and housing units within the contours were first determined using 2010 U. S. Census Bureau block data (TIGER/Line with Selected Demographic and Economic Data (census.gov). At the time of this analysis, 2020 data was not available down to the block level. Total housing units and population by block were adjusted to remove the number of acquired properties in the Ontario Quiet Home Program. The population and housing units initially calculated within a contour were based on the assumption that housing units and population within a block were evenly distributed by area. (Note: These population and housing unit counts are not associated with the acreage of residential land use types.) Provided that the initial estimate of housing units based on block data was low, Google earth was then utilized to confirm the actual number of housing units occurring within the contour in a given block (2021 aerial). The average population per housing unit determined from the census block data was used to determine the estimated population. It was also noted whether the housing units within the contour have been mitigated (sound insulated) or are eligible for voluntary acquisition.

[12] ONT Rules and Regulations, Section 3 – Aircraft Operations, and Section 5 – Aircraft Noise Mitigation Operating Procedures and Restrictions, September 2020, https://www.flyontario.com/corporate/rules-and-regulations

[13] Governor's Office of Planning and Research (OPR), Technical Advisory on Evaluating Transportation Impacts in CEQA, April 2018, p. 20.

[14] Caltrans, "Transportation Analysis Under CEQA," September 2020, p. 13.

[15] Ontario City Council, City of Ontario Resolution No. 2020-071, June 16, 2020, https://www.ontarioca.gov/sites/default/files/Ontario-Files/City-Clerk-Records-Management/Minutes%2020200616.pdf, p. 4.

[16] OEHHA, 2015, *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*,: https://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0

[17] SCAQMD, 2022, *Modeling Guidance for AERMOD*, http://www.aqmd.gov/home/air-quality/meteorological-data/modeling-guidance. Accessed March 2022

[18] CARB, 2005, *Air Quality and Land Use Handbook: A Community Health Perspective*, https://www.arb.ca.gov/ch/handbook.pdf

[19] OEHHA, 2015, *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*,: https://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0

[20] SCAQMD, October 2020, *AB 2588 and Rule 1402 Supplemental Guidelines (Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act)*, https://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab-2588-supplemental-guidelines.pdf?sfvrsn=13

[21] SCAQMD, 2022, *MATES V Multiple Air Toxics Exposure Study*, http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v, accessed April 4, 2022.

[22] SCAQMD, 2019, Air Quality Significance Thresholds, http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf

[23] CARB, 2015, Risk Management Guidance for Stationary Sources of Air Toxics, https://www.arb.ca.gov/toxics/rma/rmgssat.pdf

[24] SCAQMD, MATES V Multiple Air Toxics Exposure Study. Available at: http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v. Accessed April 4, 2022.

5.0 Cumulative Impacts

5.1 Introduction

In accordance with CEQA and pursuant to Public Resources Code section 21083(b)(2), the effects of a proposed project may be "individually limited but cumulatively considerable … when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." This SEIR addresses the incremental contribution of the Proposed Project to cumulative impacts. *CEQA Guidelines* Section 15130 provides guidance for consideration of cumulative impacts within an EIR. Further, *CEQA Guidelines* Section 15355 defines "cumulative impacts" as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Cumulative impacts may result from individually minor, but collectively significant effects taking place over a period of time.

CEQA Guidelines Section 15130 states that an EIR should discuss cumulative impacts "when the project's incremental effect is cumulatively considerable." Per *CEQA Guidelines* Section 15130(b) the discussion does not need to be in as great detail as is necessary for project impacts but is to be "guided by the standards of practicality and reasonableness." To analyze a proposed project's contribution to cumulative impacts, CEQA requires that the lead agency identify past, present, and probable future projects in the vicinity of the Proposed Project; summarize their effects, and identify the contribution of the Proposed Project to cumulative impacts in the region. *CEQA Guidelines* section 15130(b)(3) indicates that feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects should be recommended. Cumulative impacts should be considered separately for each resource area addressed in an EIR. However, when the combined cumulative impacts associated with the project's environmental effect and the effect of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and why it is not discussed in further detail in the EIR.

5.2 Methodology

This cumulative impacts analysis considers, to the extent reasonable and practical, the potential impacts of the Proposed Project and other developments, both on and off the Airport, which could contribute to cumulative effects.

Per *CEQA Guidelines* Section 15130(b)(1) the identification of reasonably foreseeable growth may be based on either:

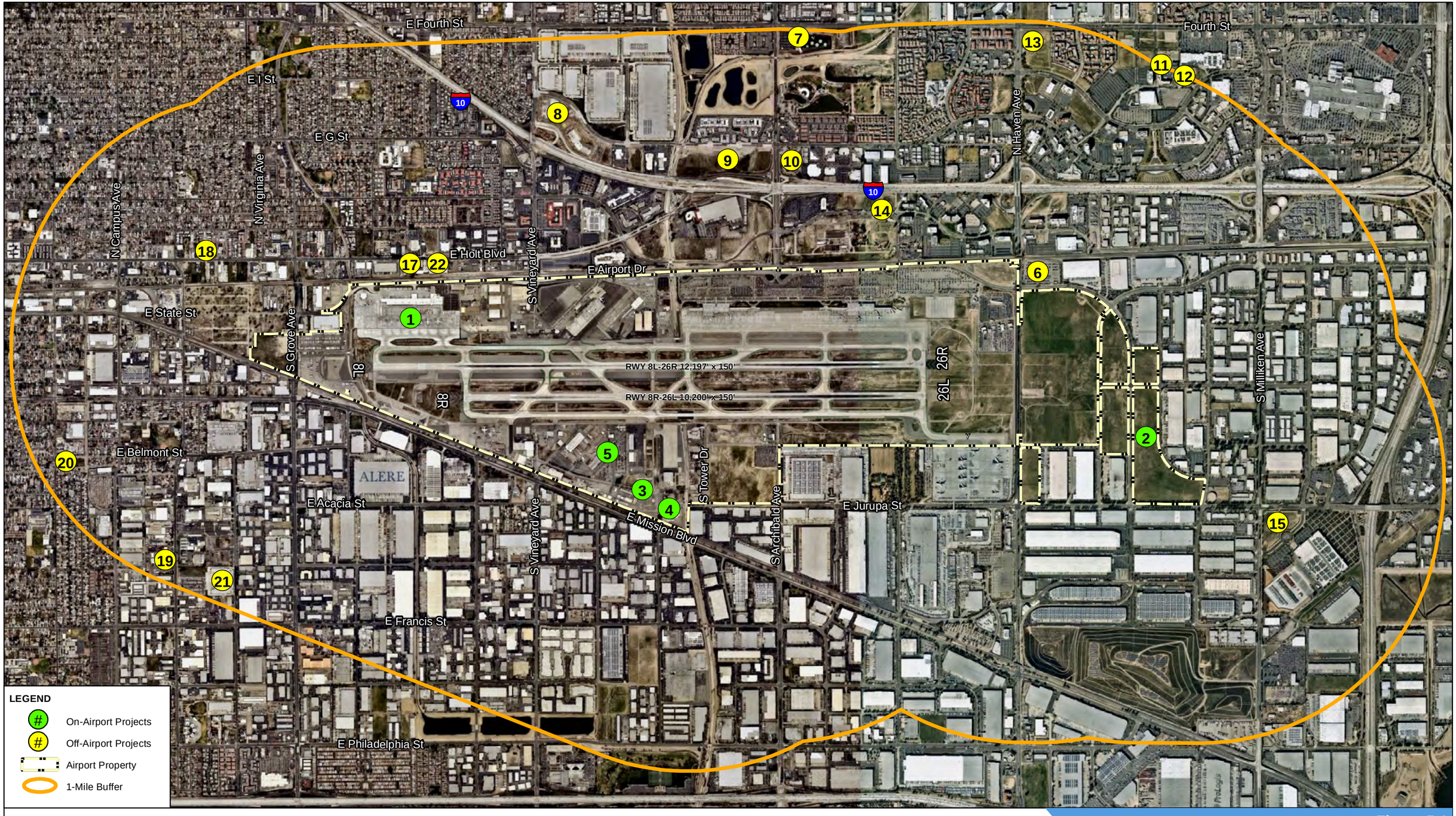
- A list of past, present, and probable future projects producing related or cumulative impacts; or
- A summary of projects contained in an adopted local, regional, or statewide plan, or related planning document designed to evaluate regional or area-wide conditions.

Because impacts of the Proposed Project will be experienced specifically during construction, the review of on- and off-airport projects that will potentially produce a cumulative impact is focused on the Proposed Project construction years 2023, 2024 and 2025. A review of recent on-airport projects (2020-present) with the potential to impact operations at ONT also is included.

The approach to analyzing potential cumulative impacts in this SEIR varies according to the environmental category being reviewed. For environmental categories where potential cumulative impacts would be localized, such as biological resources impacts, the analysis of potential cumulative impacts was limited to projects at or adjacent to ONT. For environmental categories whose cumulative impacts would accumulate on a regional basis, such as air quality, planning documents that evaluate regional and area-wide conditions were used to determine potential cumulative impacts.

The analysis begins by listing recent (2020-present) on-airport projects and probable future on-airport projects expected to be constructed and/or operational within 2023, 2024, or 2025. Probable future projects identified on-airport are in the planning stage but have not progressed their environmental review beyond issuance of a Notice of Preparation (NOP) to complete an EIR, in the case of the South Airport Cargo Center (SACC). **Table 5-1** provides the list of on-airport projects reviewed qualitatively for potential cumulative impacts. **Figure 5-1** depicts the locations of the on-airport projects.

For identification of off-airport projects with the potential to cause cumulative impacts, coordination with the City of Ontario Planning Department was undertaken. The project list provided by the City of Ontario Planning Department was reviewed for those project located within one mile of ONT (see ***Appendix J, City of Ontario Planning Department Coordination***). These projects were then reviewed for progress toward implementation, including City Council and Development Advisory Board approvals and publicly available environmental reviews or planning documentation specific to the years 2023, 2024, and 2025. If no details were available for the project's implementation timeline, no potential for cumulative impacts was identified. While limited information was available for off-airport projects provided by the City Planning Department, a summary is provided in Section 5.3. **Table 5-2** provides the list of off-airport projects reviewed qualitatively for potential cumulative impacts. Figure 5-1 depicts the location of the off-airport projects.



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 500 1,000 2,000 Feet

N

HNTB

Figure 5-1

Projects Considered for Cumulative Impacts

Sources: OIAA, Nearmap, City of Ontario Planning Department, 2022, HNTB Analysis

Table 5-1: Projects Reviewed for Cumulative Impacts (On-Airport)

#	Project Name and Description	Year Complete or Anticipated	CEQA Status	Potential Impact Categories
1	FedEx Express – Consolidate FedEx and multiple tenant operations in an air cargo facility located in the northwest sector of ONT and provide a taxiway adjacent and parallel to the air cargo facility.	2020	Pacific Gateway Cargo Center FEIR (Certified 2008), Addendum #1 June 26, 2018 Addendum determined no new significant impacts than identified in FEIR and some impacts would be lessened with updated project.	Air Quality, Noise, Transportation/Traffic in EIR; Air Quality (Construction emissions) ONLY in Addendum (reduced project impacts)
2	California Logistic Center 'Boot Property'– approximately 4 million SF of Industrial Development	2025	No Initial Study or Notice of Preparation issued.	Air Quality, Transportation/Traffic
3	Avion Roadway Realignment - Realignment of E. Avion from S. Vineyard to Cucamonga Channel, new bridge across Cucamonga Channel, and improvements to E. Jurupa from Cucamonga Channel to S. Archibald	2024	Anticipated Categorical Exemption pursuant to Section 15300.2 (Class 15301, Existing Facilities and Class 15302, Replacement or Reconstruction)	No cumulative impacts
4	Golden Bridge Project - Freight Forwarding Facility Development (non-aeronautical)	2024	No Initial Study or Notice of Preparation issued.	Air Quality, Transportation/Traffic
5	South Airport Cargo Center (SACC) & RTR Relocation	2024/2025	Notice of Preparation issued October 2021	Air Quality, Noise, Transportation/Traffic

Table 5-2: Projects Reviewed for Cumulative Impacts (Off-Airport)

#	Project Name and Description	Location	City of Ontario/San Bernardino County Project Development No.	Year Complete or Anticipated	CEQA Status	Potential Impact Categories
6	Industrial Development – 200,291 SF building	NEC of Airport Drive/Haven	PDEV20-008	No timeline available	Addendum to Ontario Plan FEIR Project introduces no new significant impacts	No cumulative impacts
7	Topgolf Los Angeles – Ontario – 100 golfing bays, bar and restaurant, event spaces 600,000 SF	2714 East 4th Street	APNs: 0210-181-34 and -45	Completed 2022 (opened March 11, 2022)	Impacts analyzed in MND	No cumulative impacts
8	Palmer Apartments – 950 units/ Commercial Retail - 5,000 SF	NWC of Archibald Ave and Inland Empire Blvd	APNs: 0110-311-52, -53, -54 and -55	Completed 2020	Meredith International Centre Specific Plan Amendment FEIR	No cumulative impacts
9	IKEA – 329,850 SF	SWC of Archibald Ave and Inland Empire Blvd	PDEV19-024	PA 3 of Meredith center, no timeline available	Meredith International Centre Specific Plan Amendment FEIR	No cumulative impacts
10	Hyatt Dual Hotel - 265 rooms	SEC of Archibald/Inland Empire Blvd	PDEV19-067	Under construction, expect completion prior to 2023	Categorically Exempt from CEQA pursuant to Section 15332 (Class 32, In-Fill Development Projects)	No cumulative impacts
11	72 Townhomes (Ontario Center Specific Plan - Piemonte Overlay)	SWC of Via Alba /Via Villagio	PDEV19-054	No timeline available	No Initial Study or Notice of Preparation issued.	No cumulative impacts

Table 5-2: Projects Reviewed for Cumulative Impacts (Off-Airport)

#	Project Name and Description	Location	City of Ontario/San Bernardino County Project Development No.	Year Complete or Anticipated	CEQA Status	Potential Impact Categories
12	110 Townhomes (Ontario Center Specific Plan - Piemonte Overlay)	NEC of Ontario Center Pkwy/Via Alba	PDEV19-061	No timeline available	Impacts analyzed in Mitigated Negative Declaration adopted 5/16/17, No. PSPA16-003 Project introduces no new significant impacts	No cumulative impacts
13	Retail Shopping Center – 101,163 SF (Ontario Center Specific Plan - Piemonte Overlay)	SEC of Haven Ave. and 4th Street	PDEV21-013	Not constructed, no timeline available	Impacts analyzed in Mitigated Negative Declaration adopted 5/16/17, No. PSPA16-003 Project introduces no new significant impacts	No cumulative impacts
14	Cambria Hotel – 124 rooms	535 N. Turner Ave	PDEV17-016	No timeline available	No Initial Study or Notice of Preparation issued.	No cumulative impacts
15	Industrial Development, 168,172 SF	SEC of Jurupa/Milliken	PDEV21-018	No timeline available	NOD 3/16/22, Addendum to The Ontario Plan EIR, significant impact	No cumulative impacts
16	Adept – 691 residential units and 70,538 SF commercial space	4th Street south to Concours' between Via Asti and Via Oiemonte	--	Not constructed, no timeline available	No Initial Study or Notice of Preparation issued.	No cumulative impacts

Table 5-2: Projects Reviewed for Cumulative Impacts (Off-Airport)

#	Project Name and Description	Location	City of Ontario/San Bernardino County Project Development No.	Year Complete or Anticipated	CEQA Status	Potential Impact Categories
17	Industrial - 26,000 SF	Subdivide parcel at 1486 East Holt Blvd	PDEV21-003	No timeline available	Categorically Exempt from CEQA pursuant to Section 15332 (Class 32, In-Fill Development Projects)	No cumulative impacts
18	Residential – 42 units/ Commercial – 12,119 SF	1001 East Holt Blvd	PDEV21-038	No timeline available	--	No cumulative impacts
19	Industrial – 31,500 SF	1516 South Bon View	PDEV21-007	No timeline available	--	No cumulative impacts
20	Industrial – 60,455 SF	SEC of Sultana Ave and Belmont	PDEV21-035	No timeline available	--	No cumulative impacts
21	Industrial - 211,358 SF	1610 and 1612 South Cucamonga Ave	PDEV19-040	Under construction, expect completion prior to 2023	Project previously analyzed under The Ontario Plan EIR (SCH# 2008101140)	Project introduces no new significant impacts
22	Industrial - 83,416 SF (two buildings)	1650 East Holt Blvd	PDEV19-048	No timeline available	Categorically Exempt from CEQA pursuant to Section 15332 (Class 32, In-Fill Development Projects)	No cumulative impacts

Source: Off-airport projects provided by City of Ontario Planning Department, February 15, 2022.

5.3 Off-Airport Project Summary

With the exception of two off-airport projects (#10 - Hyatt Dual Hotel and #21 - 211,358 SF Industrial property), the off-airport projects have either already been developed or the construction timeline is unavailable at this time according to the City and desktop research efforts. The Hyatt Dual Hotel was categorically exempt and the 211,358 SF industrial property was previously analyzed as part of The Ontario Plan EIR (SCH# 2008101140). An Addendum to the EIR was issued April 2020 which found no new significant environmental impacts, and all previously adopted mitigation measures were a condition of project approval. The industrial development is located within the Airport Influence Area of ONT and was evaluated and found to be consistent with the policies and criteria of the Ontario International Airport Land Use Compatibility Plan (ALUCP). For the reasons explained, the off-airport projects assumed to be constructed during or before the Proposed Project, would not result in a cumulative impact, construction or operationally, when combined with the Proposed Project.

The majority of the off-airport projects identified by the City are categorically exempt from CEQA, approved as part of a mitigated negative declaration (MND), or approved under an Addendum to the 2010 Ontario Plan EIR or the Meredith International Centre Specific Plan Amendment (SPA) EIR (2020). Projects eligible for categorical exemptions are generally considered not to have potential impacts on the environment; an MND is a negative declaration (ND) that incorporates revisions (mitigation measures) in the proposed project that will avoid or mitigate impacts to a point where no significant impacts on the environment would occur. The off-airport projects included as part of an Addendum to Ontario Plan EIR are industrial and were determined to introduce no new significant impacts. Impacts associated with these developments were disclosed and mitigation measures were adopted.

The projects included as part of the Meredith International Centre SPA EIR were completed in 2020 (#8 - Palmer Apartments) or do not yet have a construction timeline (#9 - IKEA). While there were significant impacts for several resource categories as part of the Meredith International Centre SPA EIR, mitigation measures reduced the impacts to below significance thresholds. The Meredith International Centre SPA EIR identified significant impacts related to transportation/traffic and proposed mitigation with two new access roadways to the site. This SEIR's Proposed Project does not impact transportation/traffic and thus no cumulative impacts related to traffic would occur. Air quality was also determined to be a potentially significant impact and mitigation measures were developed. The project proponent was required to work with the SCAQMD and document and mitigate the production of additional criteria air pollutants that could interfere with, or obstruct, the SCAQMD's implementation of the AQMP. This SEIR's Proposed Project results in a less than significant impact from criteria air pollutants.

For the reasons explained, none of the off-airport projects would have a cumulative impact, construction or operationally, when combined with the Proposed Project.

5.4 Qualitative Review

The following is a qualitative assessment of environmental categories for which there is potential for cumulative impacts associated with past, current and probable future projects when considered along with the Proposed Project which is to be constructed in 2023, 2024, and 2025. As such, this assessment includes the same environmental categories analyzed in *Chapter 4.0, Environmental Impacts and Mitigation.*

5.4.1 Air Quality

To begin, as a general matter, cumulative air quality conditions in the South Coast Air Basin are considered significant, as the air basin is in nonattainment with certain federal and state ambient air quality standards discussed in *Chapter 3.0* of this SEIR. This cumulative analysis, therefore, is conducted in accordance with SCAQMD guidance on addressing cumulative impacts for air quality: "Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."[1]

As detailed in *Section 4.1.4*, total construction emissions for the Proposed Project would not exceed NAAQS or SCAQMD thresholds. As a result, the contribution of the Proposed Project to cumulative construction-related emissions impacts would *not be considered to be cumulatively significant* under SCAQMD guidance.

Nonetheless, for additional context and information, on-airport construction projects at ONT would be subject to the same regulatory and standards rubric as the Proposed Project, including the requirement to use off-road equipment with Tier 4 Final engines. Past, current and probable future on-airport projects projected to be constructed in the same time frame as the Proposed Project (2023, 2024 and/or 2025) are discussed qualitatively below:

- FedEx Express Project: The FedEx Project is an air cargo facility located in the northwest quadrant of ONT that was constructed in 2020. An addendum to the Pacific Gateway Cargo Center (PGCC) FEIR was issued in June 2018 for a revised project, which proposed to consolidate the operations of one of ONT' s existing cargo operators to a 51-acre site located in the northwest corner of ONT, within the previously evaluated 96-acre PGCC site, as well as the construction of a new taxiway. The addendum found that impacts would either be consistent with the EIR or less than those described in the EIR. The addendum found that NO_x levels during construction would be significant and mitigation measures were applied. Once operational, no significant impacts to air quality were identified. Because construction was completed at the end of 2020, this project's construction emissions would not combine with those of the Proposed Project.
- California Logistic Center "Boot Property"–Industrial Development: The Boot Property is located on OIAA property, east of the airfield. Approximately 4

million SF of industrial development is proposed at this site. As of April 2022, it is not expected that construction of this project would occur before 2025. No CEQA document or NOP of a CEQA document has been completed at this time.

- E. Avion Roadway Realignment: OIAA is currently completing a CEQA Categorical Exemption for an approximately one-mile stretch of E. Avion Avenue and E. Jurupa Street to be reconstructed and realigned in one section; however, construction emissions have not been calculated as the project is eligible for a CEQA exemption.
- Golden Bridge Project: A CEQA document is currently being prepared for the construction of a freight forwarding facility proposed on E. Avion Street on Airport property, south of the airfield. OIAA is the lead agency; however, OIAA is not the project applicant and project materials have not been provided at this time. This project will be evaluated as a connected action in a Categorical Exclusion in accordance with the National Environmental Policy Act of 1969 (NEPA) as part of a release of federal obligations for several on-airport parcels.
- South Airport Cargo Center (SACC): The NOP of a Draft EIR for the SACC was published on October 14, 2021. The project includes the proposed relocation of the OIAA Administrative Offices and the South Airport South Secured Area Access Point (SAAP) to other locations at the Airport, demolition of the existing buildings, site improvements on the Project site, and development of an air cargo facility. OIAA is the lead agency; however, it is not the project applicant. As of April 2022, no environmental documentation beyond the NOP for development of an EIR has been submitted to OIAA by the project applicant and analysis of construction emissions by the applicant's consultant has not been finalized. Based on the applicant's schedule, and if approved by OIAA, SACC construction will begin in late 2022 with completion in 2024, with associated cargo operations scheduled to begin in late 2024. Thus, the SACC project's years of construction and operational overlap could include 2023 through 2025. It is anticipated that the EIR for the SACC project will include a comprehensive analysis of potential cumulative impacts.

Additionally, for the reasons explained under *Section 5.2*, none of the off-airport projects are anticipated to result in the Proposed Project making a cumulatively considerable contribution of construction emissions.

In summary, due to the Proposed Project resulting in a *less than significant impact* on construction-related emissions, it is not considered to be cumulatively significant under SCAQMD guidance. And, as previously discussed, the Proposed Project would not impact aircraft operational emissions beyond the construction period and does not result in operational emissions.

5.4.2 Biological Resources

As discussed in *Section 4.2.4*, the Proposed Project would result in a *less than significant impact with mitigation incorporated* to sensitive animal species and migratory species. Development projects on- and off-airport property involving ground-disturbing activities to sensitive habitat and species would not occur within

the project study area, and thus when combined with the Proposed Project, cumulative impacts would remain *less than significant impact with mitigation incorporated.*

OIAA would continue to implement its active and aggressive wildlife management program, and the applicable mitigation measures specified in Section 4.2.5 would be implemented as part of the Proposed Project to minimize or avoid impacts to biological resources.

5.4.3 Greenhouse Gas Emissions

In 2009, the California Natural Resources Agency published a notice for proposed amendments to CEQA Guidelines which noted that the impacts of GHG emissions should be considered in the context of a cumulative impact, rather than a project impact:

> "Greenhouse Gas Emissions Should be Analyzed as a Cumulative Impact: While the Proposed Amendments do not foreclose the possibility that a single project may result in greenhouse gas emissions with a direct impact on the environment, the evidence before the Resources Agency indicates that in most cases, the impact will be cumulative. Therefore, the Proposed Amendments emphasize that the analysis of greenhouse gas emissions should center on whether a project's incremental contribution of greenhouse gas emissions is cumulatively considerable."[2]

Consistent with the above findings made during the regulatory proceedings culminating in adoption of the GHG-related provisions of the CEQA Guidelines, the GHG impacts addressed in *Section 4.3.4* are treated exclusively as cumulative impacts as there are no non-cumulative GHG emissions impacts from a climate change perspective. Global climate change is the result of the accumulation of GHGs in the atmosphere, which is cumulative in nature and thus a single project's emissions will be small relative to total global or statewide GHG emissions.

As indicated in *Section 4.3.4*, implementation of the Proposed Project would result in a temporary, *significant and unavoidable impact* related to GHG emissions. Therefore, the Proposed Project's incremental contribution of GHG emissions is considered to be *cumulatively considerable.*

5.4.4 Cultural Resources

As discussed in *Section 4.4.4*, there are no anticipated impacts to cultural resources as a result of the Proposed Project and no mitigation is proposed. Therefore, when combined with other project construction anticipated to occur during the same time period, there would be no cumulative impacts related to cultural resources. Refer to *Section 5.3.6, Tribal Cultural Resources* for discussion of potential impacts and proposed mitigation measures related to Tribal Cultural Resources.

5.4.5 Transportation/Traffic

Consistent with the City of Ontario Resolution No. 2020-071 adopted VMT Thresholds,[3] rehabilitation, repair, replacement, and safety improvement projects for existing transportation assets that do not add additional capacity are projects that would not likely lead to a substantial or measurable cumulative increase in VMT provided the project is consistent with the Southern California Association of Government (SCAG) Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS). SCAG's focus in aviation planning is to ensure adequate ground transportation planning and improving ground access to the region's airports in response to potential future aviation demands. An Aviation Element was prepared as part of the RTP/SCS (also known as Connect SoCal). In preparing the Aviation Technical Report, SCAG staff gathered data from ONT, other airports in the region, other relevant data sources such as the FAA's Terminal Area Forecast (TAF), conducted analyses and engaged the Aviation Technical Advisory Committee (ATAC). ONT is an active participant in the ATAC, which meets on a quarterly basis to provide SCAG with technical and professional expertise on regional aviation issues. SCAG is required to include an airport ground access improvement program as part of Connect SoCal. A significant part of addressing airport ground access improvement is maintaining an updated list of airport ground access projects. ONT works with SCAG to provide updated project lists regularly for airport ground access projects and proposed improvements to the roadway network in the vicinity of the Airport are included in SCAG's Transportation System Project List. Because the Proposed Project would not modify any ground access to or from ONT, the project is not included on the list, however any airport or City projects that would impact airport roadways are included in the list and taken into account as part of SCAG's regional transportation planning efforts. The Proposed Project is a rehabilitation, repair, replacement, and safety improvement project that does not add or increase capacity at ONT and would therefore not increase VMT.

A significant part of addressing airport ground access improvement is maintaining an updated list of airport ground access projects. Due to the interdependent relationship between the air passenger and cargo activity traveling on the roads, highways, and transit systems, planning for the region's surface transportation system also includes analyzing historic and current airport passenger and cargo activity, as well as forecasting and planning for that future activity. The SCAG RTP/SCS addresses airport ground access and aviation systems planning improvements in the RTP/SCS. SCAG's primary interest in the region's airports is focused on air and passenger cargo activity from the perspective of how the traffic coming and going from the airports affects the region's roads, highways, and transit system. Connect SoCal states that "given the current passenger and cargo traffic to ONT, there is plenty of room for growth. The airport has a potential capacity of over 33 MAP." ONT is currently operating at 5.0 MAP.

Given the Airport's participation in SCAG's transportation planning for the region and the fact that the Proposed Project would not affect either aviation activity or influence airport capacity, the project would not cumulatively affect transportation/traffic. The forthcoming EIR for the SACC project will analyze potential cumulative impacts to

transportation/traffic however for the reasons stated previously the Proposed Project is not expected to contribute to cumulative impacts.

5.4.6 Tribal Cultural Resources

As discussed in *Section 4.7.4*, no tribal cultural resources have been identified within the project area. During AB 52 consultation with the Kizh Nation, although not recorded at the SCCIC, the Nation has knowledge of prehistoric isolates and a fire hearth located within the airport property. As such, there is potential for the Proposed Project to impact buried prehistoric archaeological and tribal cultural resources if found during construction. Projects reviewed on- and off-airport property involving ground-disturbing activities would not occur within the project area, and thus when combined with the Proposed Project, cumulative impacts would not be anticipated related to Tribal Cultural Resources.

Applicable regulatory requirements and mitigation measures specified in *Section 4.7.5* and *Section 4.7.6* respectively, would be implemented during construction of the Proposed Project to reduce the potential for impacting buried archaeological and TCRs.

5.4.7 Health Risk Assessment

As discussed in Section 4.8.4, the Proposed Project would not result in significant health risk impacts. Air quality cumulative health risks are the total risks from all sources of pollutants affecting a community or individual sensitive receptor. Cumulative sources of pollutants in the vicinity of ONT include on-road vehicles (e.g., high volume roadways), aircraft emissions, off-road equipment (e.g., airport ground support equipment, construction equipment), permitted stationary sources (e.g., gas stations), diesel-powered emergency generators, and other industrial sources. As discussed above, the SCAQMD has conducted studies on carcinogenic risk from exposure to air toxics in the SCAB. According to the MATES V Data Visualization interactive tool, the area around ONT has a cumulative cancer risk of 600 in 1 million[4].

Multiple future development projects are planned or approved for the City of Ontario, as well as ONT itself. For example, the proposed SACC project would develop a new air cargo facility at ONT. If approved, the SACC project would include additional short-term construction emissions, and long-term operational emissions (including additional aircraft and ground support equipment operating at ONT, and additional vehicles on area roads). Construction and operation of the SACC project has the potential to overlap with the ONT Rehabilitation of Runway 8R-26L and Associated Improvements Project. However, the results of the SACC project's health risk assessment were not available at the time of preparation of this analysis. And, due to the large number of project-specific inputs and detail needed to complete health risk analysis, it would be speculative to undertake further quantitative analysis of the SACC project at this time.

While the SCAQMD has not adopted any cumulative health risk thresholds at this time, the SCAQMD's thresholds (10 in 1 million cancer risk, non-cancer HI of 1) are used for evaluating the impact from a single project's incremental increase in health

risks. The SCAQMD considers that, if a project's emissions do not result in incremental health risks exceeding the thresholds, then the project's cumulative health risk impact would be less than cumulatively considerable.

Based on the SCAQMD's approach, the project's less-than-significant health risk impacts and related factors (such as the project's temporary duration), this analysis concludes that the project would not result in a cumulatively considerable health risk impact.

5.5 Quantitative Review of Noise

5.5.1 Noise

As detailed in *Section 4.5.4,* the Proposed Project results in a *significant, unavoidable temporary impact* from noise, and thus the contribution of the Proposed Project to cumulative noise impacts would be cumulatively considerable. As it relates to cumulative impacts associated with noise, the greatest potential for impacts is associated with aircraft operational noise at ONT. Given that ONT and the Proposed Project area is surrounded by industrial land uses, and that the majority of the cumulative projects listed in Table 5-1 are located far enough away from ONT, there is little potential for cumulative impacts resulting from direct construction activity noise impacts.

The impacts of the Proposed Project on temporary aircraft operational noise levels are attributable to three factors:

1. Background growth in passenger activity and aircraft operations that is anticipated at ONT with or without the Proposed Project.
2. Changes in fleet mix projected in future years that can impact overall noise levels. Generally, operations from older and noisier aircraft are expected to decrease in future years.
3. Runway closure periods associated with the Proposed Project construction that results in ONT operating on a single runway for periods of 2023, 2024 and 2025, as compared to the Baseline Conditions (the hybrid 2019/2020 base year condition discussed in Section 3.2.2) where both runways are operational. The impact of these runway closure periods is detailed and illustrated under the following section, Construction Impacts.

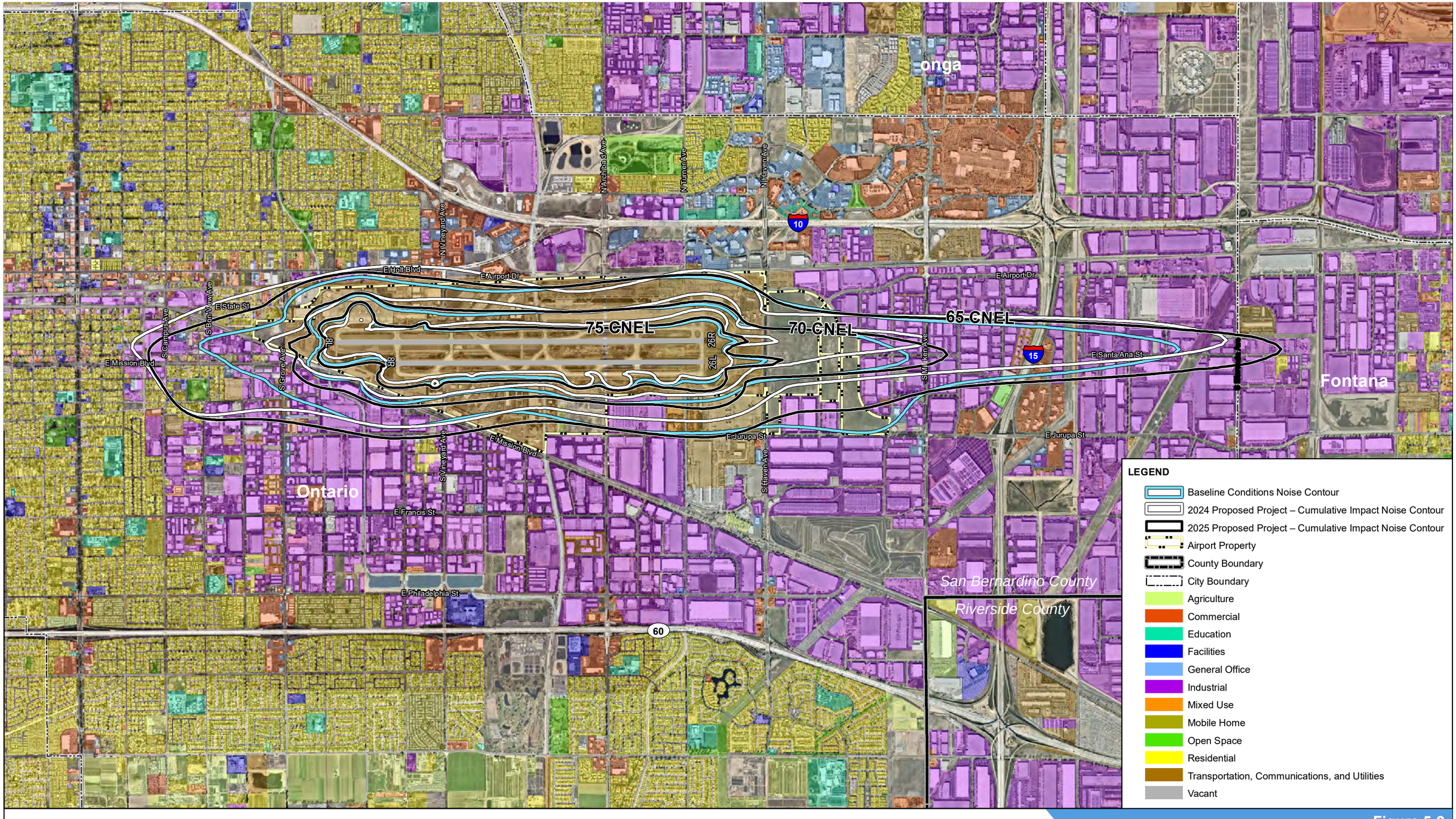
As noted above, the Proposed Project noise analysis accounts for the reasonably foreseeable future operations at ONT (based on the FAA's Draft 2020 TAF). With respect to cumulative projects listed in Table 5-1, there is one project, the SACC project, with the potential to further increase operational noise levels at ONT. As detailed under *Section 5.3.1*, the NOP of a EIR for the SACC was published on October 14, 2021. The SACC is proposed for construction in 2022-2024, with associated cargo operations scheduled to begin in late 2024.

Due to the overlap of proposed SACC operations with the analysis of Proposed Project noise levels in 2024 and 2025, an additional noise analysis was completed to model

the combined noise levels of the Proposed Project and SACC operations, herein referred as the "Proposed Project – Cumulative Impact" noise levels. Noise impacts were modeled using the methodology detailed in *Section 4.5.1*. As of March 2022, no environmental documentation beyond the NOP has been issued for public review. However because OIAA has been in close coordination with the applicant for the SACC to supply projected fleet mix information and other noise modeling input, OIAA was able to model the anticipated cumulative increase in aircraft operations due to the SACC project in the years 2024 and 2025.

As required by CEQA, the noise levels associated with the Proposed Project – Cumulative Impact are compared to the noise levels associated with the Baseline Conditions noise levels. **Figure 5-2** shows the expected noise exposure contours under the 2024 and 2025 Proposed Project - Cumulative Impact in comparison with the Baseline Conditions.

The estimated land area (acres) within CNEL contours for the Baseline Conditions and 2024 and 2025 Proposed Project - Cumulative Impact along with the estimated number of residential dwelling units, schools, churches, residential population and dwelling units located within the contours are provided in Table 3-13 (*Section 3.3.3*) and **Tables 5-3 and 5-4**, respectively.



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

N

HNTB

Figure 5-2

2024 Proposed Project – Cumulative Impact, 2025 Proposed Project – Cumulative Impact and Baseline Conditions Noise Contours Comparison

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis

Table 5-3: 2024 Proposed Project - Cumulative Impact Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	Total
Residential	56.1	0	0	**56.1**
Education	0	0	0	**0**
Mixed Use	30.2	0	0	**30.2**
Mobile Home	0	0	0	**0**
Open Space	11.8	0	0	**11.8**
Agriculture	1.6	0	0	**1.6**
Commercial	26.0	0	0	**26.0**
Facilities	4.5	0	0	**4.5**
General Office	7.3	0	0	**7.3**
Industrial	558.8	27.3	0	**586.1**
Transportation, Communications, and Utilities	600.7	452.6	546.5	**1,599.8**
Vacant	230.9	79.3	1.0	**311.2**
TOTAL	**1,527.9**	**559.2**	**547.4**	**2,634.5**
Noise-Sensitive Land Uses (#)				
Hospitals	0	0	0	**0**
Schools	0	0	0	**0**
Religious (e.g., Church)	0	0	0	**0**
Residential (dwelling units)	245	0	0	**245**
Population	1,108	0	0	**1,108**

Note:
Totals may not sum due to rounding.
(1) Of the 245 dwelling units within the 65 dB contour, under ONT's Quiet Home Program:
- 151 sound insulated (~691 population)
- 31 eligible for sound insulation (~138 population)
- 46 eligible for voluntary acquisition (~209 population)
- 17 not eligible for insulation or acquisition (~70 population)
(2) Of the 245 dwelling units with the 65 dB contour, 233 are single family and 12 are multi-family (six duplexes). Google earth was utilized to confirm housing counts and types.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

Table 5-4: 2025 Proposed Project - Cumulative Impact Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	TOTAL
Residential	47.4	0	0	**47.4**
Education	0	0	0	**0**
Mixed Use	39.5	2.7	0	**42.2**
Mobile Home	0	0	0	**0**
Open Space	11.9	0	0	**11.9**
Agriculture	3.6	0	0	**3.6**
Commercial	24.8	0	0	**24.8**
Facilities	4.0	0	0	**4.0**
General Office	9.3	0	0	**9.3**
Industrial	690.5	87.8	0	**778.3**
Transportation, Communications, and Utilities	647.9	423.0	608.5	**1,679.4**
Vacant	246.9	121.1	1.8	**369.8**
TOTAL	**1,725.8**	**634.6**	**610.2**	**2,970.6**
Noise-Sensitive Land Uses (#)				
Hospitals	0	0	0	**0**
Schools	0	0	0	**0**
Religious (e.g., Church)	0	0	0	**0**
Residential (dwelling units)	232	0	0	**232**
Population	1,050	0	0	**1,050**

Note:
Totals may not sum due to rounding.
(1) Of the 234 dwelling units within the 65 dB contour, under ONT's Quiet Home Program:
- 150 sound insulated (~685 population)
- 27 eligible for sound insulation (~117 population)
- 38 eligible for voluntary acquisition (~178 population)
- 17 not eligible for insulation or acquisition (~70 population)
(2) Of the 232 dwelling units with the 65 dB contour, 220 are single family and 12 are multi-family (six duplexes). Google earth was utilized to confirm housing counts and types.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2021.

Table 5-5 summarizes the total aircraft operations, runway closure periods, and the change in 65 CNEL noise contour area between each Proposed Project – Cumulative Impact year and the Baseline Conditions. The total acreage within the 65+ CNEL noise contours is 6% to 20% greater in the 2024 and 2025 Proposed Project – Cumulative contours as compared to the Baseline Condition contour. The change in Proposed Project - Cumulative Impact noise conditions compared to the Baseline Conditions is attributable to the three factors listed above (i.e., baseline growth, changes in fleet mix, and runway closure periods), as well as the additional SACC operations proposed in 2024 and 2025. The increase in 65+CNEL contour area in 2024 is attributable to 4,576 additional cargo operations due to the SACC project.

The increase in 65+ CNEL contour area in 2025 is attributable to 13,728 additional cargo operations due to the SACC project.

Table 5-5: Noise Inputs and Outputs for Baseline Conditions and Proposed Project – Cumulative Impacts

Year	Scenarios	Aircraft Operations	Runway Closure	65 CNEL Noise Contour Area (acres)	Change in Area Compared to Baseline
2019/2020	Baseline Conditions	106,026	No closure	2,485	--
2024	Proposed Project – Cumulative Impact	118,402	8R-26L – 9 months	2,637	+6.2%
2025	Proposed Project – Cumulative Impact	131,353	8L-26R – 5 months	2,971	+19.6%

Source: HNTB analysis, 2022.

Table 5-6 provides the population, number of housing units and acreage within the various CNEL ranges that would be affected in each Proposed Project – Cumulative Impact year and provides a comparison of the Proposed Project – Cumulative Impact in each year to the Baseline Conditions.

As indicated in Table 5-5, the Proposed Project – Cumulative Impact results in additional population and housing units within the 65-69 CNEL contour for all years, as compared to the Baseline Conditions. This increase in population/housing units is largely due to increased operations due to background growth and proposed SACC operations, and to the shift in the Proposed Project noise contours to the west of ONT, towards residential areas, as a result of the suspension of Contra Flow operations during proposed runway closures in 2024 and 2025. It should be noted that while the 65+ CNEL contour area significantly increases in 2025 compared to 2024, the total population and housing units decrease in 2025 as compared to 2024. This is due to the longer runway closure period in 2024 (9 months) as compared to 2025 (5 months), and the suspension of Contra Flow during these periods resulting in more operations over residential areas west of ONT in 2024 as compared to 2025.

The Proposed Project – Cumulative Impact would result in temporary (during construction) and permanent (due to background growth and SACC operations compared to baseline conditions) increases in noise exposure surrounding ONT and would therefore be a *cumulatively considerable significant impact* on noise levels.

Table 5-6: Estimated Population, Housing Units and Acreage within Proposed Project – Cumulative Impact and Baseline Conditions Aircraft Noise Contours

Alternative	Population				Housing Units				Acreage			
	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL
Baseline Conditions	59	0	0	59	13	0	0	13	1,390	545	551	2,485
2024 Conditions												
Proposed Project – Cumulative Impact	1,108	0	0	1,108	245	0	0	245	1,528	559	547	2,635
Difference Between 2024 Proposed Project – Cumulative Impact and Baseline Conditions	***+1,049***	***0***	***0***	***+1,049***	***+232***	***0***	***0***	***+232***	***+138***	***+14***	***-3***	***+149***
2025 Conditions												
Proposed Project – Cumulative Impact	1,050	0	0	1,050	232	0	0	232	1,726	635	610	2,971
Difference Between 2025 Proposed Project – Cumulative Impact and Baseline Conditions	***+991***	***0***	***0***	***+991***	***+219***	***0***	***0***	***+219***	***+336***	***+90***	***+60***	***+485***

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

5.6 Cumulative Impact Summary

The Proposed Project results in significant, unavoidable temporary impacts to GHG emissions and noise levels at ONT. For this reason, the Proposed Projects impact on GHG emissions and noise is cumulatively considerable. Refer to *Section 4.3.5, Greenhouse Gases, Mitigation Measures*, and *Section 4.5.5, Noise, Mitigation Measures,* for explanation of the infeasibility to mitigate these cumulatively considerable impacts. This cumulative analysis considers the potential effects of on- and off-airport projects recently completed or probable future projects expected to be constructed and/or operational within 2023, 2024, or 2025.

A qualitative assessment of environmental categories for which there is potential for cumulative impacts associated with past, current and probable future projects when considered along with the Proposed Project was conducted. This review determined that on- and off-airport projects are expected to result in a *cumulatively considerable significant impact to GHG emissions*, from construction or operationally, when combined with the Proposed Project. All cumulative projects will be subject to CEQA requirements to identify feasible mitigation measures and alternatives for the reduction of GHG emissions.

A quantitative assessment was completed for cumulative noise impacts. As it relates to cumulative impacts associated with noise, the greatest potential for impacts is associated with aircraft operational noise at ONT. Due to the overlap of proposed SACC operations with the analysis of Proposed Project noise levels in 2024 and 2025, an additional noise analysis was completed to model the combined noise levels of the Proposed Project and SACC operations, herein referred as the "Proposed Project – Cumulative Impact" noise levels. The analysis determined that the "Proposed Project – Cumulative Impact" would result in temporary (during construction) and permanent (due to background growth and SACC operations compared to baseline conditions) increases in noise exposure surrounding ONT and would therefore be a *cumulatively considerable significant impact on noise levels*.

While no additional cumulative impacts are anticipated from the combined impact of the Proposed Project and other projects other than to GHG emissions and noise, CEQA documentation for future projects will include a comprehensive analysis of potential cumulative construction impacts.

ENDNOTES

[1] SCAQMD, White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution, Appendix D – Cumulative Impact Analysis Requirements Pursuant to CEQA, August 2003, page D-3.

[2] California Natural Resources Agency, Notice of Public Hearings and Notice of Proposed Amendment of Regulations Implementing the California Environmental Quality Act, 2009, https://resources.ca.gov/CNRALegacyFiles/ceqa/docs/Notice_of_Proposed_Action.pdf

[3] Ontario City Council, City of Ontario Resolution No. 2020-071, June 16, 2020, https://www.ontarioca.gov/sites/default/files/Ontario-Files/City-Clerk-Records-Management/Minutes%2020200616.pdf, p. 7.

[4] South Coast Air Quality Management District (SCAQMD). 2022b. MATES V Multiple Air Toxics Exposure Study. Available at: http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v. Accessed April 4, 2022.

6.0 Growth-Inducing Impacts

Per *CEQA Guidelines* Section 15126.2, this SEIR addresses the ways in which the Proposed Project "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." This information can be an important factor in a decision to approve a project. As stated in CEQA Guidelines, "It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment."[1]

6.1 Growth-Inducting Impacts of the Proposed Project

The Proposed Project would not facilitate any unplanned growth. The project is located entirely on developed and active airport property within an urbanized area of San Bernardino County, and its construction would not open additional areas to development. The Proposed Project includes the rehabilitation and reconstruction of Runway 8R-26L, taxiway connector improvements and other associated airfield improvements, the relocation/replacement of several objects to outside of the RSA and/or ROFA, and the relocation of the south electrical vault. The individual projects that make up the Proposed Project, along with their connected actions and justification for each of the project components, are described in *Chapter 2.0, Project Description* and are illustrated on Figure 2-5.

The Proposed Project would not result in increased runway capacity. Runway use and flight patterns would not be impacted after the Proposed Project is implemented, however during runway closure periods as part of construction, all operations would occur on a single runway. The Proposed Project prioritizes future maintenance, rehabilitation and/or reconstruction projects for airside pavement in accordance with the 2020 ONT PMP, provides improvements to meet current FAA standards, improves airfield safety, enhances airfield efficiency and provides infrastructure needed to support airfield and navigational power requirements, including replacement of the south electrical vault.

The Proposed Project would not affect the number of employees required to operate Airport facilities. The number of passengers expected to use ONT and the number of air carrier operations using the Airport would not change as a result of the Proposed Project. It is not expected that the Proposed Project would affect population growth or tourism in Ontario and the surrounding region. The Proposed Project would therefore also not affect housing or the economy.

There would be short-term impacts during construction of the project elements, however the Proposed Project would be entirely within developed and active airport property. Land uses surrounding the project site include airport-related and industrial uses. No changes to land uses on or off airport property would occur. No land acquisition or new facilities are proposed in the surrounding communities as a result of, or to accommodate the Proposed Project. The Proposed Project is consistent with plans, goals, policies, zoning and local controls that have been adopted and govern over the project site.

The Proposed Project would not induce growth at the Airport beyond that which would occur without the improvements and therefore would not result in a significant growth-inducing impact.

ENDNOTES

[1] Association of Environmental Professionals, CEQA Guidelines, 2021, p. 211.

7.0 Effects Found Not to be Significant

This chapter identifies and explains the environmental resources for which the Proposed Project is expected to have no impact, less than significant impact, or less than significant impact with mitigation incorporated; and thus detailed analysis is not necessary. These resources include the following:

- Aesthetics
- Agricultural Resources
- Geology/Soils
- Hazard and Hazardous Materials
- Hydrology and Water Quality
- Land Use/Planning
- Mineral Resources
- Population/Housing
- Public Services
- Recreation
- Utilities/ Service Systems
- Wildfire

Section 15128 of the *State CEQA Guidelines* requires that an EIR "contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the [Supplemental] EIR." The absence of impact to these resources was discussed in the June 2021 IS. Per Section 15128, "such a statement can be contained in an attached copy of an Initial Study." Therefore discussion of the effects found not to be significant is included in *Appendix A, Notice of Preparation (NOP) and Initial Study*, which contains the June 2021 IS, of which materials are incorporated here in full.

The Environmental Checklist topics not included in this chapter are addressed in SEIR *Chapters 3.0, Environmental Setting and 4.0, Environmental Impacts and Mitigation*. Additionally, while the biological resources, cultural resources, transportation/traffic, and tribal cultural resources findings (less than significant impact or less than significant impact with mitigation incorporated) included in the IS remain valid, additional discussion of these resources is included to support that determination in *Chapters 3.0 and 4.0*.

8.0 Alternatives

The 1991 Certified FEIR reviewed and certified project components similar to those being reviewed as part of this SEIR. The 1991 Certified FEIR stated that the environmental effects of the implementation of various airfield improvements, including a runway extension and construction and reconstruction of several taxiways with the objective of providing facilities to accommodate 12 MAP at ONT, "would have short-term impacts involving construction of the airport facilities and related projects. ONT surrounding is already planned for mixed-uses, including commercial, and industrial and office parks."[1] As such, similar project components to the approved projects are being analyzed as part of this SEIR.

The Proposed Project includes the rehabilitation and reconstruction of Runway 8R-26L, taxiway connector improvements and other associated airfield improvements, the relocation/replacement of several objects to outside of the RSA and/or ROFA, and the relocation of the south electrical vault. The individual projects that make up the Proposed Project, along with their connected actions and justification for each of the project components, are described in *Chapter 2.0, Project Description* and are illustrated on Figure 2-5.CEQA Guidelines Section 15126.6(a) states that an [S]EIR must address:

> …a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives that are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason.[2]

As described in *Chapters 4.0, Environmental Impacts and Mitigation and Chapter 5.0*, *Cumulative Impacts*, the Proposed Project would result in significant temporary noise and other impacts during construction in parts of 2023, 2024 and 2025. This SEIR chapter focuses on alternatives that would avoid or minimize these significant or potentially significant temporary environmental impacts. The alternatives carried forward for detailed evaluation for this SEIR therefore includes an alternative that would minimize potentially significant temporary environmental impacts, the Two-Year Program Alternative.

The No Project Alternative is also evaluated along with its impact compared to the Baseline Conditions. Per CEQA guidelines, "The purpose of describing and analyzing a No Project alternative is to allow decision makers to compare the impacts of approving the Proposed Project with the impacts of not approving the proposed

project."[3] Discussion of the alternatives that were considered but not carried forward for detailed evaluation are also discussed.

8.1 Alternatives Carried Forward for Detailed Evaluation

8.1.1 Two-Year Program Alternative

8.1.1.1 Description of Alternative

This alternative would include identical project components included as part of the Proposed Project and depicted in Figure 2-5: the rehabilitation and reconstruction of Runway 8R-26L, taxiway connector improvements and other associated airfield improvements, the relocation of objects located within the RSA and ROFA, and relocation of the south electrical vault. However, the Two-Year Program Alternative would implement all of the project components over a two-year schedule (2023 and 2024). For comparison, the Proposed Project is expected to be implemented over a three-year schedule (2023, 2024, and 2025). The Two-Year Program Alternative was considered during early planning efforts and proposed in OIAA's January 2019 and January 2020 Airport Capital Improvement Plan (ACIP) submittals to the FAA. (*See **Appendix K, Two-Year Program Alternative***).

A two-year construction schedule is considered to be physically possible assuming appropriate construction crew availability, usage and scheduling (which is not feasible), and is also financially or economically infeasible. As with the Proposed Project, the Two-Year Program Alternative would pause construction for holiday travel; construction would begin in mid-January 2023 and be complete in mid-October 2024. The preferred schedule would occur over nine months in 2023 (Year 1) with a closure of Runway 8L-26R for 6 months followed by 8R-26L for 3 months; and nine months of Runway 8R-26L being closed in 2024 (Year 2). This equates to a total of 18 months with one of the two runways being closed during a two-year period. As a comparison, construction of the Proposed Project would require one of the two runways to be closed for a total of 24 months, beginning in mid-January 2023 and continuing through mid-June 2025 with a pause in construction during holiday travel. This would occur over nine months in 2023 and 2024, and over six months in 2025 as explained in *Chapter 2.0, Project Description*.

As is the case with the Proposed Project, once the construction is complete, the airfield would operate as it did prior to construction of the Two-Year Program Alternative.

8.1.1.2 Comparison of Environmental Effects

This section considers the environmental effects of the Two-Year Program Alternative compared to the Proposed Project.

Aesthetics

The Two-Year Program Alternative would be consistent with the aesthetics of the existing Airport and would have less than significant impacts on aesthetics. Any necessary construction lighting would be properly shielded so as not to impact airfield operations or surrounding land uses. Minor upgrades to runway and taxiway lighting associated with runway rehabilitation and taxiway improvements would be the same

as the Proposed Project and similar to the lighting that exists on the airfield today. Thus, the Two-Year Program Alternative would have less than significant impacts as with the Proposed Project.

Agricultural and Forestry Resources

The Two-Year Program Alternative would have no impacts on agricultural and forestry resources. The lack of impacts regarding this category is the same with the Two-Year Program Alternative as with the Proposed Project.

Air Quality

This air quality analysis examines criteria pollutant emissions that result from temporary construction activity and temporary operational changes associated with the Two-Year Program Alternative during construction years 2023 and 2024. Like the Proposed Project, the Two-Year Program Alternative would have no impact on operations at the Airport beyond the construction period. The Two-Year Program Alternative would not increase Airport capacity and would not result in increases in local traffic as described in *Section 3.9, Transportation/Traffic*. Therefore, emissions associated with overall aircraft activity levels and passenger traffic arriving and departing ONT were not analyzed. There are no emissions impacts associated with the Two-Year Program Alternative beyond the construction period.

Construction Impacts

The analysis of construction emission impacts includes both direct impacts associated with Two-Year Program Alternative construction activity, and indirect impacts associated with a change in aircraft taxiing patterns due to temporary construction-related runway closures in 2023 and 2024. The tables presented below summarize the direct, indirect and total construction emissions. The determination of significance was based on the Two-Year Program Alternative's total construction emissions.

Direct Construction Emissions

A construction emissions inventory was prepared for the Two-Year Program Alternative for the construction years 2023 and 2024. Construction emissions typically include emissions from on-road vehicles (vehicles miles traveled [VMT]) and off-road equipment (equipment hours). ONT requires the use of Tier 4 final engine emission standards for all off-road construction equipment, which serves to significantly reduce NO_x and PM emissions. To ensure implementation, Tier 4 engine requirements are included by ONT in all applicable construction contracts, plans and specifications. Therefore, the construction emissions inventory was developed in CalEEMod with a Tier 4 final engines input for all off-road construction equipment. The construction emissions also include PM emissions associated with the operation of the concrete batch plant proposed to be located on Airport property in an industrial area along E. Avion Street.

Table 8-1 presents the Two-Year Program Alternative direct construction emissions, as compared to the NAAQS and SCAQMD thresholds of significance. As shown, the direct construction-related emissions are below the applicable NAAQS and SCAQMD thresholds for all pollutants/precursors and construction years. See *Appendix D, Air Quality and GHG Emissions Analysis, Attachment 1 – Construction Emissions* for details on the modeling of construction activity emissions.

Table 8-1: Two-Year Program Alternative Direct Construction Emissions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023 Two-Year Program Alternative	18	3	1	<1	1	3	182	36	6	1	12	26
2024 Two-Year Program Alternative	18	3	1	<1	1	2	178	32	7	1	9	23
NAAQS or SCAQMD threshold of significance	*100*	*10*	*10*	--	*70*	*100*	*550*	*100*	*75*	*150*	*55*	*150*
Exceeds Thresholds?	*No*	*No*	*No*	--	*No*	*No*	*No*	*No*	--	--	*No*	*No*

Notes:
Volatile organic compounds (VOCs) are referred as Reactive organic gases (ROG) in CalEEMod.

Source: CalEEMod, HNTB analysis 2022.

Indirect Construction Emissions

The Two-Year Program Alternative would require the following temporary runway closures in 2023 and 2024 during construction:

- 2023 – maximum nine months of runway closure
  - Runway 8L-26R will be closed for six months (from mid-January to mid-July)
  - Runway 8R-26L will be closed for three months (from August to October)
- 2024 – maximum nine months of runway closure
  - Runway 8R-26L will be closed for nine months (from mid-January to mid-October)

While operational levels would be identical in each future year whether or not the Two-Year Program Alternative is implemented, due to these necessary runway and taxiway closures, aircraft taxiing times would vary. More specifically, the Two-Year Program Alternative would reduce the duration of taxiing times in construction years 2023 and 2024 as compared to the Baseline Conditions. The most prevalent reason for reduced taxi times in 2023 and 2024 is due to the fact that, without the requirement to operate with Contra Flow, aircraft that would have necessarily traveled to Runways 8L and 8R to depart will be allowed to depart on either Runway 26L or 26R, depending on the runway that is open. This will reduce taxi distance for many operations.

Table 8-2 provides a comparison of the total aircraft taxiing emissions with implementation of the Two-Year Program Alternative in 2023 and 2024 as compared to the Baseline Conditions aircraft taxiing emissions. These incremental differences represent the indirect Two-Year Program Alternative related construction emissions associated with temporary runway closures.

Total Construction Emissions

As presented in **Table 8-3**, when taking into consideration the temporary increases in emissions from construction equipment and the temporary decreases in taxiing emissions associated with the temporary runway closures, the total construction emissions remain below the applicable NAAQS and SCAQMD thresholds for all pollutants/precursors and years. Therefore, the Two-Year Program Alternative would result in a ***less than significant impact*** from construction-related emissions.

Table 8-2: Two-Year Program Alternative Aircraft Taxiing Indirect Construction Emissions from Temporary Runway Closures Compared to Baseline Conditions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
Baseline Conditions	517	63	96	18	2	2	2,832	346	527	101	9	9
2023 Two-Year Program Alternative	490	60	90	17	1	1	2,686	328	493	95	8	8
2023 Incremental Changes	***-27***	***-3***	***-6***	***-1***	***<0***	***<0***	***-146***	***-18***	***-34***	***-5***	***-1***	***-1***
Baseline Conditions	517	63	96	18	2	2	2,832	346	527	101	9	9
2024 Two-Year Program Alternative	510	63	94	18	2	2	2,790	342	511	99	8	8
2024 Incremental Changes	***-6***	***-1***	***-3***	***<0***	***<0***	***<0***	***-43***	***-4***	***-16***	***-1***	***<0***	***<0***

Source: FAA ASPM and HNTB analysis, 2022.

Table 8-3: Total Two-Year Program Alternative Construction Emissions Compared to Baseline Conditions

Year	Emission Source	Pollutants (tons/year)						Pollutants (lbs/day)					
		CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023	Direct - Construction	18	3	1	<1	1	3	182	36	6	1	12	26
	Indirect – Aircraft Taxiing	-27	-3	-6	-1	<0	<0	-146	-18	-34	-5	-1	-1
	Total	**-9**	**0**	**-6**	**-1**	**<1**	**1**	**36**	**17**	**-28**	**-5**	**11**	**25**
2024	Direct - Construction	18	3	1	<1	1	2	178	32	7	1	9	23
	Indirect – Aircraft Taxiing	-6	-1	-3	<0	<0	<0	-43	-4	-16	-1	<0	<0
	Total	**11**	**3**	**-2**	**<0**	**<1**	**2**	**136**	**28**	**-9**	**-1**	**9**	**23**
NAAQS or SCAQMD threshold of significance		*100*	*10*	*10*	*--*	*100*	*70*	*550*	*100*	*75*	*150*	*150*	*55*
Exceeds Thresholds?		*No*	*No*	*No*	*--*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*

Source: FAA ASPM and HNTB analysis, 2022.

Additional Analysis For Informational Purposes

As noted above, CEQA requires that a proposed project be compared to baseline conditions for the purpose of making a significance determination. For the Two-Year Program Alternative, the incremental aircraft taxiing emissions would be influenced by factors that are not exclusively attributable to the Project itself, specifically from background operational growth at ONT that is projected to occur with or without the Two-Year Program Alternative, as well as lower emission factors for aircraft from improved engine technology. In order to remove the influence of background growth and differences in emission factors, this analysis also compares aircraft taxiing emissions of the Two-Year Program Alternative in a given year with the aircraft taxiing emissions from the No Project Alternative in the same year. The No Project Alternative, in this context, acts as a modified baseline under CEQA Guidelines Section 15125(a)(1), as it allows for a comparison of the Two-Year Program Alternative to the airfield conditions expected at the time of its implementation (calendar years 2023 and 2024). This comparison is made for informational purposes only.

Table 8-4 provides a comparison of the total aircraft taxiing emissions with and without implementation of the Two-Year Program Alternative in 2023 and 2024, as well as the incremental differences between the two conditions each year. These incremental differences represent the indirect Two-Year Program Alternative-related construction emissions associated with temporary runway closures, removing background growth and differences in emission factors. As indicated, the temporary changes in aircraft taxiing during construction of the Two-Year Program Alternative result in decreases of emissions when compared to the No Project Alternative.

As presented in **Table 8-5**, when taking into consideration the emissions decreases associated with the temporary runway closures through the construction years, there is a net decrease in total construction emissions when comparing the Two-Year Program Alternative to the No Project Alternative, and no exceedances of NAAQS or SCAQMD thresholds. As the Two-Year Program Alternative itself does not induce operational growth, this comparison provides a more realistic look at the impacts of the Two-Year Program Alternative aircraft taxiing emissions.

Table 8-4: Two-Year Program Alternative Aircraft Taxiing Indirect Construction Emissions from Temporary Runway Closures Compared to the No Project Alternative

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023 No Project Alternative	551	67	101	20	2	2	3,019	369	554	107	9	9
2023 Two-Year Program Alternative	490	60	90	17	1	1	2,686	328	493	95	8	8
2023 Incremental Changes	***-61***	***-7***	***-11***	***-2***	***<0***	***<0***	***-333***	***-41***	***-61***	***-12***	***-1***	***-1***
2024 No Project Alternative	572	70	105	20	2	2	3,125	383	573	111	9	9
2024 Two-Year Program Alternative	510	63	94	18	2	2	2,790	342	511	99	8	8
2024 Incremental Changes	***-61***	***-8***	***-11***	***-2***	***<0***	***<0***	***-336***	***-41***	***-62***	***-12***	***-1***	***-1***

Source: FAA ASPM and HNTB analysis, 2022.

Table 8-5: Total Two-Year Program Alternative Construction Emissions Compared to the No Project Alternative

Year	Emission Source	Pollutants (tons/year)						Pollutants (lbs/day)					
		CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023	Direct - Construction	18	3	1	<1	1	3	182	36	6	1	12	26
	Indirect – Aircraft Taxiing	-61	-7	-11	-2	<0	<0	-333	-41	-61	-12	-1	-1
	Total	**-43**	**-4**	**-11**	**-2**	**1**	**2**	**-151**	**-5**	**-55**	**-12**	**11**	**25**
2024	Direct - Construction	18	3	1	<1	1	2	178	32	7	1	9	23
	Indirect – Aircraft Taxiing	-61	-8	-11	-2	<0	<0	-336	-41	-62	-12	-1	-1
	Total	**-44**	**-4**	**-11**	**-2**	**1**	**2**	**-158**	**-9**	**-55**	**-11**	**8**	**22**
NAAQS or SCAQMD threshold of significance		*100*	*10*	*10*	*--*	*100*	*70*	*550*	*100*	*75*	*150*	*150*	*55*
Exceeds Thresholds?		*No*	*No*	*No*	*--*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*

Source: FAA ASPM and HNTB analysis, 2022.

Impact Summary

This section summarizes the Two-Year Program Alternative's impacts as it relates to the thresholds of significance detailed in *Chapter 4.0, Section 4.1.3* for Impact 4.1-1 through 4.1-5.

Impact 4.1-1

Summary Conclusion for Impact 4.1-1: Implementation of the Two-Year Program Alternative would not conflict with or obstruct implementation of the SCAQMD AQMP or applicable portions of an SIP. The Two-Year Program Alternative would not increase operational activities at the Airport and would result in a *less than significant impact* from construction emissions. As such, this would be a *less than significant impact*.

Construction of the Two-Year Program Alternative would result in emissions associated with construction activities (direct emissions) as well as emissions associated with temporary changes in aircraft taxiing times from proposed runway closures (indirect emissions). The total construction emissions do not exceed NAAQS or SCAQMD thresholds of significance in any construction year and therefore would not conflict with implementation of the SCAQMD AQMP or applicable SIPs. After construction of the Two-Year Program Alternative, there would be no impact to operational emissions at ONT.

Impact 4.1-2

Summary Conclusion for Impact 4.1-2: Implementation of the Two-Year Program Alternative would result in direct and indirect construction-related emissions; however, as detailed under *Construction Impacts*, the total construction emissions would be below all NAAQS and SCAQMD thresholds. Therefore, the project would have a *less than significant impact* from construction-related criteria pollutant emissions and would not violate any air quality standard.

It should be noted that the Two-Year Program Alternative's incremental aircraft taxiing emissions would be influenced by factors that are not attributable to the Project itself, specifically from background operational growth at ONT that is projected to occur with or without the Two-Year Program Alternative, as well as lower emission factors for aircraft from improved engine technology.

In order to remove the influence of background growth and differences in emission factors, a comparison of aircraft taxiing emissions of the Two-Year Program Alternative in a given year with the aircraft taxiing emissions from the No Project Alternative in the same year was also completed (see Table 8-4). Under this comparison, the Two-Year Program Alternative results in net decreases in total construction emissions and does not result in any exceedances of NAAQS or SCAQMD thresholds (see Table 8-5). This comparison is made for informational purposes only.

Impact 4.1-3

Summary Conclusion for Impact 4.1-3: Construction of the Two-Year Program Alternative in conjunction with other projects anticipated to be under construction

during the same period relative to cumulative emissions is discussed in *Chapter 5.0, Cumulative Impacts.*

Impact 4.1-4

Summary Conclusion for Impact 4.1-4: Implementation of the Two-Year Program Alternative would not expose sensitive receptors to substantial pollutant concentrations. As such, the Two-Year Program Alternative would have a *less than significant impact*.

As detailed within this chapter under *Health Risk Assessment,* construction of the Two-Year Program Alternative would not expose sensitive receptors to pollutant concentrations that exceed SCAQMD thresholds.

The Two-Year Program Alternative site is located entirely within Airport property. There are no sensitive receptors including, but not limited to homes, schools, hospitals, resident care facilities, or day-care centers, located within the Two-Year Program Alternative site. The closest sensitive receptors are residential homes located along E. Airport Drive and S Grove Avenue, approximately 700 feet north and 400 feet west of the contractor staging area, respectively.[4] The closest sensitive receptors to the construction pavement area (proposed Taxiway N2) are residential homes located approximately 2,400 feet north off of E. Nocta Street. As summarized under Impact 4.1-2, when taking into consideration the totality of the Two-Year Program Alternative's construction-related effects (emission increases from construction equipment and emission decreases from aircraft taxiing), the total construction emissions remain below the applicable NAAQS and SCAQMD thresholds for all pollutants/precursors and years. Therefore, construction of the Two-Year Program Alternative would not expose sensitive receptors to substantial pollutant concentrations and construction would have a *less than significant* impact.

Aircraft taxiing operations under the Two-Year Program Alternative would be conducted in the same general location as with Baseline Conditions. The Two-Year Program Alternative temporarily requires that operations shift between existing runways when individual runways are closed for construction purposes and when Contra Flow cannot be implemented when compared to the Baseline Conditions. The Two-Year Program Alternative would not bring aircraft taxiing operations any closer to sensitive receptors, including but not limited to homes, schools, hospitals, resident care facilities, or day-care centers than Baseline Conditions. Therefore, the Two-Year Program Alternative would not expose sensitive receptors to substantial pollutant concentrations and would have a *less than significant* impact.

Impact 4.1-5

Summary Conclusion for Impact 4.1-5: Implementation of the Two-Year Program Alternative would not result in objectionable odors adversely affecting a substantial number of people, therefore, the Two-Year Program Alternative would result in a *less than significant impact*.

Exhaust from the use of diesel equipment during construction would generate odors within the project area. However, the closest sensitive receptors to the project area

are residential homes located along E. Airport Drive and S. Grove Avenue, approximately 700 feet north and 400 feet west of the contractor staging area, respectively.[5] The closest sensitive receptors to the construction pavement area (proposed Taxiway N2) are residential homes located approximately 2,400 feet north off of E. Nocta Street. Dispersion of construction odors is variable based on wind direction and speed, but would not affect a substantial number of people given the distance from sensitive receptors. Therefore, construction of the Two-Year Program Alternative would not result in objectionable odors adversely affecting a substantial number of people and impacts would be *less than significant*.

Temporary changes in aircraft taxiing times due to proposed runway closures also would not notably change existing odors at or in the vicinity of the Airport. While total aircraft activity is projected to increase at ONT over the course of implementation of the Two-Year Program Alternative (in 2023 and 2024), the increase in aircraft activity would occur regardless of the Two-Year Program Alternative. Therefore, aircraft taxiing operations during implementation of the Two-Year Program Alternative would not result in objectionable odors adversely affecting a substantial number of people and impacts would be *less than significant*.

Mitigation Measures

The Two-Year Program Alternative results in a less than significant impact on air quality emissions during the construction period. Therefore, no mitigation measures are necessary.

Comparison to Proposed Project

Direct Construction Emissions

Table 8-6 compares the direct construction emissions between the Proposed Project and Two-Year Program Alternative. As shown, the total variation in direct construction emissions is minimal or zero. The Two-Year Program Alternative would have approximately the same total direct construction emissions as the Proposed Project, but the emissions would be incurred over a two-year period instead of a three-year period.[6]

Indirect Construction Emissions

Table 8-7 provides a comparison of the indirect construction emissions from the Proposed Project and Two-Year Program Alternatives (as originally compared to the Baseline Conditions for aircraft taxiing emissions in each year). Aircraft operational levels would be identical whether or not the Proposed Project or Two-Year Program Alternative is implemented. Due to necessary runway and taxiway closure periods totaling nine months in 2023 and 2024 during construction of both Alternatives, aircraft taxiing times would be almost identical in 2023[7] and identical in 2024 between the Proposed Project and Two-Year Program Alternative. Therefore, indirect construction emission due to aircraft taxiing emissions would be identical in 2023 and 2024.

In 2025, the Proposed Project indirect construction emissions would be net positive due to background growth in operations resulting in minor additional taxiing delay in

2025. However, aircraft taxiing emissions in 2025 without the Proposed Project runway closures (No Project Alternative) would be greater. While the Proposed Project would result in direct construction emissions in 2025 that would not be experienced under the Two-Year Program Alternative in 2025 (because construction would be completed in 2024), the Proposed Project would continue to decrease the total aircraft taxiing emissions in 2025, while the Two-Year Program Alternative would not. In order to make a reasonable comparison of the aircraft taxiing emissions in 2025 between the alternatives, the 2025 Two-Year Program Alternative indirect emissions are represented by the 2025 No Project Alternative indirect emissions.

Total Construction Emissions

As shown in **Table 8-8**, the Proposed Project would result in less overall total construction emissions as compared to the Two-Year Program Alternative due to the extended runway closure periods into 2025 (i.e., indirect construction emissions are lower with the Proposed Project).

Table 8-6: Comparison of Proposed Project and Two-Year Program Alternative Direct Construction Emissions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023 Proposed Project	12	2	<1	<1	1	2	125	24	4	<1	8	18
2023 Two-Year Program Alternative	18	3	1	<1	1	3	182	36	6	1	12	26
2023 Variation	***-6***	***-1***	***<0***	***0***	***0***	***-1***	***-57***	***-12***	***-2***	***<0***	***-4***	***-8***
2024 Proposed Project/ Two Year Program Alternative	18	3	1	<1	1	2	178	32	7	1	9	23
2024 Variation	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
2025 Proposed Project	5	1	<1	<1	<1	1	56	11	2	<1	4	8
2025 Two-Year Program Alternative*	*n/a – no direct construction activity*											
2025 Variation	5	1	<1	<1	<1	1	56	11	2	<1	4	8
Total Direct Variation	**-1**	**<0**	**0**	**<1**	**0**	**0**	**-1**	**-1**	**0**	**<1**	**0**	**0**

Note: *The Two-Year Program Alternative would complete construction in 2024, therefore, the 2025 direct emissions for the Two-Year Program Alternative would be zero.
Variation represents the Proposed Project minus the Two-Year Program Alternative emissions.
Totals may not sum due to rounding.

Source: FAA ASPM and HNTB analysis, 2022.

Table 8-7: Comparison of Proposed Project and Two-Year Program Alternative Indirect Construction Emissions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023 Proposed Project/ Two Year Program Alternative	-27	-3	-6	-1	<0	<0	*-146*	*-18*	*-34*	*-5*	*-1*	*-1*
2023 Variation	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
2024 Proposed Project/ Two Year Program Alternative	-6	-1	-3	<0	<0	<0	*-43*	*-4*	*-16*	*-1*	*<0*	*<0*
2024 Variation	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
2025 Proposed Project	46	6	6	2	<1	<1	251	33	35	9	1	1
2025 Two-Year Program Alternative*	80	10	13	3	0	0	438	56	69	15	1	1
2025 Variation	**-34**	**-4**	**-7**	**-1**	**0**	**0**	**-187**	**-23**	**-34**	**-6**	**0**	**0**
Total Indirect Variation	**-34**	**-4**	**-7**	**-1**	**0**	**0**	**-187**	**-23**	**-34**	**-6**	**0**	**0**

Note: *The Two-Year Program Alternative would complete construction in 2024, therefore, the 2025 indirect aircraft taxiing emissions for the Two-Year Program Alternative is represented by the indirect 2025 No Project Alternative incremental aircraft taxiing emissions as compared to the Baseline Conditions (see Table 8-35) in order to make a reasonable comparison of the aircraft taxiing emissions between the alternatives in 2025.
Variation represents the Proposed Project minus the Two-Year Program Alternative emissions.
Totals may not sum due to rounding.

Source: FAA ASPM and HNTB analysis, 2022.

Table 8-8: Comparison of Proposed Project and Two-Year Program Alternative Total Construction Emissions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023 Proposed Project	-14	-1	-6	-1	1	2	-21	6	-29	-5	7	17
2023 Two-Year Program Alternative	-9	0	-6	-1	1	2	36	17	-28	-5	11	25
2023 Variation	***-5***	***-1***	***<0***	***0***	***<0***	***-1***	***-57***	***-11***	***-2***	***<0***	***-4***	***-8***
2024 Proposed Project/ Two Year Program Alternative	11	3	-2	<0	1	2	136	28	-9	-1	9	23
2024 Variation	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
2025 Proposed Project	51	7	7	2	<1	1	307	44	37	9	4	9
2025 Two-Year Program Alternative*	80	10	13	3	0	0	438	56	69	15	1	1
2025 Variation	**-29**	**-3**	**-6**	**-1**	**<1**	**1**	**-131**	**-12**	**-32**	**-6**	**3**	**8**
Total Variation	**-34**	**-4**	**-6**	**-1**	**0**	**0**	**-188**	**-23**	**-34**	**-6**	**-1**	**0**

Note: *The Two-Year Program Alternative would complete construction in 2024, therefore, the 2025 total emissions for the Two-Year Program Alternative is represented by zero direct construction emissions plus the indirect 2025 No Project Alternative incremental aircraft taxiing emissions as compared to the Baseline Conditions (see Table 8-35) in order to make a reasonable comparison of the aircraft taxiing emissions between the alternatives in 2025.
Variation represents the Proposed Project minus the Two-Year Program Alternative emissions.
Totals may not sum due to rounding.

Source: FAA ASPM and HNTB analysis, 2022.

Biological Resources

The Two-Year Program Alternative would result in the same impacts to biological resources as with the Proposed Project since construction of the same project components would occur under both alternatives. Thus, the Two-Year Program Alternative would have less than significant impacts (with mitigation incorporated) as with the Proposed Project.

Cultural Resources

The Two-Year Program Alternative would result in the same impacts to cultural resources as with the Proposed Project since construction of the same project components would occur under both alternatives. Thus, the Two-Year Program Alternative would have no impacts as with the Proposed Project.

Energy

The Two-Year Program Alternative would have less than significant impacts on energy. Although consumption of resources and energy would be necessary during construction, impacts would be less than significant. Compared to the Proposed Project, impacts to energy would be of a shorter duration but would be more heavily utilized during the shorter time period. However, the Two-Year Program Alternative would have less than significant impacts as with the Proposed Project.

Geology and Soils

The Two-Year Program Alternative would have less than significant impacts on geology and soils. The lack of impacts regarding this category is the same with the Two-Year Program Alternative as with the Proposed Project.

Greenhouse Gas Emissions (GHGs)

This analysis examines GHG emissions that result from temporary construction activity and temporary operational changes associated with the Two-Year Program Alternative during construction years 2023 and 2024.

Like the Proposed Project, the Two-Year Program Alternative would have no impact on operations at the Airport beyond the construction period. The Two-Year Program Alternative would not increase Airport capacity, it would not result in increases in local traffic as described in *Section 3.9*. Therefore, GHG emissions associated with overall aircraft activity levels and passenger traffic arriving and departing ONT were not analyzed. There would be no GHG emissions impacts associated with the Two-Year Program Alternative beyond the construction period.

Construction GHG Impacts

The analysis of construction GHG emissions includes both direct GHG emissions associated with Two-Year Program Alternative construction activities and indirect GHG emissions associated with a change in aircraft taxiing patterns due to temporary construction-related runway closures in 2023 and 2024. The tables presented below summarize the direct, indirect and total construction GHG emissions. The

determination of significance was based on the Two-Year Program Alternative's total construction GHG emissions.

Direct Construction GHG Emissions

A construction GHG emissions inventory was prepared for the Two-Year Program Alternative for the construction years 2023 and 2024. Construction GHG emissions typically include emissions from on-road vehicles (vehicles miles traveled) and off-road equipment (equipment hours). **Table 8-9** presents the Two-Year Program Alternative's construction GHG emissions.[8]

Table 8-9: Two-Year Program Alternative Direct Construction GHG Emissions (MT/Year)

Year	CO_2	CH_4	N_2O	CO_{2e}
2023	4,200	0.9	0.1	**4,267**
2024	4,086	0.8	0.1	**4,147**

Sources: CalEEMod and HNTB Analysis, 2022.

Indirect Construction GHG Emissions

The Two-Year Program Alternative would require temporary runway closures in 2023 and 2024 during construction, as detailed in *Section 8.1.1.1*. While operational levels would be identical in each future year whether or not the Two-Year Program Alternative is implemented, due to these necessary runway and taxiway closures, aircraft taxiing times would vary. More specifically, the Two-Year Program Alternative would reduce the duration of taxiing times in construction years 2023 and 2024 as compared to the Baseline Conditions. The most prevalent reason for reduced taxi times is due to the fact that without the requirement to operate with Contra Flow, aircraft that would have necessarily traveled to Runways 8L and 8R to depart will be allowed to depart on either Runway 26L or 26R, depending on the runway that is open and this will reduce taxi distance for many operations.

Table 8-8 provides a comparison of the total aircraft taxiing GHG emissions with implementation of the Two-Year Program Alternative in 2023 and 2024 as compared to the Baseline Conditions aircraft taxiing GHG emissions. These incremental differences represent the indirect Two-Year Program Alternative related GHG construction emissions associated with temporary runway closures.

Table 8-10: Two-Year Program Alternative Aircraft Taxiing Indirect Construction GHG Emissions from Temporary Runway Closures Compared to Baseline Conditions

Year	CO_2e (MT/year)
Baseline Conditions	49,520
Two-Year Program	46,872
2023 Incremental Changes	***-2,648***
Baseline Conditions	49,520
Two-Year Program	48,958
2024 Incremental Changes	***-562***

Source: AEDT and HNTB analysis, 2022.

Total Construction GHG Emissions

As presented in **Table 8-11**, when taking into consideration the temporary increases in GHG emissions from construction equipment and the temporary decreases in aircraft taxiing GHG emissions associated with the temporary runway closures through the construction years, the total construction GHG emissions are greater than zero. Therefore, the Two-Year Program Alternative would result in a ***significant, unavoidable temporary impact*** from construction GHG emissions.

Table 8-11: Total Two-Year Program Alternative Construction GHG Emissions Compared to Baseline Conditions

Year	Alternative	CO_2e (MT/year)
2023	Direct - Construction	4,267
	Indirect – Aircraft Taxiing	-2,648
	Total	***1,619***
2024	Direct - Construction	4,147
	Indirect – Aircraft Taxiing	-562
	Total	***3,585***
Total GHG Emissions		***5,204***

Source: AEDT and HNTB analysis, 2022.

Additional Analysis for Informational Purposes

As noted above, CEQA requires that a proposed project be compared to baseline conditions for the purpose of making a significance determination. For the Two-Year Program Alternative, the incremental aircraft taxiing GHG emissions would be influenced by factors that are not exclusively attributable to the Project itself, specifically from background operational growth at ONT that is projected to occur with or without the Two-Year Program Alternative, as well as lower emission factors for aircraft from improved engine technology. In order to remove the influence of background growth and differences in emission factors, this analysis also compares aircraft taxiing GHG emissions of the Two-Year Program Alternative in a given year

with the aircraft taxiing GHG emissions from the No Project Alternative in the same year. The No Project Alternative, in this context, acts as a modified baseline under CEQA Guidelines Section 15125(a)(1), as it allows for a comparison of the Two-Year Program Alternative to the airfield conditions expected at the time of its implementation (calendar years 2023 and 2024). This comparison is made for informational purposes only.

Table 8-12 provides a comparison of the total aircraft taxiing GHG emissions with and without implementation of the Two-Year Program Alternative in 2023 and 2024, as well as the incremental differences between the two conditions each year. These incremental differences represent the indirect Two-Year Program Alternative-related construction GHG emissions associated with temporary runway closures, removing background growth and differences in emission factors. As indicated, the temporary changes in aircraft taxiing during construction of the Two-Year Program Alternative result in decreases of GHG emissions in both years when compared to the No Project Alternative. This is a result of the suspension of Contra Flow, which improves departure taxi efficiency.

As presented in **Table 8-13**, when taking into consideration the emission decreases associated with the temporary runway closures through the construction years, there is a net decrease in total construction GHG emissions when comparing the Two-Year Program Alternative to the No Project Alternative. As the Two-Year Program Alternative itself does not induce operational growth, this comparison provides a more realistic look at the impacts of the Two-Year Program Alternative on aircraft taxiing GHG emissions.

Table 8-12: Two-Year Program Alternative Aircraft Taxiing Indirect Construction GHG Emissions from Temporary Runway Closures

Year	Alternative	CO_2e (MT/year)
2023	No Project	52,700
	Two-Year Program	46,872
	Project Related	**-5,828**
2024	No Project	54,849
	Two-Year Program	48,958
	***Project* Related**	**-5,891**

Source: AEDT and HNTB analysis, 2022.

Table 8-13: Total Two-Year Program Alternative Construction GHG Emissions

Year	Emission Source	CO_2e (MT/year)
2023	Direct - Construction	4,267
	Indirect – Aircraft Taxiing	-5,828
	Total	**-1,561**
2024	Direct - Construction	4,147
	Indirect – Aircraft Taxiing	-5,891
	Total	**-1,744**

Source: AEDT and HNTB analysis, 2022.

Impact Summary

This section summarizes the Two-Year Program Alternative's impacts as it relates to the thresholds of significance detailed in *Chapter 4.0, Section 4.3.3* for Impact 4.3-1 and 4.3-2.

Impact 4.3-1

Summary Conclusion for Impact 4.3-1: Implementation of the Two-Year Program Alternative would result in total net positive construction-related GHG emissions in years 2023 and 2024. Therefore, the Two-Year Program Alternative would result in *significant, unavoidable temporary impact* due to construction-related GHG emissions.

It should be noted that the Two-Year Program Alternative incremental aircraft taxiing GHG emissions would be influenced by factors that are not attributable to the Project itself, specifically from background operational growth at ONT that is projected to occur with or without the Two-Year Program Alternative, as well as lower emission factors for aircraft from improved engine technology. In order to remove the influence of background growth and differences in emission factors, a comparison of aircraft taxiing GHG emission of the Two-Year Program Alternative in a given year with the aircraft taxiing GHG emissions from the No Project Alternative in the same

year was completed (see Table 8-12). Under this comparison, the Proposed Project results in net decreases in total construction GHG emissions in all construction years (see Table 8-13). This comparison is made for informational purposes only.

Impact 4.3-2

Summary Conclusion for Impact 4.3-2: The Two-Year Program Alternative would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG. Therefore, it would be a *less than significant impact*.

Several local plans address GHGs and measures to reduce GHG emissions.

First, the 2014 City of Ontario Community Climate Action Plan (CAP) establishes community strategies to reduce GHG emissions consistent with CARB's statewide GHG reduction efforts. The CAP included a GHG inventory for 2008 and a forecasted inventory for 2020, analyzed GHG reduction measures for effectiveness and feasibility, and presented a list of measures for inclusion in the CAP. The CAP includes a GHG emission reduction target of 30% below business-as-usual 2020 levels.[9]

Second, the 2016 SCAQMD AQMP is based upon the adopted general plans (and resulting vehicular trip generation) from the local jurisdictions that were in place when the AQMP was developed. Proposed land uses that are consistent with such adopted general plans are considered consistent with the AQMP and will not conflict with or obstruct implementation of the applicable air quality plan. The 2016 AQMP includes the strategies and measures needed to meet the NAAQS and CAAQS. Many of these measures and programs also serve to reduce GHG emissions.

Third, the 2019 ONT AQIP includes measures to minimize and reduce emissions from mobile source activities at the Airport. As it relates to GHG emissions, the AQIP includes GSE and Fuel Truck Operation Policies (RM1 and RM2), which would likely result in a reduction of GHG pollutants. [10]

Fourth, the 2021 San Bernardino County Regional Greenhouse Gas Reduction Plan includes an inventory of GHG emissions and evaluation of reduction measures to be adopted by 25 Partnership Cities within the County.[11] The reduction measures set forth in the Plan are being and should be considered for adoption by agencies in the region that are developing jurisdiction-specific climate action plans. The Regional GHG Reduction Plan includes reduction measures evaluated for the City of Ontario. Measures which could assist in reducing GHG emissions expected from the Two-Year Program Alternative, if adopted by the relevant agencies, include State fuel efficiency measures, electric-powered construction equipment, and idling ordinances.

The Two-Year Program Alternative would result in significant, unavoidable temporary impacts to GHG emissions during the construction period, based on its incremental increase in GHG emissions. However, there are no specific GHG policies mandated in the above-referenced plans, as it relates to construction at ONT. Further, it is noted that construction equipment and aircraft would be in compliance with applicable fuel efficiency and emission standards.

Based on the absence of specific construction-related policies for the reduction of GHG emissions in the referenced plans, and compliance with other existing standards for construction equipment and aircraft, the Two-Year Program Alternative itself would not conflict with any applicable local plans, policies or regulations related to the reduction of GHG emissions.

Additionally, as summarized above, when compared to the Baseline Conditions, the Two-Year Program Alternative construction GHG emissions would result in a significant impact due to construction activity and aircraft taxiing as compared to the Baseline Conditions. However, this comparison is influenced by factors that are not attributable to the Two-Year Program Alternative itself, specifically from background operational growth at ONT that is projected to occur with or without the Two-Year Program Alternative, as well as lower emission factors for aircraft from improved engine technology. In order to remove the influence of these factors, a comparison is made of aircraft taxiing GHG emissions of the Two-Year Program Alternative in a given year with the aircraft taxiing GHG emissions from the No Project Alternative in the same year. In this comparison, total construction GHG emissions would decrease in all construction years.

Mitigation Measures

As discussed above, the Two-Year Program Alternative would result in a significant and unavoidable temporary impact associated with the release of additional GHG emissions during the two-year construction period (Impact 4.3-1). At this point in time, there are no feasible mitigation measures available to further reduce the Two-Year Program Alternative's direct construction GHG emissions.

As discussed under Impact 4.3-2, there are several local plans which address GHGs and measures to reduce GHG emissions. While there are no feasible measures that can be assumed and quantified in this analysis, regional and local measures, if implemented, should serve to further reduce overall GHG emissions.

It is worth noting that the GHG analysis assumes a conservative 40-mile roundtrip for concrete delivery for the Two-Year Program Alternative construction. However, a concrete batch plant is proposed to be located on Airport property in an industrial area along E. Avion Street, which would likely reduce the total VMT assumed for concrete delivery trucks but would still include delivery of raw materials (i.e., Portland cement and aggregate) to mix the concrete on-site. A closer look at the CalEEMod output indicates CO_2 emissions specific to on-road hauling accounts for on average 20% of the total direct GHG construction emissions in each construction year. Utilizing a concrete batch plant on-site would likely serve to reduce total on-road hauling VMT, and thus reduce total GHG emissions, but the Two-Year Program Alternative would still result in a net increase in total GHG emissions during the construction period.

As for the Two-Year Program Alternative's other source of GHG emissions – indirect construction emissions from the taxiing of aircraft on the airfield, it is well established that the regulation of aircraft tailpipe emissions is federally preempted and cannot be addressed at the local level.

Comparison to Proposed Project

Direct Construction GHG Emissions

Table 8-14 compares the direct construction GHG emissions between the Proposed Project and Two-Year Program Alternative. As shown, the total variation in direct construction GHG emissions is minimal. The Two-Year Program Alternative would have approximately the same total direct construction GHG emissions as the Proposed Project, but the emissions would be incurred over a two-year period instead of a three-year period.[12]

Indirect Construction GHG Emissions

Table 8-15 provides a comparison of the indirect construction GHG emissions from the Proposed Project and Two-Year Program Alternatives (as originally compared to the Baseline Conditions for aircraft taxiing GHG emissions in each year). Aircraft operational levels would be identical whether or not the Proposed Project or Two-Year Program Alternative is implemented. Due to necessary runway and taxiway closure periods totaling nine months in 2023 and 2024 during construction of both Alternatives, aircraft taxiing times would be almost identical in 2023[13] and identical in 2024 between the Proposed Project and Two-Year Program Alternative. Therefore, indirect construction GHG emissions due to aircraft taxiing emissions would be identical in 2023 and 2024 between the Alternatives.

In 2025, the Proposed Project indirect construction GHG emissions would be net positive due to background growth in operations resulting in minor additional taxiing delay in 2025. However, aircraft taxiing GHG emissions in 2025 without the Proposed Project runway closures (No Project Alternative) would be greater. While the Proposed Project would result in direct construction GHG emissions in 2025 that would not be experienced under the Two-Year Program Alternative in 2025 (because construction would be completed in 2024), the Proposed Project would continue to decrease the total aircraft taxiing GHG emissions in 2025, while the Two-Year Program Alternative would not. In order to make a reasonable comparison of the aircraft taxiing GHG emissions in 2025 between the alternatives, the 2025 Two Year Program Alternative indirect GHG emissions are represented by the 2025 No Project Alternative indirect GHG emissions.

Total Construction GHG Emissions

As shown in **Table 8-16**, the Proposed Project would result in less overall total construction GHG emissions as compared to the Two-Year Program Alternative due to the extended runway closure periods into 2025 (i.e., indirect construction emissions are lower with the Proposed Project).

Table 8-14: Comparison of Proposed Project and Two-Year Program Alternative Direct Construction GHG Emissions

Year	CO_2e (MT/year)
2023 Proposed Project	2,918
2023 Two Year Program Alternative	4,267
2023 Variation	***-1,349***
2024 Proposed Project / Two-Year Program Alternative	4,147
2024 Variation	***0***
2025 Proposed Project	1,327
2025 Two-Year Program Alternative	n/a – no direct construction activity
2025 Variation	***1,327***
Total Direct Variation	***-22***

Note: *The Two-Year Program Alternative would complete construction in 2024, therefore, the 2025 direct GHG emissions for the Two-Year Program Alternative is zero. Variation represents the Proposed Project minus the Two-Year Program Alternative emissions.
Totals may not sum due to rounding.

Source: AEDT and HNTB analysis, 2022.

Table 8-15: Comparison of Proposed Project and Two-Year Program Alternative Indirect Construction GHG Emissions

Year	CO_2e (MT/year)
2023 Proposed Project	-2,601
2023 Two Year Program Alternative	-2,648
2023 Variation	***47***
2024 Proposed Project / Two-Year Program Alternative	-562
2024 Variation	***0***
2025 Proposed Project	4,424
2025 Two-Year Program Alternative*	7,697
2025 Variation	***-3,273***
Total Indirect Variation	***-3,226***

Note: *The Two-Year Program Alternative would complete construction in 2024, therefore, the 2025 indirect GHG emissions for the Two-Year Program Alternative is represented by the indirect 2025 No Project Alternative incremental aircraft taxiing GHG emissions as compared to the Baseline Conditions (see Table 8-37) in order to make a reasonable comparison of the aircraft taxiing emissions between the alternatives in 2025. Variation represents the Proposed Project minus the Two-Year Program Alternative emissions.
Totals may not sum due to rounding.

Source: AEDT and HNTB analysis, 2022.

Table 8-16: Comparison of Proposed Project and Two-Year Program Alternative Total Construction GHG Emissions

Year	CO_2e (MT/year)
2023 Proposed Project	317
2023 Two Year Program Alternative	1,619
2023 Variation	***-1,302***
2024 Proposed Project / Two-Year Program Alternative	3,585
2024 Variation	***0***
2025 Proposed Project	5,751
2025 Two-Year Program Alternative*	7,697
2025 Variation	***-1,946***
Total Variation	***-3,248***

Note: *The Two-Year Program Alternative would complete construction in 2024, therefore, the 2025 total GHG emissions for the Two-Year Program Alternative is represented by zero direct construction emissions plus the indirect 2025 No Project Alternative incremental aircraft taxiing emissions as compared to the Baseline Conditions (see Table 8-37) in order to make a reasonable comparison of the aircraft taxiing emissions between the alternatives in 2025.
Variation represents the Proposed Project minus the Two-Year Program Alternative emissions.
Totals may not sum due to rounding.

Source: AEDT and HNTB analysis, 2022.

Hazards and Hazardous Materials

The Two-Year Program Alternative would result in the same impacts to hazards and hazardous materials as with the Proposed Project since construction of the same project components would occur under both alternatives. Thus, the Two-Year Program Alternative would have less than significant impacts as with the Proposed Project.

Hydrology and Water Quality

The Two-Year Program Alternative would have less than significant impacts to hydrology and water quality. Although surface water runoff would occur during construction, impacts would be less than significant with mitigation incorporated. Compared to the Proposed Project, impacts to hydrology and water quality would be of a shorter duration, however they would also be more intense during the shorter time period. Thus, the Two-Year Program Alternative would have less than significant impacts (with mitigation incorporated) as with the Proposed Project.

Land Use and Planning

The Two-Year Program Alternative would have no impacts on land use and planning. The lack of impacts regarding this category is the same with the Two-Year Program Alternative as with the Proposed Project.

Mineral Resources

The Two-Year Program Alternative would have no impacts on mineral resources. The lack of impacts regarding this category is the same with the Two-Year Program Alternative as with the Proposed Project.

Noise

This section provides an analysis of potential impacts due to noise with respect to CEQA Guidelines. Runway use and flight patterns would be temporarily impacted during runway closures due to the lack of ability to operate in Contra Flow conditions, as discussed in *Chapter 2.0, Project Description.* Therefore, noise impacts during construction in 2023 and 2024 were analyzed. There are no noise impacts associated with the Two-Year Program Alternative beyond the construction period.

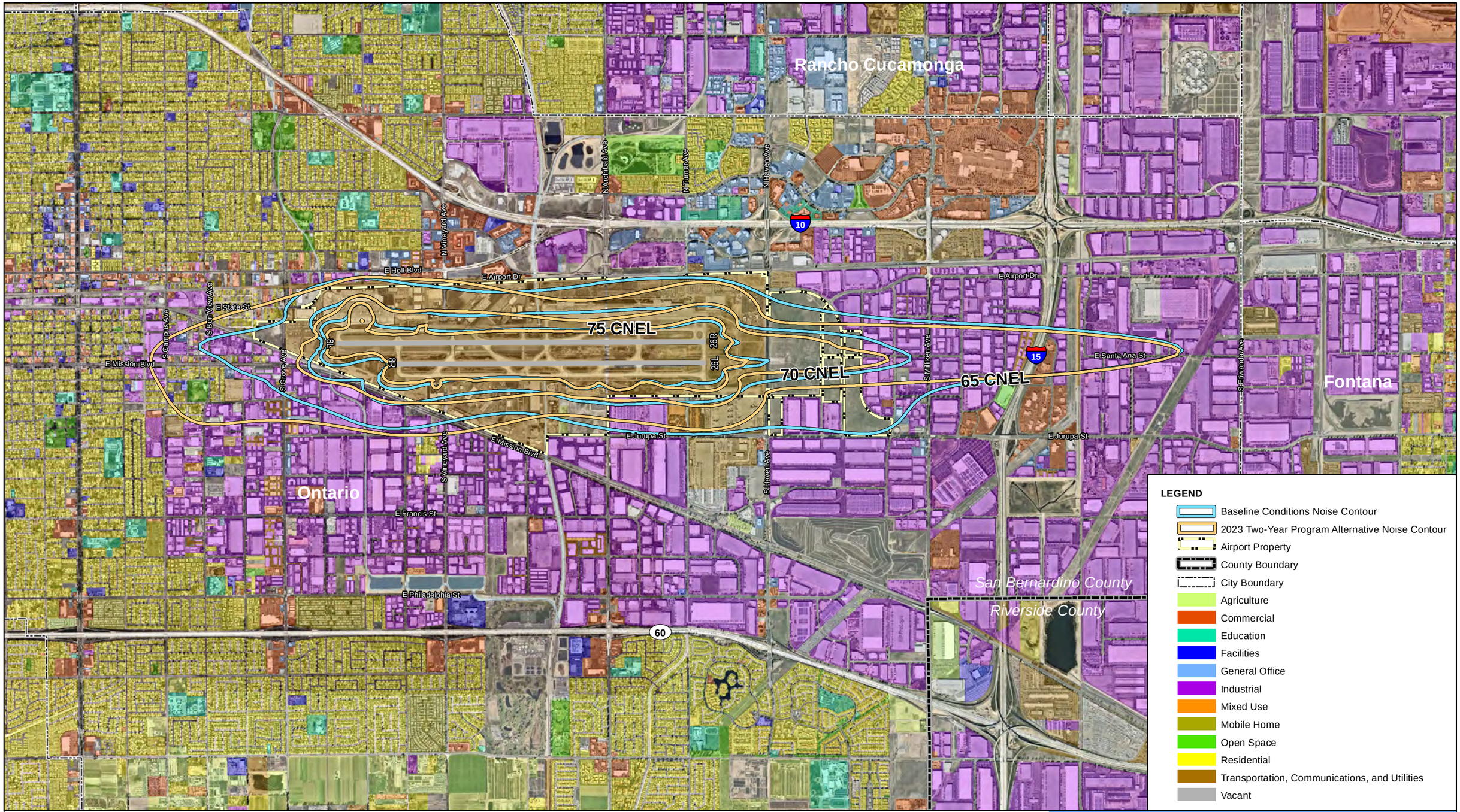
Construction Impacts

Runway use and flight patterns would be temporarily modified during construction in 2023 and 2024 due to runway closures, as detailed in *Section 8.1.1.1*. During these runway closure periods, all operations would occur on a single runway. Due to the two runways being parallel and closely spaced, temporarily operating on a single runway would not significantly alter flight patterns. The only change in flight patterns during temporary runway closure periods in 2023 and 2024, may result from FAA Air Traffic Control (ATC) imposed restrictions on the use of Contra Flow operations during nighttime (10:00 PM to 7:00 AM), as defined in *Section 2.2.3, Airfield Operations*. Since Contra Flow would not be used by ATC when operating on a single open runway,

the Two-Year Program Alternative would result in temporary increases in noise exposure to the west of the Airport during the nighttime hours during these construction periods.

As required by CEQA, the construction noise levels associated with the Two-Year Program Alternative in 2023 and 2024 were compared to the noise levels associated with the Baseline Conditions noise levels. **Figures 8-1 and 8-2** show the expected noise exposure contours under the Two-Year Program Alternative in 2023 and 2024 in comparison with the Baseline Conditions.

The estimated land area (acres) within CNEL contours for the Baseline Conditions and Two-Year Program Alternative in 2023 and 2024 along with the estimated number of residential dwelling units, schools, churches, residential population and dwelling units located within the contours are provided in Table 3-13 (*Section 3.8.3, Noise, Baseline Conditions*) and **Tables 8-17** and **8-18**, respectively.



ONT ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

N

HNTB

Figure 8-1

2023 Two-Year Program Alternative vs. Baseline Conditions Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis

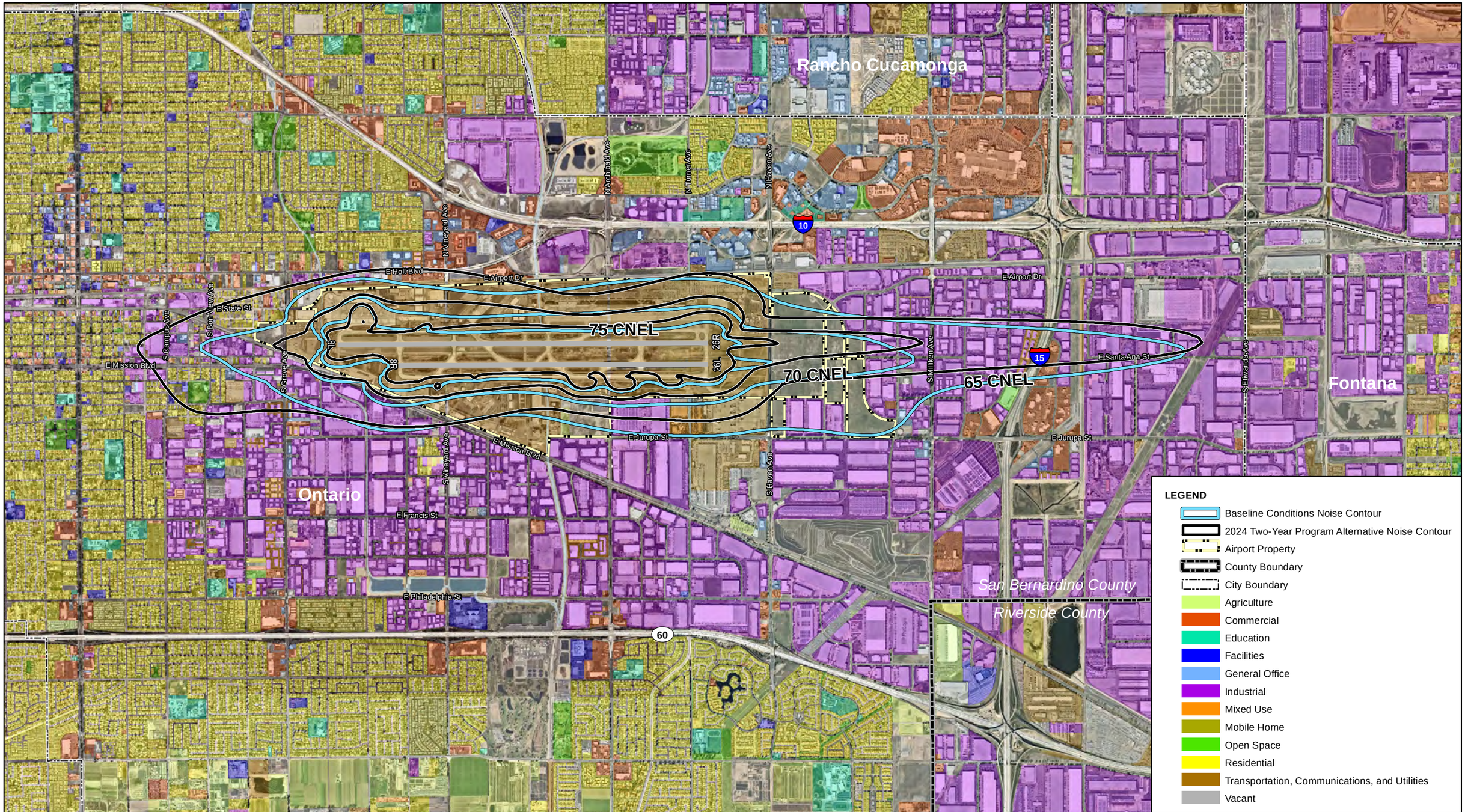


Figure 8-2

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

N

HNTB

2024 Two-Year Program Alternative vs. Baseline Conditions Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis

Table 8-17: 2023 Two-Year Program Alternative Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	TOTAL
Residential	50.1	0	0	**50.1**
Education	0	0	0	**0.0**
Mixed Use	35.1	0.5	0	**35.6**
Mobile Home	0	0	0	**0.0**
Open Space	11.8	0	0	**11.8**
Agriculture	1.9	0	0	**1.9**
Commercial	17.6	0	0	**17.6**
Facilities	4.1	0	0	**4.1**
General Office	8.7	0	0	**8.7**
Industrial	510.5	18.9	0	**529.4**
Transportation, Communications, and Utilities	596.1	417.0	519.3	**1,532.3**
Vacant	196.0	80.5	0	**276.5**
TOTAL	**1,431.8**	**516.8**	**519.3**	**2,468.0**
Noise-Sensitive Land Uses (#)				
Hospitals	0	0	0	**0**
Schools	0	0	0	**0**
Religious (e.g., Church)	0	0	0	**0**
Residential (dwelling units)	239	0	0	**239**
Population	1,094	0	0	**1,094**

Note:
Totals may not sum due to rounding.
(1) Of the 239 dwelling units within the 65 dB contour, under ONT's Quiet Home Program:
- 160 sound insulated (~739 population)
- 30 eligible for sound insulation (~133 population)
- 31 eligible for voluntary acquisition (~146 population)
- 18 not eligible for insulation or acquisition (~76 population)
(2) Of the 239 dwelling units with the 65 CNEL contour, 229 are single family and 10 are multi-family (five duplexes). Google earth was utilized to confirm housing counts and types.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2021.

Table 8-18: 2024 Two-Year Program Alternative Effects of Aircraft Noise Exposure on Land Uses (acres)

Land Use Category	Noise Exposure Range (CNEL, dB)			
	65-69	70-74	75+	Total
Residential	52.0	0	0	**52.0**
Education	0	0	0	**0.0**
Mixed Use	25.8	0	0	**25.8**
Mobile Home	0	0	0	**0.0**
Open Space	11.8	0	0	**11.8**
Agriculture	1.1	0	0	**1.1**
Commercial	23.6	0	0	**23.6**
Facilities	3.4	0	0	**3.4**
General Office	6.9	0	0	**6.9**
Industrial	503.0	18.9	0	**521.9**
Transportation, Communications, and Utilities	598.7	441.8	526.1	**1,566.6**
Vacant	218.2	63.6	0.3	**282.2**
TOTAL	**1,444.5**	**524.4**	**526.4**	**2,495.3**
Noise-Sensitive Land Uses (#)				
Hospitals	0	0	0	**0**
Schools	0	0	0	**0**
Religious (e.g., Church)	0	0	0	**0**
Residential (dwelling units)	215	0	0	**215**
Population	948	0	0	**948**

Note:
Totals may not sum due to rounding.
(1) Of the 215 dwelling units within the 65 dB contour, under ONT's Quiet Home Program:
- 128 sound insulated (~566 population)
- 26 eligible for sound insulation (~111 population)
- 44 eligible for voluntary acquisition (~202 population)
- 17 not eligible for insulation or acquisition (~70 population)
(2) Of the 215 dwelling units with the 65 CNEL contour, 203 are single family and 12 are multi-family (six duplexes). Google earth was utilized to confirm housing counts and types.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2021.

Table 8-19 summarizes the total aircraft operations, runway closure periods, and the change in 65 CNEL noise contour area between each Two-Year Program Alternative year and the Baseline Conditions. The total acreage within the 65+ CNEL noise contours is very similar in the Two-Year Program Alternative contours as compared to the Baseline Condition contour, varying from -0.5% to +0.4%. The change in Two-Year Program Alternative noise conditions compared to the Baseline Conditions is attributable to three factors:

1. Background growth in passenger activity and aircraft operations that is anticipated at ONT with or without the Two-Year Program Alternative.

2. Changes in fleet mix projected in future years that can impact overall noise levels. Generally, operations from older and noisier aircraft are expected to decrease in future years.
3. Runway closure periods associated with the Two-Year Program Alternative construction that results in ONT operating on a single-runway for periods of 2023 and 2024, as compared to the Baseline Conditions where both runways are operational. The impact of these runway closure periods is detailed and illustrated under the following section, Construction Impacts.

Table 8-19: Noise Inputs and Outputs for Baseline Conditions and Two-Year Program Alternatives

Year	Aircraft Operations[1]	Runway Closure	65 CNEL Noise Contour Area (acres)	Change in Area Compared to Baseline Conditions
Baseline Conditions	106,026	No closure	2,485	--
2023 Two-Year Program Alternative	110,368	8L-26R – 6 months 8R-26L – 3 months	2,468	-0.7%
2024 Two-Year Program Alternative	113,826	8R-26L – 9 months	2,497	+0.5%

Note: (1) Aircraft operations are not influenced by the Two-Year Program Alternative. Background growth in passenger activity and aircraft operations are anticipated at ONT with or without the Two-Year Program Alternative.

Source: HNTB analysis, 2022.

Table 8-20 provides the population, number of housing units and acreage within the various CNEL ranges that would be affected in each Two-Year Program Alternative year and provides a comparison of the Two-Year Program Alternative in each year to the Baseline Conditions.

As indicated in Table 8-20, construction of the Two-Year Program Alternative results in additional population and housing units within the 65-69 CNEL contour in 2023 and 2024, as compared to the Baseline Conditions. This increase in population/housing units is due to the shift in the Two-Year Program Alternative noise contours to the west of ONT, towards residential areas, as a result of the suspension of Contra Flow operations during proposed runway closures.

Table 8-20: Estimated Population, Housing Units and Acreage within Two-Year Program Alternative and Baseline Conditions Aircraft Noise Contours

Alternative	Population				Housing Units				Acreage			
	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL
Baseline Conditions	59	0	0	59	13	0	0	13	1,390	545	551	2,485
2023 Conditions												
Two-Year Program	1,094	0	0	1,094	239	0	0	239	1,432	517	519	2,468
Difference Between Two-Year Program and Baseline Conditions	***+1,035***	***0***	***0***	***+1,035***	***+226***	***0***	***0***	***+226***	***+42***	***-28***	***-31***	***-17***
2024 Conditions												
Two-Year Program	948	0	0	948	215	0	0	215	1,444	524	526	2,495
Difference Between Two-Year Program and Baseline Conditions	***+889***	***0***	***0***	***+889***	***+202***	***0***	***0***	***+202***	***+55***	***-21***	***-24***	***+10***

Note: Aircraft operations are not influenced by the Proposed Project. Background growth in passenger activity and aircraft operations are anticipated at ONT with or without the Proposed Project.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

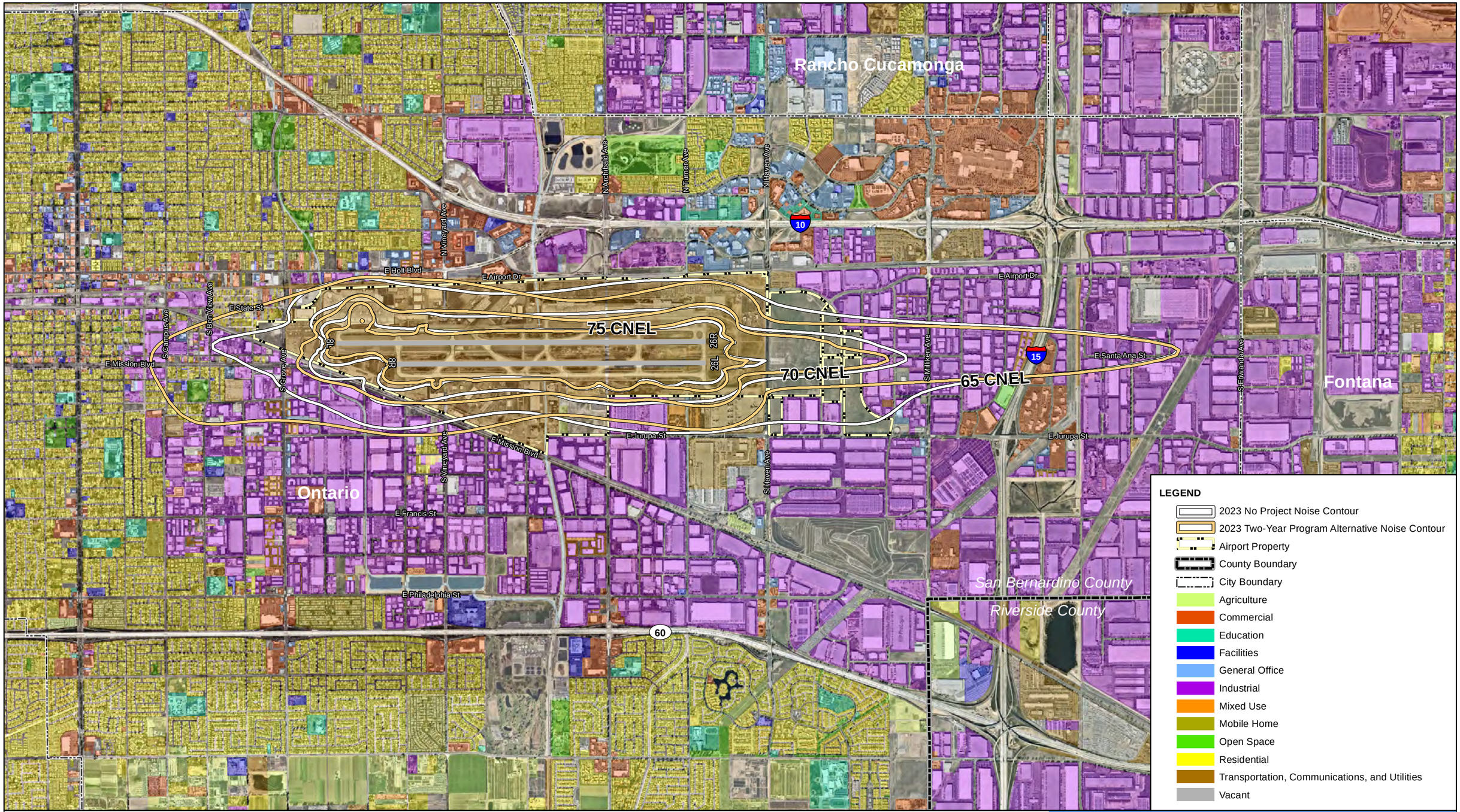
Additional Analysis for Informational Purposes

CEQA requires that the project alternative be compared to Baseline Conditions for the purpose of making a significance determination. For the Two-Year Program Alternative, the future noise exposure would be influenced by factors that are not attributable to the Project itself, specifically from background operational growth that is projected to occur with or without the Proposed Project, as well changes in fleet mix that can impact overall noise levels. In order to remove the influence of background growth and differences in aircraft fleet noise levels, this analysis also compares noise exposure of the Two-Year Program Alternative in a given year with the noise exposure from the No Project Alternative in the same year. This analysis is provided for informational purposes.

Figures 8-3 and 8-4 show the expected noise exposure contours in 2023 and 2024 in comparison with the No Project Alternative in the same year. Under the No Project Alternative there would be no runway closures, and Contra Flow would continue during nighttime operations. In comparison with the No Project Alternatives, the Two-Year Program Alternative increases the size of the contours to the west of the Airport whereas the size of the contours to the east of the Airport decreases.

Tables 4-21 and 4-22 summarize the estimated land area (acres) within CNEL contours for the No Project Alternative in 2023 and 2024 along with the estimated number of residential dwelling units, schools, and churches located within the contours (see Table 8-13 and Table 8-14 for the Two-Year Program Alternative summaries). The tables also provide an estimate of the residential population exposed to varying degrees of noise exposure based upon average household size by Census block. Residential dwelling units and population were initially determined using U.S. Census Bureau block data, with data verified using Google Earth.[14]

Table 8-21 summarizes the total aircraft operations, runway closure periods, and the change in 65 CNEL noise contour area between the Two-Year Program Alternative and No Project in a given year. While the total aircraft operation levels remain the same between the Two-Year Program and No Project Alternatives in a given year, the total acreage within the 65+ CNEL noise contours increases between 2-4% in the Two-Year Program Alternative contours as compared to the No Project Alternative contours in the same year.



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

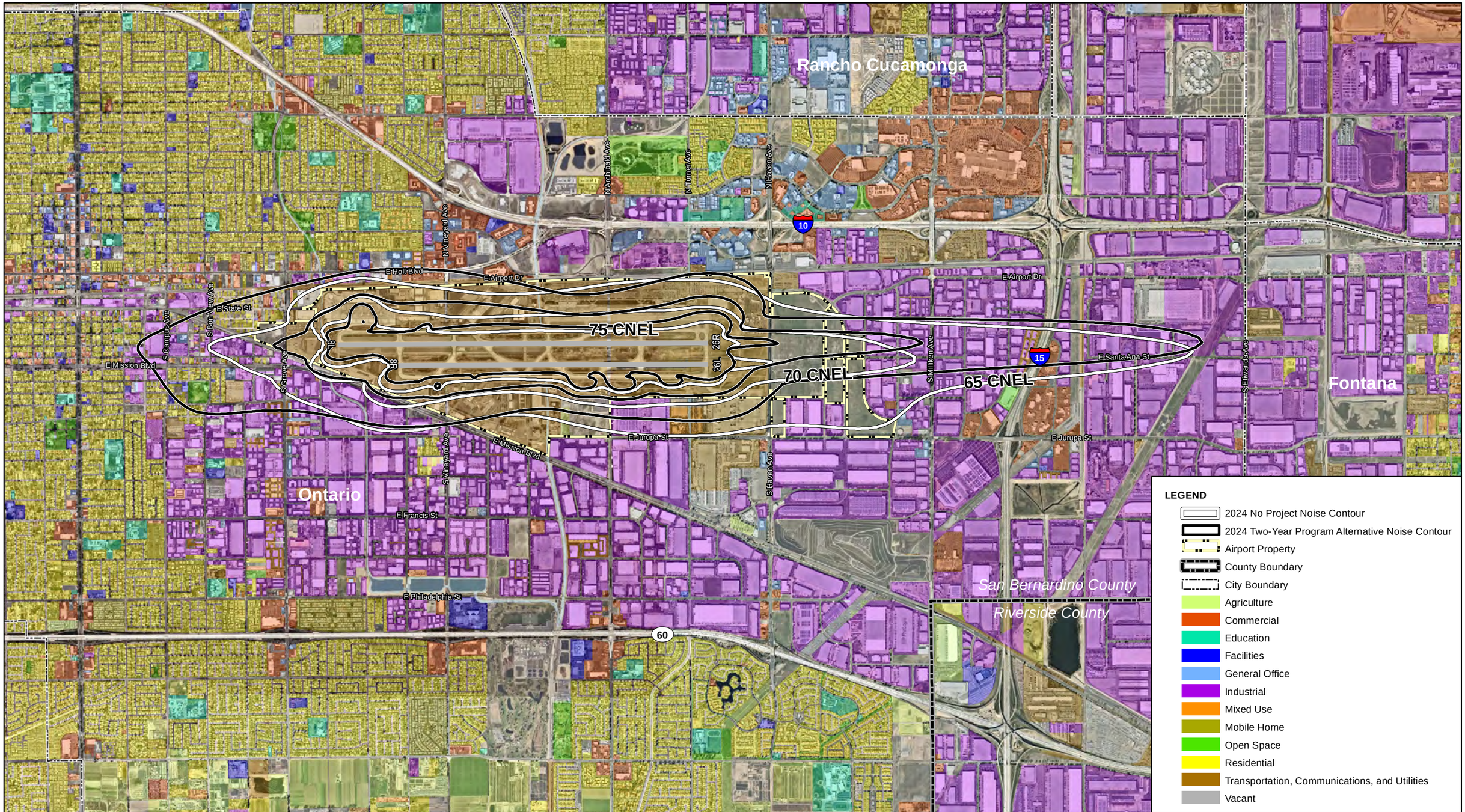
N

HNTB

Figure 8-3

2023 Two-Year Program Alternative vs. 2023 No Project Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

N

HNTB

Figure 8-4

2024 Two-Year Program Alternative vs. 2024 No Project Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis

Table 8-21: Noise Inputs and Outputs for No Project and Two-Year Program Alternative

Year	Alternative	Aircraft Operations[1]	Runway Closure	65 CNEL Noise Contour Area (acres)	Change in Area
2023	No Project	110,368	No closure	2,371	+4.1%
	Two-Year Program		8L-26R – 6 months 8R-26L – 3 months	2,468	
2024	No Project	113,826	No closure	2,439	+2.4%
	Two-Year Program		8R-26L – 9 months	2,497	

Note: (1) Aircraft operations are not influenced by the Two-Year Program Alternative. Background growth in passenger activity and aircraft operations are anticipated at ONT with or without the Two-Year Program Alternative, as shown with the same level of operations modeled in the No Project Alternative and Two-Year Program Alternative in a given year.

Source: HNTB analysis, 2022.

Table 8-22 provides the population, number of housing units and acreage within the various CNEL ranges that would be affected in each Two-Year Program Alternative construction year and provides a comparison of the Two-Year Program Alternative in each construction year to the No Project Alternative in the same year.

As indicated in Table 8-22, construction of the Two-Year Program Alternative results in additional population and housing units within the 65-69 CNEL contour for all construction years, as compared to the No Project Alternative. This increase in population/housing units is due to the shift in the Two-Year Program Alternative noise contours to the west of ONT, towards residential areas, as a result of the suspension of contra flow operations during proposed runway closures.

Table 8-22: Estimated Population, Housing Units and Acreage within Two-Year Program Alternative Aircraft Noise Contours

Alternative	Population				Housing Units				Acreage			
	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL
2023 Conditions												
No Project	29	0	0	29	7	0	0	7	1,305	523	543	2,371
Two-Year Program	1,094	0	0	1,094	239	0	0	239	1,432	517	519	2,468
Difference Between Two-Year Program and No Project	***+1,065***	***0***	***0***	***+1,065***	***+232***	***0***	***0***	***+232***	***+127***	***-6***	***-24***	***+97***
2024 Conditions												
No Project	44	0	0	44	10	0	0	10	1,349	537	553	2,439
Two-Year Program	948	0	0	948	215	0	0	215	1,444	524	526	2,495
Difference Between Two-Year Program and No Project	***+904***	***0***	***0***	***+904***	***+205***	***0***	***0***	***+205***	***+96***	***-12***	***-26***	***+57***

Source: SCAG, 2019 Annual Land Use Data, HNTB Analysis, 2022.

Impact Summary

This section summarizes the Two-Year Program Alternative's impacts as it relates to the thresholds of significance detailed in *Chapter 4.0, Section 4.4.3* for Impact 4.5-1 through 4.5-3.

Impact 4.5-1

Summary Conclusion for Impact 4.5-1: The Two-Year Program Alternative would result in temporary noise exposure changes during the construction period in 2023 and 2024 due to the suspension of nighttime Contra Flow operations during proposed runway closure periods. Therefore, the Two-Year Program Alternative would have a *significant, unavoidable temporary impact* on noise levels in the vicinity of the project.

The Two-Year Program Alternative would result in changes in noise exposure as compared to the Baseline Conditions. The change in Two-Year Program Alternative noise conditions compared to the Baseline Conditions is attributable to three factors:

1. Background growth in passenger activity and aircraft operations that is anticipated at ONT with or without the Two-Year Program Alternative.
2. Changes in fleet mix projected in future years that can impact overall noise levels. Generally, operations from older and noisier aircraft are expected to decrease in future years.
3. Runway closure periods associated with the Two-Year Program Alternative construction that results in ONT operating on a single-runway for periods of 2023 and 2024, as compared to the Baseline Conditions where both runways are operational.

During the proposed runway closure periods, all operations would occur on a single runway. Due to the two runways being parallel and closely spaced, temporarily operating on a single runway would not significantly alter flight patterns. As described above, Contra Flow operations would be suspended during construction periods. Figures 8-1 and 8-2 illustrate the expected noise exposure contours in 2023 and 2024 in comparison with the Baseline Conditions.

The Two-Year Program Alternative would result in temporary increases in noise exposure to the west of the Airport during nighttime hours during these construction periods. This would result in a *significant, unavoidable temporary impact on noise levels* in the vicinity of the project.

Impact 4.5-2

Summary Conclusion for Impact 4.5-2: The Two-Year Program Alternative would result in groundborne vibration and noise levels, but construction activity would not expose sensitive receptors. The Two-Year Program Alternative would result in a *less than significant impact* from groundborne vibration and noise levels.

Construction of the Two-Year Program Alternative may result in substantial vibration impacts. However, the project area is located within the active airfield and adjacent airport property. The properties immediately surrounding ONT are zoned industrial or commercial. The closest sensitive receptors are residential homes located along E. Airport Drive and S. Grove Avenue, approximately 700 feet north and 400 feet west of the contractor staging area, respectively. It should be noted that these residential homes are eligible for acquisition under ONT's Quiet Home Program. The closest sensitive receptors to construction pavement area (proposed Taxiway N2) are residential homes located approximately 2,400 feet north, off of E. Nocta Street.

Between the Two-Year Program Alternative site and the residential receivers off of E. Nocta Street, there are two major roadways, industrial and commercial facilities, and a tow yard. Due to distance, the existing noise environment, and obstructions between noise sources and the residential receptors, construction noise levels would not be discernable over the existing ambient noise environment. Therefore, the Two-Year Program Alternative would result in a *less than significant impact* from groundborne vibration and noise levels.

Impact 4.5-3

Summary Conclusion for Impact 4.5-3: The Two-Year Program Alternative would result in *significant, unavoidable temporary impacts* to people residing or working around the Airport from excessive noise levels, as described below.

During runway closure periods in 2023 and 2024, all operations would occur on a single runway. During single runway operation, Contra Flow operations would be suspended at nighttime which is typically used as a noise mitigation strategy to minimize noise over residential areas at night. As described above, the Two-Year Program Alternative would temporarily expose additional people to excessive noise during the construction period when compared to Baseline Conditions. Therefore, the Two-Year Program Alternative would result in *significant, unavoidable temporary impacts* to people residing or working around the Airport from excessive noise levels.

Mitigation Measures

The Two-Year Program Alternative would result in significant but unavoidable temporary impacts to noise levels when compared to Baseline Conditions. There are no mitigation measures proposed as the impacts are temporary and noise levels will not be impacted following completion of Two-Year Program Alternative construction.

While Contra Flow operations would be suspended during the runway closure periods for construction of the Two-Year Program Alternative, ONT would continue to implement other Voluntary Operational Restrictions for noise management during implementation of the Two-Year Program Alternative, including but not limited to: [15]

- "Touch-and-go" operations by turbojet and turbo-fan aircraft are prohibited without special permissions
- Nighttime (10:00 PM and 7:00 AM) engine maintenance run-up operations are prohibited. Daytime run-up operations occur at specified locations.

"Intersection departures" are prohibited (i.e., departures not starting at the end of the runway), except from 8L at Taxiway D and from 26R at Taxiway V. Departures must start at the end of runways to allow aircraft to pass higher over residential communities.

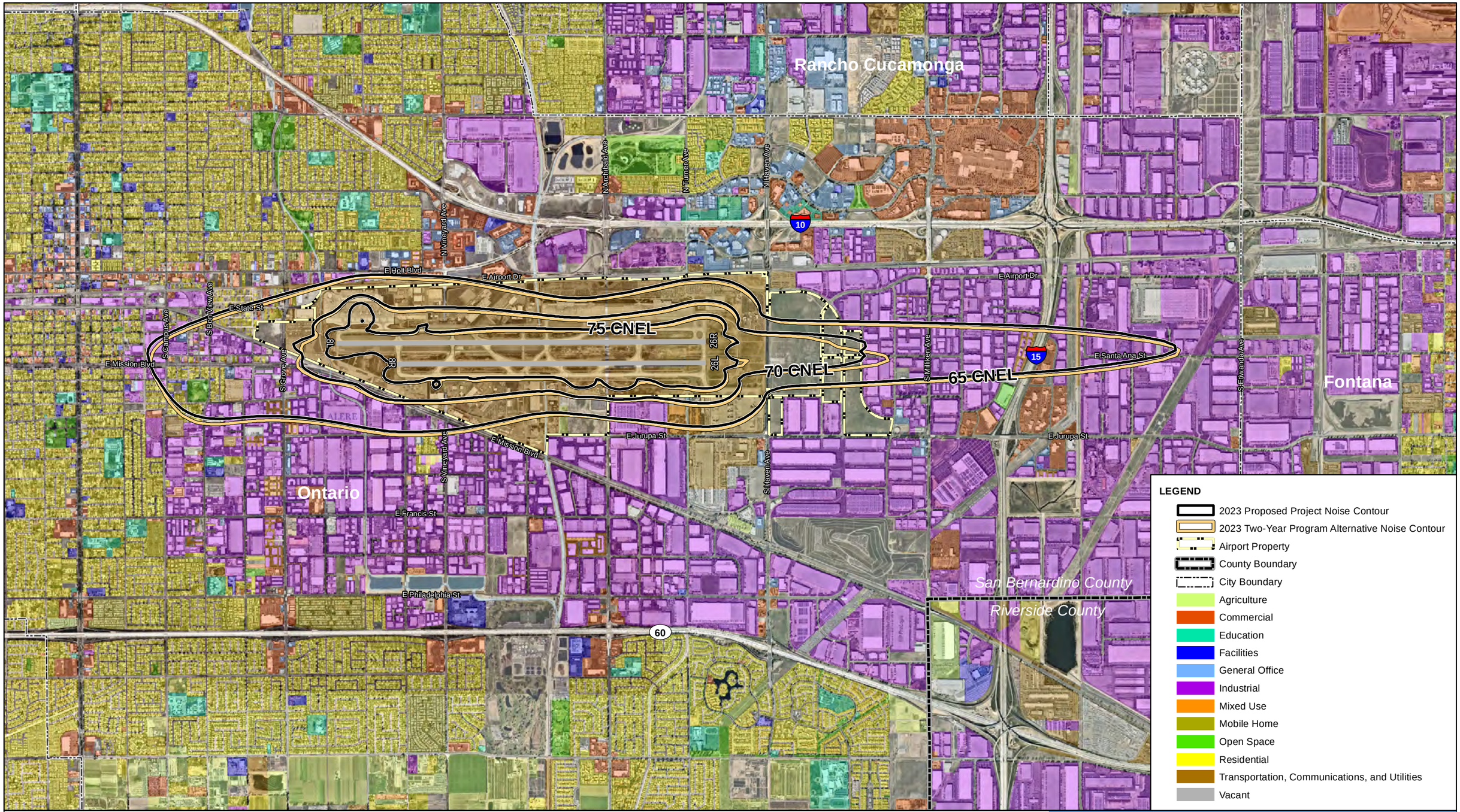
Comparison to Proposed Project

The Two-Year Program Alternative condenses the construction period to two years (2023 and 2024) as compared to the Proposed Project's three-year construction period (2023, 2024 and 2025). As summarized in **Table 8-23**, runway closure schedules vary in 2023 between the two Alternatives but are identical in 2024. Therefore, the 2024 noise contour areas for both alternatives are identical. In 2025, the Two-Year Program Alternative implementation would be complete, therefore, the noise environment for the Two-Year Program Alternative in 2025 is represented by the 2025 No Project Alternative noise contour in order to make a reasonable comparison of the noise environment between the Proposed Project and Two-Year Program Alternative in 2025.

Figures 8-5 and 8-6 compare the expected noise exposure contours in 2023 and 2024 for the Two-Year Program Alternative and the Proposed Project, respectively. As illustrated in Figure 8-5, the Two-Year Program Alternative noise contours are shifted slightly south as compared to the Proposed Project noise contours, due to Runway 8L-26R (north runway) being closed for a greater period of the year and therefore more operations on Runway 8R-26L (south runway) as compared to Proposed Project in 2023. This minor shift south in the noise contours results in additional residential units/population within the Two-Year Program Alternative noise contours. As illustrated in Figure 8-6, the 2024 noise contours for both alternatives are identical due to the construction phasing and runway closure periods being the same.

Table 8-24 provides the population, number of housing units and acreage within the various CNEL ranges that would be affected in the Two-Year Program Alternative and provides a comparison of the Two-Year Program Alternative in 2023 to the Proposed Project in 2023.

As indicated in Table 8-24, construction of the Two-Year Program Alternative results in additional population and housing units within the 65-69 CNEL contour in 2023, as compared to the Proposed Project. This increase in population/housing units is due to the longer closure of Runway 8L-26R under the Two-Year Program Alternative. This results in operations occurring on Runway 8R-26L for a greater period of the year as compared to the Proposed Project, with a higher concentration of residential houses location off the 8R end as compared to the 8L end. Because the Two-Year Program Alternative would be complete in 2024, the 2025 Proposed Project is compared to the 2025 No Project Alternative noise contour (to represent the Two-Year Program Alternative in 2025), in order to make a reasonable comparison of the noise environments between the alternatives in 2025. As shown, the Proposed Project would result in in additional population and housing units with the 65-69 CNEL contour in 2025. Overall, the Proposed Project would result in greater temporary



ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

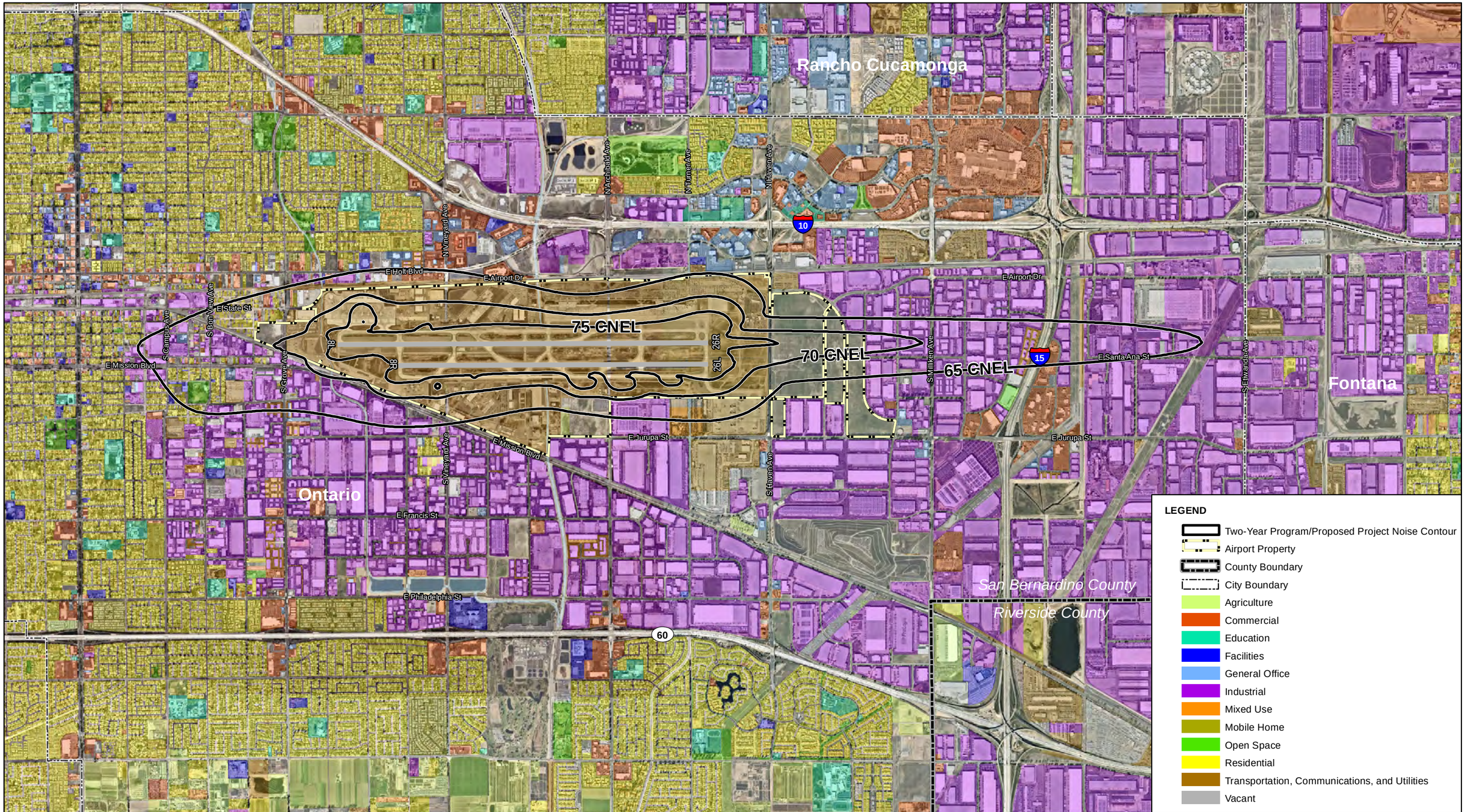
N

HNTB

Figure 8-5

2023 Two-Year Program Alternative vs. 2023 Proposed Project Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis



ONT ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

N

HNTB

Figure 8-6

2024 Two-Year Program Alternative vs. 2024 Proposed Project Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis

impacts to population and housing counts due to the extended construction period through 2025 as compared to the Two-Year Program Alternative that would be complete in 2024.

Table 8-23: Noise Inputs and Outputs for Proposed Project and Two-Year Program Alternative

Year	Alternative	Aircraft Operations[1]	Runway Closure	65 CNEL Noise Contour Area (acres)	Change in Area Compared to Proposed Project
2023	Proposed Project	110,368	8L-26R – 4 months 8R-26L – 5 months	2,472	-0.2%
	Two-Year Program		8L-26R – 6 months 8R-26L – 3 months	2,468	
2024	Proposed Project/ Two Year Program	113,826	8R-26L – 9 months	2,497	--
2025	Proposed Project	117,625	8L-26R – 5 months	2,548	-1.4%
	Two-Year Program[2]		No closure	2,513	

Note: (1) Aircraft operations are not influenced by the Two-Year Program Alternative. Background growth in passenger activity and aircraft operations are anticipated at ONT with or without the Two-Year Program Alternative, as shown with the same level of operations modeled in the No Project Alternative and Two-Year Program Alternative in a given year.
(2) The Two-Year Program Alternative completes construction in 2024, therefore, the 2025 noise contour for the Two-Year Program Alternative is represented by the 2025 No Project Alternative noise contour in order to make a reasonable comparison of the noise environment between the Proposed Project and Two-Year Program Alternative in 2025.

Source: HNTB analysis, 2022.

Table 8-24: Estimated Population, Housing Units and Acreage within the Proposed Project and Two-Year Program Alternative Aircraft Noise Contours

Alternative	Population				Housing Units				Acreage			
	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL
2023 Conditions												
Proposed Project	1,014	0	0	1,014	225	0	0	225	1,430	519	523	2,472
Two-Year Program	1,094	0	0	1,094	239	0	0	239	1,432	517	519	2,468
Difference Between Proposed Project and Two-Year Program	***-80***	***0***	***0***	***-80***	***-14***	***0***	***0***	***-14***	***-1***	***+2***	***+4***	***+4***
2024 Conditions												
Proposed Project/Two-Year Program	948	0	0	948	215	0	0	215	1,444	524	526	2,495
Difference Between Proposed Project and Two-Year Program	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
2025 Conditions												
Proposed Project	703	0	0	703	165	0	0	165	1,467	534	547	2,548
Two-Year Program*	54	0	0	54	12	0	0	12	1,398	552	563	2,513
Difference Between Proposed Project and Two-Year Program	***+649***	***0***	***0***	***+649***	***+153***	***0***	***0***	***+153***	***+69***	***-18***	***-16***	***+35***

Note: *The Two-Year Program Alternative completes construction in 2024, therefore, the 2025 noise contour for the Two-Year Program Alternative is represented by the 2025 No Project Alternative noise contour in order to make a reasonable comparison of the noise environment between the Proposed Project and Two-Year Program Alternative in 2025.
Difference represents the Proposed Project minus the Two-Year Program Alternative counts.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

Population and Housing

The Two-Year Program Alternative would have no impacts on population and housing. The lack of impacts regarding this category is the same with the Two-Year Program Alternative as with the Proposed Project.

Public Services

The Two-Year Program Alternative would have no physical impacts on public services. The lack of impacts regarding this category is the same with the Two-Year Program Alternative as with the Proposed Project.

Recreation

The Two-Year Program Alternative would have no impacts on recreation. The lack of impacts regarding this category is the same with the Two-Year Program Alternative as with the Proposed Project.

Transportation/Traffic

The Two-Year Program Alternative would have less than significant impacts to transportation and traffic. Any temporary surface traffic changes associated with construction of the Two-Year Program would be minor and mitigated, if necessary, by a required construction traffic plan. Construction vehicles would use existing airport roadways and service roads, and/or adjacent airfield area for access regardless of the construction staging area used. Compared to the Proposed Project, impacts to transportation and traffic due to construction would be of a shorter duration, however roadways may be more heavily used during the shorter time period.

Further, CEQA Guidelines section 15064.3 now specifies that VMT shall be the most appropriate measure of transportation impacts. VMT refers to the amount and distance of automobile travel attributable to a project. A project's effect on automobile delay and roadway congestion, previously measured by LOS, will no longer constitute an environmental impact. The Governor's OPR developed a *Technical Advisory on Evaluating Transportation Impacts in CEQA*, which states that rehabilitation, repair and safety improvement projects for existing transportation assets that do not add additional capacity are projects that would not likely lead to a substantial or measurable increase in VMT.[16] Caltrans' Transportation Analysis under CEQA[17] has the same standard, and ONT has a Caltrans-issued permit. Here, both the Proposed Project and the Two-Year Program Alternative are rehabilitation, repair and safety improvement projects that do not add or increase capacity at ONT and would therefore not increase VMT. Moreover, the City of Ontario Resolution No. 2020-071 adopted VMT Thresholds stating that transportation projects that do not add capacity can be screened from further VMT review during the CEQA process and are presumed to have a less than significant impact on transportation.[18]

Thus, the Two-Year Program Alternative would have less than significant impacts as with the Proposed Project.

Tribal Cultural Resources

The Two-Year Program Alternative would result in the same impacts to cultural resources as with the Proposed Project since construction of the same project components would occur under both alternatives. Thus, the Two-Year Program Alternative would have less than significant impacts (with mitigation incorporated) as with the Proposed Project.

Utilities and Service Systems

The Two-Year Program Alternative would have less than significant impacts on utilities and service systems. Although increased use of utilities and service systems would be necessary during construction, impacts would be less than significant. Compared to the Proposed Project, impacts to utilities and service systems would be of a shorter duration, however they would also be more intense during the shorter time period. Thus, the Two-Year Program Alternative would have less than significant impacts as with the Proposed Project.

Health Risk Assessment

The incremental excess cancer risk is an estimate of the chance a person exposed to a specific source of a TAC may have of developing cancer from that exposure beyond the individual's risk of developing cancer from existing background levels of TACs in the ambient air. For context, the average cancer risk from TACs in the ambient air for an individual living in an urban area of California is 830 in 1 million.[19] The SCAQMD has conducted studies on carcinogenic risk from exposure to air toxics in the SCAB. The most recent is the Multiple Air Toxics Exposure Study V (MATES V). According to the MATES Data Visualization interactive tool, the area around ONT has a cumulative cancer risk of 600 in 1 million.[20] Cancer risk estimates do not mean, and should not be interpreted to mean, that a person will develop cancer from estimated exposures to toxic air pollutants.

Impact Summary

This section summarizes the Two-Year Program Alternative's impacts as it relates to the thresholds of significance detailed in *Chapter 4.0, Section 4.8.3* for Impacts 4.8-1 through 4.8-3.

Impact 4.8-1 and 4.8-2

MEIR and MEIW

The maximum estimated community health risks are determined by evaluating the increased cancer risk and non-cancer chronic risks for the maximally exposed individual resident (MEIR) and off-site maximally exposed individual worker (MEIW). To be conservative (health protective), sensitive receptors located at the closest school and closest hospital were evaluated using the residential risk parameters (age bins starting utero in the third trimester of pregnancy; 17 to 21 hours per day exposure).

The incremental excess cancer and chronic risks for the MEIR resulting from implementation of the Two-Year Program Alternative are presented in **Table 8-25**.

These estimates are conservative (health protective) and assume that the resident is outdoors for the entire exposure period. The locations of the MEIR are shown in Figure 4-8. As shown in Table 8-21, health risks for the MEIR would not exceed the SCAQMDs thresholds during implementation of the Two-Year Program Alternative.

Table 8-25
Two-Year Program Alternative Maximally Exposed Individual Resident Incremental Health Risk

	MEIR Cancer Risk	MEIR Chronic Hazard Index (HI)	MEIR Acute Hazard Index (HI)
Two-Year Program Alternative	2.2 in 1 million	0.08	0.22
Threshold	10 in 1 million	1	1
Exceed Threshold?	No	No	No

Source: Lakes AERMOD View, CARB ADMRT. See *Appendix I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs and outputs.

The incremental excess cancer and chronic risks for the MEIW resulting from implementation of the Two-Year Program Alternative are presented in **Table 8-26**. These estimates are conservative (health protective) and assume that the worker is outdoors for the entire exposure period. The locations of the MEIW are shown in Figure 4-8. As shown in Table 8-22, health risks for the MEIW would not exceed the SCAQMDs thresholds during implementation of the Two-Year Program Alternative.

Table 8-26
Two-Year Program Alternative Maximally Exposed Individual Worker Incremental Health Risk

	MEIW Cancer Risk	MEIW Chronic HI	MEIW Acute HI
Two-Year Program Alternative	<0.1 in 1 million	0.27	0.54
Threshold	10 in 1 million	1	1
Exceed Threshold?	No	No	No

Source: Lakes AERMOD View, CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs and outputs.

The point of maximum impact (PMI; off-site) for cancer risks would be the location of the MEIW, at the airport property line near the location of the proposed concrete batch plant, at approximately Universal Transverse Mercator (UTM) coordinates Zone 11, 4443897 meters East, 3767796 meters North. The location of the PMI is shown in Figure 4-8. No sensitive receptors are located near the PMI for cancer risks.

Sensitive Receptor Health Risks

The estimated incremental excess cancer risks due to exposure to the Two-Year Program Alternative's TAC emissions for each modeled discrete sensitive receptor (shown in Figure 4-8) are presented in **Table 8-27** The model inputs, outputs, and risk isopleth figures are available in *Appendix I, Health Risk Assessment, Attachment*

B, Risk Modeling Input/Output. As shown in Table 8-23, the incremental increase in cancer risk would not exceed the SCAQMD threshold of 10 in 1 million for any sensitive receptor during implementation of Two-Year Program Alternative.

Table 8-27
Two-Year Program Alternative Discrete Sensitive Receptor Incremental Cancer Risk

Receptor	Risk Two-Year Program Alternative (chances per million)
R1, Residence	-0.5
R2, Residence	-0.4
R3, Residence	-0.3
R4, Residence	-0.2
R5, Residence	-0.1
R6, Residence	<0.1
R7, Residence	2.2
R8, Residence	<0.1
R9, Residence	1.2
R10, Residence	1.6
R11, Residence	0.4
R12, Residence	0.3
R13, Residence	0.2
R14, Residence	0.1
R15, Residence	<0.1
R16, Residence	-0.2
R17, Residence	-0.2
R18, Residence	-0.2
R19, Residence	-0.2
R20, Residence	1.0
R21, Residence	0.6
R22, Residence	0.3
S1, School	1.1
S2, School	1.1
S3, School	1.4
S4, School	<0.1
S5, School	0.1
H1, Hospital	-0.1

Source: Lakes AERMOD View and CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs, outputs, and risk isopleths.

The estimated incremental non-cancer chronic risk due to exposure to the Two-Year Program Alternative's TAC emissions for each modeled discrete sensitive receptor (shown in Figure 4-8) is presented in **Table 8-28**. The model inputs, outputs, and risk isopleth figures are available in *Appendix I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output*. As shown in Table 8-24, the incremental increase in non-cancer chronic HI would not exceed the SCAQMD threshold of 1 for any sensitive receptor during implementation of the Two-Year Program Alternative.

Table 8-28
Two-Year Program Alternative Discrete Sensitive Receptor Incremental Chronic Risk

Receptor	Two-Year Program Alternative HI
R1, Residence	<0.01
R2, Residence	-0.01
R3, Residence	<0.01
R4, Residence	<0.01
R5, Residence	<0.01
R6, Residence	<0.01
R7, Residence	0.08
R8, Residence	<0.01
R9, Residence	0.07
R10, Residence	0.04
R11, Residence	0.02
R12, Residence	0.02
R13, Residence	0.01
R14, Residence	0.01
R15, Residence	0.01
R16, Residence	<0.01
R17, Residence	<0.01
R18, Residence	<0.01
R19, Residence	<0.01
R20, Residence	0.06
R21, Residence	0.04
R22, Residence	0.03
S1, School	0.02
S2, School	0.04
S3, School	0.05
S4, School	<0.01
S5, School	0.01
H1, Hospital	<0.01

Source: Lakes AERMOD View and CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs, outputs, and risk isopleths.

The estimated incremental non-cancer chronic risk due to exposure to the Two-Year Program Alternative's TAC emissions for each modeled discrete sensitive receptor (shown in Figure 4-8) is presented in **Table 8-29**. The model inputs, outputs, and risk isopleth figures are available in *Appendix I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output*. As shown in Table 8-25, the incremental increase in non-cancer acute HI would not exceed the SCAQMD threshold of 1 for any sensitive receptor during implementation of the Two-Year Program Alternative.

Table 8-29
Two-Year Program Alternative Discrete Sensitive Receptor Incremental Acute Risk

Receptor	Two-Year Program Alternative HI
R1, Residence	-0.03
R2, Residence	-0.07
R3, Residence	-0.01
R4, Residence	<0.01
R5, Residence	<0.01
R6, Residence	<0.01
R7, Residence	0.14
R8, Residence	-0.11
R9, Residence	0.13
R10, Residence	-0.01
R11, Residence	<0.01
R12, Residence	-0.03
R13, Residence	<0.01
R14, Residence	0.05
R15, Residence	0.05
R16, Residence	0.10
R17, Residence	0.05
R18, Residence	0.03
R19, Residence	0.03
R20, Residence	0.15
R21, Residence	-0.03
R22, Residence	-0.06
S1, School	0.13
S2, School	0.18
S3, School	0.22
S4, School	0.01
S5, School	0.13
H1, Hospital	<0.01

Source: Lakes AERMOD View and CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs, outputs, and risk isopleths.

Impact 4.8-3
Cancer Burden
The cancer burden is the estimated increase in the occurrence of cancer cases from a source or facility over a 70-year exposure duration. The Two-Year Program Alternative would involve short-term and temporary airport runway rehabilitation and associated improvement activities, anticipated to last a maximum duration of two years. Once implementation of the Two-Year Program Alternative is complete, the project would not result in any long-term changes in emissions at ONT. Therefore, an analysis of cancer burden is not applicable to the Two-Year Program Alternative.

Mitigation Measures

No mitigation is proposed as there are no anticipated health risks as a result of the Two-Year Program Alternative.

Comparison to Proposed Project

The Two-Year Program Alternative condenses the construction period to two years (2023 and 2024) as compared to the Proposed Project's three-year construction period (2023, 2024 and 2025). Both the Proposed Project and the Two-Year Program Alternative would result in a less than significant human health risk impact, and the differences in associated risk between the Alternatives are minor.

The Two-Year Program Alternative would compress the anticipated project implementation period from three years to two years. For this reason, the Two-Year Program Alternative would result in a shorter exposure time for sensitive receptors to any project-related increases in TAC concentrations. However, the compressed implementation period would increase the intensity of diesel-powered construction equipment use and the annual concrete throughput for the batch plant.

As there are no existing sensitive receptor locations (residences, schools, and hospitals) in close proximity to the construction areas anticipated to have intense use of diesel-powered equipment, and more than 1,000 feet from the proposed batch plant location, the primary driver of health risks for sensitive receptors would be the change in aircraft emissions concentrations due to shifting aircraft movement patterns during project implementation. Compared to the Proposed Project three-year implementation, the Two-Year Program Alternative would result in slightly lower health risks for the MEIR (cancer risks lower by 0.8 in 1 million; non-cancer chronic HI lower by 0.03; acute HI lower by 0.23).

Potential existing off-site worker locations are much closer to the proposed staging area, construction areas, and batch plant. Therefore, health risks to off-site workers are more affected by increased intensity of diesel-powered construction equipment use and the annual concrete throughput for the batch plant. For the MEIW, compared to the Proposed Project three-year implementation, the Two-Year Program Alternative would result in slightly lower cancer risk risks (lower by 0.4 in 1 million), a slight increase in non-cancer chronic HI (increase by 0.09), and no change for acute HI.

Tables 8-30 through 8-34 present the comparison of potential health risk impacts between the Proposed Project and Two-Year Program Alternative and provide the difference in potential impacts between the two alternatives.

Table 8-30
Proposed Project and Two-Year Program Alternative Maximally Exposed Individual Resident Incremental Health Risk

	MEIR Cancer Risk	MEIR Chronic HI	MEIR Acute HI
Proposed Project	3.0 in 1 million	0.11	0.45
Two-Year Program Alternative	2.2 in 1 million	0.08	0.22
Difference	*0.8 in 1 million*	*0.03*	*0.23*
Threshold	10 in 1 million	1	1
Exceed Threshold?	No	No	No

Note: Difference represents the Proposed Project minus the Two-Year Program Alternative risk.

Source: Lakes AERMOD View, CARB ADMRT. See *Appendix I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs and outputs.

Table 8-31
Proposed Project and Two-Year Program Alternative Maximally Exposed Individual Worker Incremental Health Risk

	MEIW Cancer Risk	MEIW Chronic HI	MEIW Acute HI
Proposed Project	0.4 in 1 million	0.18	0.54
Two-Year Program Alternative	<0.1 in 1 million	0.27	0.54
Difference	*0.4 in 1 million*	*-0.09*	*0*
Threshold	10 in 1 million	1	1
Exceed Threshold?	No	No	No

Note: Difference represents the Proposed Project minus the Two-Year Program Alternative risk.

Source: Lakes AERMOD View, CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs and outputs.

Table 8-32
Proposed Project and Two-Year Program Alternative Discrete Sensitive Receptor Incremental Cancer Risk

Receptor	Proposed Project Risk (chances per million)	Two-Year Program Alternative Risk (chances per million)	*Difference (chances per million)*
R1, Residence	-0.4	-0.5	*0.1*
R2, Residence	-0.5	-0.4	*-0.1*
R3, Residence	-0.3	-0.3	*0*
R4, Residence	-0.2	-0.2	*0*
R5, Residence	-0.1	-0.1	*0*
R6, Residence	0.1	<0.1	*0.1*
R7, Residence	2.6	2.2	*0.4*
R8, Residence	0.4	<0.1	*0.4*
R9, Residence	3.0	1.2	*1.8*
R10, Residence	3.0	1.6	*1.4*
R11, Residence	0.5	0.4	*0.1*
R12, Residence	0.4	0.3	*0.1*
R13, Residence	0.2	0.2	*0*
R14, Residence	0.1	0.1	*0*
R15, Residence	<0.1	<0.1	*0*
R16, Residence	-0.2	-0.2	*0*
R17, Residence	-0.2	-0.2	*0*
R18, Residence	-0.3	-0.2	*-0.1*
R19, Residence	-0.2	-0.2	*0*
R20, Residence	1.0	1.0	*0*
R21, Residence	0.6	0.6	*0*
R22, Residence	0.4	0.3	*-0.1*
S1, School	1.7	1.1	*0.6*
S2, School	1.5	1.1	*0.4*
S3, School	1.5	1.4	*0.1*
S4, School	0.1	<0.1	*0.1*
S5, School	0.1	0.1	*0*
H1, Hospital	-0.1	-0.1	*0*

Note: Difference represents the Proposed Project minus the Two-Year Program Alternative risk.

Source: Lakes AERMOD View and CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs, outputs, and risk isopleths.

Table 8-33
Proposed Project and Two-Year Program Alternative
Discrete Sensitive Receptor Incremental Chronic Risk

Receptor	Proposed Project HI	Two-Year Program Alternative HI	*Difference in HI*
R1, Residence	0.01	<0.01	*0.01*
R2, Residence	<0.01	-0.01	*0.01*
R3, Residence	<0.01	<0.01	*0*
R4, Residence	<0.01	<0.01	*0*
R5, Residence	<0.01	<0.01	*0*
R6, Residence	0.01	<0.01	*0.01*
R7, Residence	0.08	0.08	*0*
R8, Residence	0.02	<0.01	*0.02*
R9, Residence	0.11	0.07	*0.04*
R10, Residence	0.08	0.04	*0.04*
R11, Residence	0.02	0.02	*0*
R12, Residence	0.02	0.02	*0*
R13, Residence	0.01	0.01	*0*
R14, Residence	0.01	0.01	*0*
R15, Residence	0.01	0.01	*0*
R16, Residence	0.01	<0.01	*0.01*
R17, Residence	<0.01	<0.01	*0*
R18, Residence	<0.01	<0.01	*0*
R19, Residence	<0.01	<0.01	*0*
R20, Residence	0.06	0.06	*0*
R21, Residence	0.04	0.04	*0*
R22, Residence	0.04	0.03	*0.01*
S1, School	0.02	0.02	*0*
S2, School	0.04	0.04	*0*
S3, School	0.05	0.05	*0*
S4, School	<0.01	<0.01	*0*
S5, School	0.01	0.01	*0*
H1, Hospital	<0.01	<0.01	*0*

Note: Difference represents the Proposed Project minus the Two-Year Program Alternative risk.

Source: Lakes AERMOD View and CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs, outputs, and risk isopleths.

Table 8-34
Proposed Project and Two-Year Program Alternative
Discrete Sensitive Receptor Incremental Acute Risk

Receptor	Proposed Project HI	Two-Year Program Alternative HI	*Difference in HI*
R1, Residence	0.07	-0.03	*0.10*
R2, Residence	-0.05	-0.07	*0.02*
R3, Residence	<0.01	-0.01	*0.01*
R4, Residence	0.01	<0.01	*0.01*
R5, Residence	0.01	<0.01	*0.01*
R6, Residence	0.01	<0.01	*0.01*
R7, Residence	0.14	0.14	*0*
R8, Residence	0.05	-0.11	*0.16*
R9, Residence	0.45	0.13	*0.32*
R10, Residence	0.27	-0.01	*0.28*
R11, Residence	<0.01	<0.01	*0*
R12, Residence	-0.03	-0.03	*0*
R13, Residence	<0.01	<0.01	*0*
R14, Residence	0.05	0.05	*0*
R15, Residence	0.05	0.05	*0*
R16, Residence	0.10	0.10	*0*
R17, Residence	0.05	0.05	*0*
R18, Residence	0.03	0.03	*0*
R19, Residence	0.03	0.03	*0*
R20, Residence	0.15	0.15	*0*
R21, Residence	-0.03	-0.03	*0*
R22, Residence	-0.03	-0.06	*0.03*
S1, School	0.17	0.13	*0.04*
S2, School	0.18	0.18	*0*
S3, School	0.22	0.22	*0*
S4, School	0.01	0.01	*0*
S5, School	0.02	0.13	*-0.11*
H1, Hospital	0.01	<0.01	*0.01*

Note: Difference represents the Proposed Project minus the Two-Year Program Alternative risk.

Source: Lakes AERMOD View and CARB ADMRT. See Appendix *I, Health Risk Assessment, Attachment B, Risk Modeling Input/Output* for model inputs, outputs, and risk isopleths.

Wildfire

The Two-Year Program Alternative would have no impacts to wildfire. The lack of impacts regarding this category is the same with the Two-Year Program Alternative as with the Proposed Project.

Growth Inducement

The Two-Year Program Alternative would not induce growth because it would not directly or indirectly create jobs or entice new businesses to the area. The lack of

impacts regarding this category is the same with the Two-Year Program Alternative as with the Proposed Project.

Cumulative Impacts

As with the Proposed Project, implementation of all of the project components would contribute to cumulative impacts temporarily during construction. Similar to the Proposed Project, the Two-Year Program Alternative would result in less than significant project-level air emission impacts (with mitigation incorporated) and therefore would not be cumulatively considerable except for the requirement to consider cumulative impacts for EIR purposes. The Two-Year Program Alternative would have significant temporary noise impacts due to aircraft activity however the impacts would be less than the Proposed Project due to reduced construction years. Therefore, the Two-Year Program Alternative would have cumulatively less impact than the Proposed Project.

8.1.1.3 Ability of Alternative to Meet Basic Objectives of the Proposed Project and to be Feasibly Implemented

This alternative would only partially achieve the basic objectives of the Proposed Project in that it would prioritize future maintenance, rehabilitation and/or reconstruction projects for airside pavement in accordance with the 2020 ONT PMP, meet current FAA standards, improve safety on the airfield, enhance airfield efficiency, and provide adequate infrastructure to support airfield and navigational power requirements. However, and importantly, the Two-Year Program Alternative would not meet the objective to maximize available FAA funding for construction. Nor is the Two-Year Program Alternative feasible as explained below.

OIAA's airport revenue streams primarily originate from: aircraft landing fees, facilities rental fees, concessions (parking, food and beverage, news and gifts, advertising, etc.), and Passenger Facility Charges (PFC). These funding streams maintain and cover ONT's day-to-day operating costs. Large airfield projects, including the Proposed Project, are not able to be solely financed by the OIAA without significantly compromising the ability to operate ONT to its existing service levels. As such, the FAA has an Airport Improvement Program (AIP) that provides airport sponsors with entitlement and discretionary grants that can be used to substantially fund critical airfield infrastructure design and construction.[21] Additional information on AIP funds is included in *Appendix K, Two-Year Program Alternative, Attachments K-1 through K-4.*

Additionally, a two-year construction program provides challenges in labor availability and funding to accomplish the work. Shortening the program would require construction activity for at least two, and likely three, shifts per day, up to seven days per week during some or all of the phases in order to accomplish the volume of work required to reconstruct the runway. Given the current construction outlook for the region, it is unlikely that a contractor would be able to secure enough labor to accomplish the runway work in one year. Labor shortages in the region mean that OIAA would not be able to staff multiple work crew shifts each day that would be needed to condense or accelerate the Project's construction into a two-year

timeframe versus a three-year duration. Also, such acceleration of the Project's construction timeframe would result in significantly higher costs due to higher pay required during non-standard work hours. According to an annual analysis of the Bureau of Labor Statistics' Job Openings and Labor Turnover Survey (JOLTS), "the construction industry continues to face a skilled labor shortage, with worker scarcity exacerbated since the onset of the pandemic. The resulting surge in construction wages, combined with climbing materials prices, has produced significant increases in the cost of delivering construction services."[22] Refer to *Appendix K, Attachment K-5* for information related to construction workforce labor shortages. The three-year program allows the work to be accomplished with a more traditional construction schedule given labor availability. Chronic supply chain problems would also make it infeasible to provide timely goods and materials to allow the Project construction to be condensed to a two-year construction timeframe. (See *Appendix K*, *Attachment K-6*.)

Further, FAA funding availability dictates construction timeframes as OIAA is reliant on FAA funding through the AIP for large scale construction. Under the Two-Year Program Alternative, OIAA would not be able to utilize at least about $20 million in FAA funding for the Project that would be available under the three-year construction timeframe of the Proposed Project. The funding amounts would come from (1) annual "entitlement" funding from the local Southern California FAA office for ONT capital project (about $4.5 million each year to OIAA on average over the last three years), (2) annual funding of about $9.685 million from the Bipartisan Infrastructure Law, and (3) annual "discretionary" funding from the local FAA office for ONT capital project (about $5 million each year expected based on discussions with the FAA).

In 2019 and 2020, OIAA requested FAA funding assistance to complete the project over a two-year period, as included in the 2019 and 2020 ACIPs (*Appendix K, Attachment K-2*). The funding levels requested for a two-year program were relatively aligned with funding levels that had historically been requested and received for runway reconstruction programs at other medium hub airports. FAA indicated that no more than $5 million in FAA discretionary funding would be available annually from the FAA in order to support the ACIP. However, FAA has indicated that the requested AIP funding is expected to be available to support the Proposed Project if completed over a three-year period (2023, 2024 and 2025). Specifically, the level of discretionary funding proposed by the OIAA in their annual ACIP submittals in 2019 and 2020 for a Two-Year Program is not available. Without Federal funding assistance, OIAA would not be able to complete this critical airfield project within a timespan that is needed to rehabilitate critical runway and taxiway pavement. The third year of construction would provide the airport with another year's worth of AIP entitlements to apply to the project. The airport would also seek additional discretionary AIP dollars in that third year to further offset Project construction costs. Accelerating the construction timeframe for the Project would require the airport to self-fund approximately $20 million or more in construction costs to be expended in 2024, funding for which costs would be available with Federal grant monies in 2025 (but not 2024) under the Proposed Project's construction timeframe. This substantial amount is beyond the airport's ability to fund in 2024 due to other capital program requirements and operating budget obligations. The airport does not have existing

or available reserve or contingency funding to apply to the Project for construction costs that would be expended in 2024 under the Two-Year Program Alternative.

OIAA does not have funds available to cover the about $20 million gap in Project funding that would exist, as discussed above, under the Two-Year Program Alternative versus the Proposed Project. Nor, according to OIAA CFO John Schubert, does OIAA have unrestricted and available cash, reserve, contingency, or bond funds available to fund any part of the $20 million amount of Project construction costs to be expended in 2024 under the Two-Year Program Alternative, funding for which costs should be available with Federal grant monies in 2025 under the Proposed Project construction timeframe of three years.

Accordingly, the Two-Year Program Alternative both does not meet the Project Objective to maximize FAA funding for capital projects at ONT and is neither practically nor financially or economically feasible under CEQA Guidelines sections 15126(f)(1) and 15364. OIAA does not have available funds for the Proposed Project or any Alternative independent of FAA funding available during a three-year construction program for the Project. Without a funding commitment from FAA for the Two-Year Program Alternative, OIAA is financially unable to implement this alternative which makes it infeasible. Nor can this Alternative be feasibly implemented given construction labor shortages and supply chain problems for needed construction materials and goods.

8.1.2 No Project Alternative

CEQA and CEQA Guidelines require the evaluation of a No Project Alternative.

8.1.1.4 Description of Alternative

The No Project Alternative is the circumstance under which the project does not proceed. No rehabilitation or reconstruction of runways, taxiways, or other airfield improvements would occur. The airside pavement maintenance, rehabilitation and reconstruction projects recommended in the 2020 ONT PMP would not be implemented, and existing runway, taxiway and airfield conditions would remain and airfield efficiency would not be enhanced. Runway 8R-26L would continue to deteriorate beyond its intended design service life and airfield conditions would become a safety concern. None of the airfield improvements needed to address safety concerns and to meet FAA standards would occur, as objects would remain within the RSA and ROFA, and modifications needed to address hot spots at ONT would not occur.

8.1.1.5 Environmental Effects

This section considers the environmental effects of the No Project Alternative (e.g., the Airport/airfield remaining in its existing state).

Aesthetics

Under the No Project Alternative, there would be no construction or change to activities, and there would be no impacts to aesthetics or visual resources. The only variation in potential impact between the No Project Alternative and the Proposed

Project is that the Proposed Project would have a less than significant impact associated with creation of a new source of substantial light or glare whereas the No Project Alternative would have no impact.

Agricultural and Forestry Resources

Under the No Project Alternative, there would be no construction or change to activities, and there would be no impacts to agricultural or forestry resources. The lack of impacts regarding this category is the same with the No Project Alternative as with the Proposed Project.

Air Quality

The No Project Alternative would have no impact on operations at the Airport. The No Project Alternative would not increase Airport capacity, it would not result in increases in local traffic as described in *Section 3.9*, and therefore, emissions associated with passenger traffic arriving and departing ONT were not analyzed. Therefore, no operational analysis is completed as part of this EIR.

Construction Impacts

Under the No Project Alternative, the proposed airfield improvements would not be constructed. Therefore, there would be no direct construction emissions associated with the project. The No Project Alternative would have no runway closure periods and would therefore have no indirect construction emissions associated with changes in aircraft taxiing. The No Project Alternative would have *no impact* due to construction emissions.

For consistency in analysis of aircraft taxiing emissions, **Table 8-35** compares the No Project Alternative aircraft taxiing emissions to the Baseline Conditions aircraft taxiing emissions. As shown, aircraft taxiing emissions would increase under the No Project Alternative as compared to the Baseline Conditions in years 2023, 2024 and 2025, and exceed the NAAQS and SCAQMD thresholds of significance for NOx and VOC in 2025. However, the increase in aircraft taxiing emissions is not a result of the No Project Alternative, but instead due to background growth in aircraft operations at ONT that would result in added taxiing delay and therefore increased aircraft taxiing emissions.

Comparison to Proposed Project

A comparison of the No Project Alternative and Proposed Project aircraft taxiing emissions is provided for informational purposes in *Chapter 4.0, Section 4.1.4*, Table 4-7. This comparison is provided again in **Table 8-36**. These incremental differences represent the indirect Proposed Project-related construction emissions associated with temporary runway closures, removing background growth and differences in emission factors. As indicated, the temporary changes in aircraft taxiing during construction of the Proposed Project would result in decreases of emissions when compared to the No Project Alternative. This is a result of the suspension of Contra Flow, which improves departure taxi efficiency. This comparison further demonstrates the temporary reduction in emissions that would be experienced during implementation of the Proposed Project due to changes in aircraft taxiing.

Table 8-35: No Project Alternative Aircraft Taxiing Emissions Compared to Baseline Conditions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}
Baseline Conditions	517	63	96	18	2	2	2,832	346	527	101	9	9
2023 No Project	551	67	101	20	2	2	3,019	369	554	107	9	9
2023 No Project Incremental Changes	***34***	***4***	***5***	***2***	***0***	***0***	***187***	***23***	***27***	***6***	***0***	***0***
2024 No Project	572	70	105	20	2	2	3,125	383	573	111	9	9
2024 No Project Incremental Changes	***55***	***7***	***9***	***2***	***0***	***0***	***293***	***37***	***46***	***10***	***0***	***0***
2025 No Project	597	73	109	21	2	2	3,270	402	596	116	10	10
2025 No Project Incremental Changes	***80***	***10***	***13***	***3***	***0***	***0***	***438***	***56***	***69***	***15***	***1***	***1***
NAAQS or SCAQMD threshold of significance	*100*	*10*	*10*	--	*100*	*70*	*550*	*55*	*55*	*150*	*150*	*55*
Exceeds Thresholds?	*No*	*Yes*	*Yes*	--	*No*	*No*	*No*	*Yes*	*Yes*	--	*No*	*No*

Source: FAA ASPM and HNTB analysis, 2022.

Table 8-36: Proposed Project Aircraft Taxiing Indirect Construction Emissions from Temporary Runway Closures Compared to No Project Alternative

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023 No Project	551	67	101	20	2	2	3,019	369	554	107	9	9
2023 Proposed Project	490	60	90	17	1	1	2,686	328	493	95	8	8
2023 Incremental Changes	**-61**	**-7**	**-11**	**-2**	**<0**	**<0**	***-333***	***-41***	***-61***	***-12***	***-1***	***-1***
2024 No Project	572	70	105	20	2	2	3,125	383	573	111	9	9
2024 Proposed Project	510	63	94	18	2	2	2,790	342	511	99	8	8
2024 Incremental Changes	**-61**	**-8**	**-11**	**-2**	**<0**	**<0**	***-336***	***-41***	***-62***	***-12***	***-1***	***-1***
2025 No Project	597	73	109	21	2	2	3,270	402	596	116	10	10
2025 Proposed Project	563	69	103	20	2	2	3,083	379	562	110	9	9
2025 Incremental Changes	**-34**	**-4**	**-6**	**-1**	**<0**	**<0**	***-187***	***-23***	***-34***	***-7***	***-1***	***-1***

Source: FAA ASPM and HNTB analysis, 2022.

Impact Summary

As detailed above, the No Project Alternative would have *no impact* on operational of construction emissions. Therefore, the No Project Alternative would have no impact as it relates to the thresholds of significance detailed in *Chapter 4.0, Section 4.1.3* for Impact 4.1-1 through 4.1-5. The construction impact summary above is provided for consistency with the analysis of aircraft taxiing emissions for the Proposed Project and Two-Year Program Alternative as compared to Baseline Conditions.

Biological Resources

Under the No Project Alternative, there would be no construction or change to activities, and there would be no impacts to biological resources. The Proposed Project would have a less than significant impact (with mitigation incorporated) associated with biological resources whereas the No Project Alternative would have no impact.

Cultural Resources

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to cultural resources. The SCCIC record search did not identify any cultural resources within the project area, thus the lack of impacts regarding this category is the same with the No Project Alternative as with the Proposed Project.

Energy

Under the No Project Alternative, there would be no construction or change to activities and there would be no impact on energy supply. The only variation in potential impact between the No Project Alternative and the Proposed Project is that Proposed Project would have a less than significant impact associated with the potential to consume energy resources inefficiently during construction of the project whereas the No Project Alternative would have no impact.

Geology and Soils

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to geology and soils. The Proposed Project would however have the potential for less than significant impact associated with constructions efforts such as soil erosion or soils that are unstable.

Greenhouse Gas Emissions

The No Project Alternative would have no impact on operations at the Airport. The No Project Alternative would not increase Airport capacity, it would not result in increases in local traffic as described in *Section 3.9*, and therefore, emissions associated with passenger traffic arriving and departing ONT were not analyzed. Therefore, no operational GHG analysis is completed as part of this EIR.

Construction Impacts

Under the No Project Alternative, the proposed airfield improvements would not be constructed. Therefore, there would be no direct construction GHG emissions associated with the project. The No Project Alternative would have no runway closure periods and would therefore have no indirect construction GHG emissions associated with changes in aircraft taxiing. The No Project Alternative would have *no impact* due to construction GHG emissions.

For consistency in analysis of aircraft taxiing GHG emissions, **Table 8-37** compares the No Project Alternative aircraft taxiing GHG emissions to the Baseline Conditions aircraft taxiing GHG emissions. As shown, aircraft taxiing GHG emissions would increase under the No Project Alternative as compared to the Baseline Conditions in years 2023, 2024 and 2025. However, the increase in aircraft taxiing GHG emissions is not a result of the No Project Alternative, but instead due to background growth in aircraft operations at ONT that would result in added taxiing delay and therefore increased aircraft taxiing GHG emissions.

Comparison to Proposed Project

A comparison of the No Project Alternative and Proposed Project aircraft taxiing GHG emissions is provided for informational purposes in *Chapter 4.0, Section 4.3.4*, Table 4-14. This comparison is provided again in **Table 8-38**. These incremental differences represent the indirect Proposed Project-related construction GHG emissions associated with temporary runway closures, removing background growth and differences in emission factors. As indicated, the temporary changes in aircraft taxiing during construction of the Proposed Project would result in decreases of GHG emissions when compared to the No Project Alternative. This is a result of the suspension of Contra Flow, which improves departure taxi efficiency. This comparison further demonstrates the temporary reduction in GHG emissions that would be experienced during implementation of the Proposed Project due to changes in aircraft taxiing.

Table 8-37: No Project Alternative Aircraft Taxiing GHG Emissions Compared to Baseline Conditions

Year	CO_2e (MT/year)
Baseline Conditions	49,520
2023 No Project Alternative	52,700
2023 Incremental Changes	***3,180***
Baseline Conditions	49,520
2024 No Project Alternative	54,849
2024 Incremental Changes	***5,329***
Baseline Conditions	49,520
2024 No Project Alternative	57,217
2025 Incremental Changes	***7,697***

Source: AEDT and HNTB analysis, 2022.

Table 8-38: Proposed Project Aircraft Taxiing Indirect Construction GHG Emissions from Temporary Runway Closures Compared to the No Project Alternative

Year	CO_2e (MT/year)
2023 No Project Alternative	52,700
2023 Proposed Project	46,919
2023 Incremental Changes	**-5,781**
2024 No Project Alternative	54,849
2024 Proposed Project	48,958
2024 Incremental Changes	**-5,891**
2025 No Project Alternative	57,217
2025 Proposed Project	53,944
2025 Incremental Changes	**-3,273**

Source: AEDT and HNTB analysis, 2022.

Impact Summary

As detailed above, the No Project Alternative would have no impact on operational of construction GHG emissions. Therefore, the No Project Alternative would have no impact as it relates to the thresholds of significance detailed in Chapter 4.0, Section 4.3.3 for Impact 4.3-1 and 4.3-2. The construction impact summary above is provided for consistency with the analysis of aircraft taxiing GHG emissions for the Proposed Project and Two-Year Program Alternative as compared to Baseline Conditions.

Hazards and Hazardous Materials

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to hazards or hazardous materials. The Proposed Project would however have the potential for less than significant impact associated with constructions efforts that might encounter hazards or hazardous materials.

Hydrology and Water Quality

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to hydrology or water quality. The Proposed Project would however have the potential for less than significant impacts such as water quality standards associated with construction and less than significant impacts (with mitigation incorporated) associated with a minor increase in impervious surface.

Land Use and Planning

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to land use and planning. The No Project Alternative would however not advance ONT's planning goals and objectives. The lack

of impacts regarding this category is the same with the No Project Alternative as with the Proposed Project.

Mineral Resources

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to mineral resources. The lack of impacts regarding this category is the same with the No Project Alternative as with the Proposed Project.

Noise

Under the No Project Alternative, the proposed airfield improvements would not be constructed. There would be no changes to flight pattens or temporary runway closures. As a result, the No Project Alternative would have ***no impact*** on construction-related noise levels and would avoid the temporary significant impacts from aircraft noise that would occur under the Proposed Project and Two-Year Program Alternative.

Construction Impacts

Under the No Project Alternative, the proposed airfield improvements would not be constructed. There would be no runway closure periods and therefore no temporary construction-related noise impacts associated with runway closures and suspension of Contra Flow.

For consistency in analysis of noise impacts, the No Project Alternative noise levels are compared to the Baseline Conditions noise levels. **Figure 8-7** show the expected noise exposure contours under the No Project Alternative in 2023, 2024, and 2025 in comparison with the Baseline Conditions.

The estimated land area (acres) within CNEL contours for the Baseline Conditions and No Project Alternative in 2023, 2024, and 2025 along with the estimated number of residential dwelling units, schools, churches, residential population and dwelling units located within the contours are provided in Table 3-13 (*Section 3.8.3, Noise, Baseline Conditions*) and Tables 4-21, 4-22, and 4-23 (*Section 4.5.4, Noise, Impacts*), respectively.

Table 8-39 summarizes the total aircraft operations and the change in 65 CNEL noise contour area between the No Project Alternative years and the Baseline Conditions. The total acreage within the 65+ CNEL noise contours varies from -4.6% to +1.1%. when comparing the No Project Alternative years to the Baseline Conditions. The change in No Project Alternative noise conditions compared to the Baseline Conditions is attributable to two factors:

1. Background growth in passenger activity and aircraft operations that is anticipated at ONT with or without the No Project Alternative.
2. Changes in fleet mix projected in future years that can impact overall noise levels. Generally, operations from older and noisier aircraft are expected to decrease in future years.

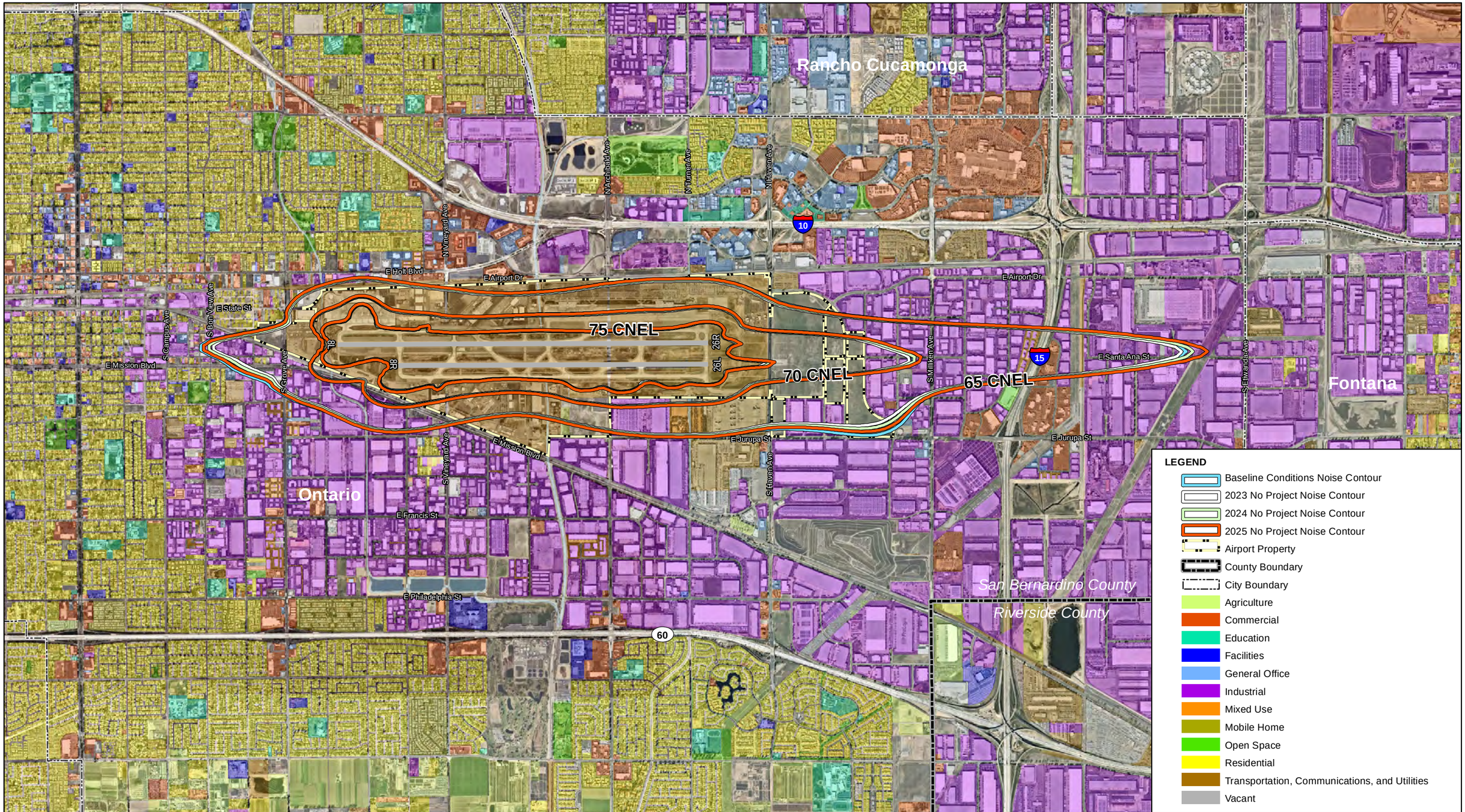


Figure 8-7

ONT

ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 750 1,500 3,000 Feet

N

HNTB

No Project vs. Baseline Conditions Noise Contours

Sources: OIAA, Nearmap, Southern California Association of Governments (SCAG) 2019 Annual Land Use Data, HNTB Analysis

Table 8-39: Noise Inputs and Outputs for Baseline Conditions and No Project Alternative

Year	Alternative	Aircraft Operations[1]	Runway Closure	65 CNEL Noise Contour Area (acres)	Change in Area Compared to Baseline Conditions
2019/ 2020	Baseline Conditions	106,026	No closure	2,485	--
2023	No Project	110,368	No closure	2,371	-4.6%
2024	No Project	113,826	No closure	2,439	-1.9%
2025	No Project	117,625	No closure	2,513	+1.1%

Note: (1) Aircraft operations are not influenced by the No Project Alternative. Background growth in passenger activity and aircraft operations are anticipated at ONT under all project alternatives

Source: HNTB analysis, 2022.

Table 8-40 provides the population, number of housing units and acreage within the various CNEL ranges that would be affected in each No Project Alternative year and provides a comparison in each year to the Baseline Conditions.

As indicated in Table 8-40, the No Project Alternative includes less population and housing units within the 65-69 CNEL contour in all years, as compared to the Baseline Conditions. This decrease in population/housing units is likely due to the changes in fleet mix projected in future years that can impact overall noise levels. Generally, operations from older and noisier aircraft are expected to decrease in future years .

Table 8-40: Estimated Population, Housing Units and Acreage within No Project Alternative and Baseline Conditions Aircraft Noise Contours

Alternative	Population				Housing Units				Acreage			
	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL
Baseline Conditions	59	0	0	59	13	0	0	13	1,390	545	551	2,485
2023 Conditions												
No Project Alternative	29	0	0	29	7	0	0	7	1,305	523	543	2,371
Difference Between 2023 No Project and Baseline Conditions	***-30***	***0***	***0***	***-30***	***-6***	***0***	***0***	***-6***	***-85***	***-22***	***-8***	***-114***
2024 Conditions												
No Project Alternative	44	0	0	44	10	0	0	10	1,349	537	553	2,439
Difference Between 2024 No Project and Baseline Conditions	***-15***	***0***	***0***	***-15***	***-3***	***0***	***0***	***-3***	***-41***	***-8***	***+2***	***-46***
2025 Conditions												
No Project Alternative	54	0	0	54	12	0	0	12	1,398	552	563	2,513
Difference Between 2025 No Project and Baseline Conditions	***-5***	***0***	***0***	***-5***	***-1***	***0***	***0***	***-1***	***+8***	***+7***	***+12***	***+28***

Note: Aircraft operations are not influenced by the No Project Alternative. Background growth in passenger activity and aircraft operations are anticipated at ONT with or without the No Project Alternative.

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

Comparison to Proposed Project

A comparison of the No Project Alternative and Proposed Project noise levels is provided for informational purposes in *Chapter 4.0, Section 4.5.4*, Table 4-24 and Table 4-25. This comparison is provided again in **Table 8-41** and **Table 8-42**.

Table 8-41 summarizes the total aircraft operations, runway closure periods, and the change in 65 CNEL noise contour area between the Proposed Project and No Project Alternatives in a given year. While the total aircraft operation levels remain the same between the Proposed Project and No Project Alternatives in a given year, the total acreage within the 65+ CNEL noise contours increases between 1-4% in the Proposed Project contours as compared to the No Project Alternative contours in the same year.

Table 8-41: Noise Inputs and Outputs for No Project and Proposed Project

Year	Alternative	Aircraft Operations[1]	Runway Closure	65 CNEL Noise Contour Area (acres)	Change in Area
2023	No Project	110,368	No closure	2,371	+4.3%
	Proposed Project		8L-26R – 4 months 8R-26L – 5 months	2,472	
2024	No Project	113,826	No closure	2,439	+2.4%
	Proposed Project		8R-26L – 9 months	2,497	
2025	No Project	117,625	No closure	2,513	+1.4%
	Proposed Project		8L-26R – 5 months	2,548	

Note: (1) Aircraft operations are not influenced by the Proposed Project. Background growth in passenger activity and aircraft operations are anticipated at ONT with or without the Proposed Project, as shown with the same level of operations modeled in the No Project Alternative and Proposed Project in a given year.

Source: HNTB analysis, 2022.

Table 8-38 provides the population, number of housing units and acreage within the various CNEL ranges that would be affected in each Proposed Project construction year and provides a comparison of the Proposed Project in each construction year to the No Project Alternative in the same year.

As indicated in Table 8-38, there would be a net increase in population and housing units within the 65-69 CNEL contour for all Proposed Project construction years, as compared to the No Project Alternative. This increase in population/housing units is due to the shift in the Proposed Project noise contours to the west of ONT, towards residential areas, as a result of the suspension of Contra Flow operations during proposed runway closures.

Table 8-42: Estimated Population, Housing Units and Acreage within Proposed Project and No Project Aircraft Noise Contours

Alternative	Population				Housing Units				Acreage			
	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL	65-69	70-74	75+	TOTAL
2023 Conditions												
No Project	29	0	0	29	7	0	0	7	1305	523	543	2371
Proposed Project	1,014	0	0	1,014	225	0	0	225	1,430	519	523	2,472
Difference Between Proposed Project and No Project	***+985***	***0***	***0***	***+985***	***+218***	***0***	***0***	***+218***	***+125***	***-4***	***-20***	***+101***
2024 Conditions												
No Project	44	0	0	44	10	0	0	10	1,349	537	553	2,439
Proposed Project	948	0	0	948	215	0	0	215	1,444	524	526	2,495
Difference Between Proposed Project and No Project	***+904***	***0***	***0***	***+904***	***+205***	***0***	***0***	***+205***	***+96***	***-12***	***-26***	***+57***
2025 Conditions												
No Project	54	0	0	54	12	0	0	12	1,398	552	563	2,513
Proposed Project	703	0	0	703	165	0	0	165	1,467	534	547	2,548
Difference Between Proposed Project and No Project	***+649***	***0***	***0***	***+649***	***+153***	***0***	***0***	***+153***	***+69***	***-18***	***-17***	***+35***

Source: SCAG 2019 Annual Land Use Data, HNTB Analysis, 2022.

Impact Summary

As noted above, the No Project Alternative would have *no impact* on construction-related noise levels. Therefore, the No Project Alternative would have no impact as it relates to the thresholds of significance detailed in *Chapter 4.0, Section 4.5.3* for Impact 4.5-1 through 4.5-3. The noise impact summary above is provided for consistency with the analysis of noise levels for the Proposed Project and Two-Year Program Alternative as compared to Baseline Conditions.

Population and Housing

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to population and housing. The lack of impacts regarding this category is the same with the No Project Alternative as with the Proposed Project.

Public Services

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to public services. The lack of impacts regarding this category is the same with the No Project Alternative as with the Proposed Project.

Recreation

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to recreation. The lack of impacts regarding this category is the same with the No Project Alternative as with the Proposed Project.

Transportation/Traffic

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to transportation or traffic. The lack of significant impacts regarding this category and the VMT standard is the same with the No Project Alternative as with the Proposed Project.

Tribal Cultural Resources

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to tribal cultural resources. The Proposed Project would have a less than significant impact (with mitigation incorporated) associated with tribal cultural resources whereas the No Project Alternative would have no impact.

Health Risk Assessment

Under the No Project Alternative, there would be no construction or change to activities. Therefore, there would be no anticipated health risks as a result of the No Project Alternative. The health risk impacts presented for the Proposed Project and Two-Year Program Alternative represent the projects incremental increase in risks based on emissions associated with project construction. Therefore, the No Project Alternative's incremental increase in risks associated with project construction would be considered to be zero.

Utilities and Service Systems

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to utilities and service systems. The only variation in potential impact between the No Project Alternative and the Proposed Project is that Proposed Project would have a less than significant impact associated with the potential to temporarily impact utilities and service systems whereas the No Project Alternative would have no impact.

Wildfire

Under the No Project Alternative, there would be no construction or change to activities and there would be no impacts to wildfire risks. The lack of impacts regarding this category is the same with the No Project Alternative as with the Proposed Project.

Growth Inducement

The No Project Alternative would not induce growth because it would not directly or indirectly create jobs or entice new businesses to the area. The lack of impacts regarding this category is the same with the No Project Alternative as with the Proposed Project.

Cumulative Impacts

Because the No Project Alternative would have virtually no impact on any of the topics discussed above, it would not contribute to cumulative impacts.

8.1.1.6 Ability of Alternative to Meet Basic Objectives of the Proposed Project

The No Project Alternative would fail to meet all the objectives of the Proposed Project. It would not prioritize future maintenance, rehabilitation and/or reconstruction projects for airside pavement in accordance with the 2020 ONT PMP, meet current FAA standards, improve safety on the airfield, enhance airfield efficiency, and provide adequate infrastructure to support airfield and navigational power requirements, or maximize the use of available FAA funding for construction.

8.1.3 Summary Comparison

Table 8-43 provides a summary comparison of the Two-Year Program Alternative, Proposed Project, and No Project regarding impact significance.

As indicated, both the Proposed Project and the Two-Year Program Alternative would result in temporary significant, unmitigable impacts to GHG emissions and noise. As indicated in Table 8-16, the Proposed Project would result in less overall construction related GHG emissions as compared to the Two-Year Program Alternative. However, the Proposed Project would result in greater temporary impacts to noise levels (and as a result additional population and housing counts) due to the extended construction period through 2025 as compared to the Two-Year Program Alternative that is complete in 2024.

Table 8-43: Summary Comparison of Alternatives' Impact Significance Compared to Baseline Conditions

Resource	Proposed Project	Two-Year Program	No Project
Aesthetics	Less than significant	Less than significant	No impact
Agricultural and Forestry Resources	No impact	No impact	No impact
Air Quality	Operations – No impact Construction – Less than significant	Operations – No impact Construction – Less than significant	Operations – No impact Construction – No impact
Biological Resources	Less than significant with mitigation	Less than significant with mitigation	No impact
Cultural Resources	No impact	No impact	No impact
Energy	Less than significant	Less than significant	No impact
Geology/Soils	Less than significant	Less than significant	No impact
Greenhouse Gas Emissions	Operations – No impact *Construction – Temporary Significant, unmitigable*	Operations – No impact *Construction – Temporary Significant, unmitigable*	Operations – No impact Construction – No impact
Hazards and Hazardous Materials	Less than significant	Less than significant	No impact
Hydrology and Water Quality	Less than significant	Less than significant	No impact
Land Use/Planning	No impact	No impact	No impact
Mineral Resources	No impact	No impact	No impact
Noise	Operations – No impact *Construction - Temporary Significant, unmitigable*	Operations – No impact *Construction - Temporary Significant, unmitigable*	Operations – No Impact Construction – No impact
Population/Housing	No impact	No impact	No impact
Public Services	No impact	No impact	No impact
Recreation	No impact	No impact	No impact
Transportation/Traffic	Less than significant	Less than significant	No impact

Table 8-43: Summary Comparison of Alternatives' Impact Significance Compared to Baseline Conditions

Resource	Proposed Project	Two-Year Program	No Project
Tribal Cultural Resources	Less than significant with mitigation	Less than significant with mitigation	No impact
Utilities/Service Systems	Less than significant	Less than significant	No impact
Health Risk Assessment	Less than significant	Less than significant	No impact
Cumulative Impacts	Less than significant with mitigation	Less than significant with mitigation	No impact
Growth-Inducing Impacts	No impact	No impact	No impact

Note: The Proposed Project would result in less overall construction related GHG emissions as compared to the Two-Year Program Alternative. However, the Proposed Project would result in greater temporary impacts to noise levels (and as a result additional population and housing counts) due to the extended construction period through 2025 as compared to the Two-Year Program Alternative that is complete in 2024.

8.2 Alternatives Not Carried Forward for Detailed Evaluation

Three potential alternatives were initially considered and were not carried forward for more detailed evaluation. According to Section 15126.6(c), "Among the factors that may be used to eliminate alternatives from detailed consideration in an [S]EIR are:(i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts." Based on this guidance, the following alternatives were not carried forward for detailed evaluation due to the failure to meet most of the basic project objectives.

8.2.1 Continued Use of Contra Flow Operations During Construction

The alternative to continue the use of Contra Flow during construction was considered and requested by the OIAA. As explained in *Section 2.2.3, Airfield Operations*, Contra Flow is an operational noise mitigation strategy used at ONT to minimize noise over residential areas at night and thus occurs daily between 10:00 PM and 7:00 AM when weather and wind conditions allow. Since 1988, FAA has supported ONT's use of Contra Flow procedures. Per Section 5 of the ONT Rules and Regulations (8/16/19), by FAA letter of agreement (LOA), "ATC shall employ the noise abatement preferential runway use procedures specified [herein] and recognizing that under certain conditions it may be necessary to prescribe deviations because of aircraft emergencies, adverse weather, or field construction and maintenance work." This is followed by Section 5.3(b.), Runway Use Procedures, which explains "Between the hours of 2200 and 0700, aircraft operate in accordance with preferential runway use procedures known as 'Contra-flow.'" However, circumstances may prevent FAA from using this procedure. These circumstances are typically safety related and can include low visibility, wind direction and velocity, and runway and taxiway closures. Specifically, the ONT Rules and Regulations state that "Contra-flow procedures shall be discontinued when atmospheric conditions (wind and low cloud ceilings), or when aircraft operations and construction activities require."[23] Refer to ***Appendix L, Contra Flow Decisions and Federal Guidance*** for supporting information.

Although initial discussions between OIAA and FAA on this alternative strategy to continue Contra Flow during periods of construction indicated concern by FAA, the OIAA pursued this possibility with FAA. Because ONT's runways essentially operate as one runway during normal conditions due to their close spacing (i.e., they cannot operate independently), OIAA requested that FAA allow the continued use of Contra Flow during the construction periods when only one runway is open. This alternative strategy would avoid temporary increases in noise exposure to the west of the Airport during the nighttime hours.

A Safety Risk Management (SRM) panel was held with the FAA's ATO in July 2020 to discuss potential mitigation options for the temporary noise exposure impacts on several upcoming Airport projects. At this meeting, the FAA determined that Contra Flow operations would not be allowed during installation of another ONT construction project (Touchdown Zone Lights) and reemphasized their concern over the use of Contra Flow during the future runway rehabilitation project as well.[24] In November 2020, the FAA ATO informed OIAA that it will temporarily cease Contra Flow

operations during construction periods associated with the Proposed Project in 2023, 2024 and 2025 when the Airport is operating with a single open runway. The decision was made to ensure safe operations and reduce risk while operating with one available runway.[25]

Therefore, this alternative is legally infeasible under CEQA Guidelines section 15364 given that the FAA has exclusive authority over aircraft operations, which includes control of the operation of aircraft both in the air and on the airport taxiways and runways. Per *49 U.S. Code § 40103 - Sovereignty and use of airspace*, the U.S. Government has exclusive sovereignty of airspace of the United States. State and local governments are not permitted to regulate any type of aircraft operations, such as flight paths or altitudes, or the navigable airspace. Documentation of the FAA's decision to prohibit the use of Contra Flow during construction periods and regulation related to the FAA's legal authority is included in *Appendix L*.

8.2.2 Partial Rehabilitation

The 2020 ONT PMP was developed for ONT in 2020 as a supplement to the 2011 APMS. The goals of these programs are to identify areas of airfield pavement that need rehabilitation and reconstruction work and prioritize construction projects based on the severity of distresses and available funding. The PMP allows OIAA to identify areas of work that require attention immediately and areas that if improved using preventative maintenance measures will allow for a longer life-cycle of the present infrastructure. Further, it identifies and prioritizes future maintenance, rehabilitation, and/or reconstruction projects for the airside pavements based on the Pavement Condition Index (PCI), which includes a visual pavement inspection, and the technical Pavement Classification Number (PCN) for the airfield pavements based on the current and projected fleet mix at ONT. Several alternatives were considered to reduce the duration of construction, and specifically partial runway rehabilitation to reduce the duration of runway closures during rehabilitation.

Thus, technical analysis has resulted in the most logical and feasible maintenance and rehabilitation alternatives possible to set forth as the Proposed Project. The project components included have been prioritized and are needed to meet the project objectives stated in *Chapter 1.0*. While other variations of the Proposed Project were considered, these alternatives were ultimately dismissed from consideration as these alternatives would not achieve any of the basic Project objectives to prioritize future maintenance, rehabilitation and/or reconstruction projects for airside pavement in accordance with the 2020 ONT PMP, nor would partial rehabilitation meet the immediate safety needs, current FAA standards, or enhance airfield efficiency.

8.2.3 Reduced Project Components

Several of the Proposed Project components are needed to meet current FAA standards and to improve safety and enhance efficiency on the airfield. While some of these taxiway and airfield improvements are not directly tied to the rehabilitation and could be implemented at a different time, it is prudent to complete these

improvements during the runway rehabilitation and reconstruction for purposes of efficiency and cost, and to avoid further later periods of runway closure that would likely result in more instances of Contra Flow being discontinued during nighttime hours.

Similar to the partial rehabilitation alternative, the project components included have been prioritized and are needed to meet the project objectives stated in *Chapter 1.0*. While other variations of the Proposed Project were considered, these alternatives were ultimately dismissed from consideration as these alternatives would not achieve any of the basic Project objectives to prioritize future maintenance, rehabilitation and/or reconstruction projects for airside pavement in accordance with the 2020 ONT PMP, nor would reduced project components meet the immediate safety needs, current FAA standards, or enhance airfield efficiency. Reducing the number or type of project components would not result in any substantial change to environmental effects and thus the alternative to reduce the number or type of project components was dismissed from consideration.

8.3 Environmentally Superior Alternatives

The No Project Alternative could be considered environmentally superior because it would avoid virtually all impacts associated with the Proposed Project. Of the alternatives that would at least partially meet the objectives of the Proposed Project and that were carried forward for detailed analysis, the Two-Year Program Alternative as discussed in *Section 8.1.1* could be considered environmentally superior due to reduced duration of noise impacts, however the total air quality and GHG emissions would be slightly greater than the Proposed Project. The Two-Year Program Alternative would have similar impacts to the Proposed Project, however it would reduce the duration of the noise exposure impacts associated with the Proposed Project during construction. However, the Two-Year Program Alternative would not experience the net benefit to indirect aircraft taxiing emissions in 2025 associated with the Proposed Project runway closures in 2025. As explained above, however, the Two-Year Program Alternative does not meet a key Project Objective to maximize available FAA funding and is not practically or economically or financially feasible.

ENDNOTES

[1] City of Los Angeles Department of Airports, "Ontario International Airport Final Environmental Impact Report for Terminals, Other Facilities and Operations to Support 12 Million Annual Passengers," November 1991, p. 5-2.

[2] Association of Environmental Professionals 2021, CEQA Guidelines, p. 214.

[3] Ibid., p. 215.

[4] The residential homes located along E. Airport Drive and S. Grove Avenue, approximately 700 feet north and 400 feet west of the contractor staging area, are eligible for voluntary acquisition under ONT's Quiet Home Program.

[5] The residential homes located along E. Airport Drive and S. Grove Avenue, approximately 700 feet north and 400 feet west of the contractor staging area, are eligible for voluntary acquisition under ONT's Quiet Home Program.

[6] Total construction emissions for the Two-Year Program Alternative (2023-2024) are slightly greater than for the Proposed Project (2023-2025) emissions, which is likely due to constantly decreasing average emission factors for on-road and off-road equipment in future years. For this reason, the emission factors assumed for construction in 2025 would be slightly lower than those assumed for construction in 2023.

[7] 2023 proposed taxi-out times vary by one second (11:02 vs 11:01) between the Proposed Project and Two-Year Program Alternative (taxi-in times are identical). This insignificant difference in taxi-out times results in equal indirect construction emissions for the two Alternatives in 2023.

[8] As with the air quality emissions analysis, the construction GHG emissions inventory was developed in CalEEMod with the assumption that all off-road construction equipment would use Tier 4 final engines. However, use of Tier 4 off-road equipment does not reduce in any reduction in GHG emissions.

[9] City of Ontario, Community Climate Action Plan, November 2014.

[10] DRAFT, Air Quality Improvement Plan, Ontario International Airport, September 17, 2019, http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/facility-based-mobile-source-measures/draft-aqip-ont.pdf?sfvrsn=7,

[11] SBCTA, Region Greenhouse Gas Reduction Plan, Final, March 2021, https://www.gosbcta.com/plan/regional-greenhouse-gas-reduction-plan/, accessed 2/23/22.

[12] Total construction emissions for the Two-Year Program Alternative (2023-2024) are slightly greater than for the Proposed Project (2023-2025) emissions, which is likely due to constantly decreasing average emission factors for on-road and off-road equipment in future years. For this reason, the emission factors assumed for construction in 2025 would be slightly lower than those assumed for construction in 2023.

[13] 2023 proposed taxi-out times vary by one second (11:02 vs 11:01) between the Proposed Project and Two-Year Program Alternative (taxi-in times are identical). This insignificant difference in taxi-out times results in equal indirect construction emissions for the two Alternatives in 2023.

[14] Population and housing units within the contours were first determined using 2010 U. S. Census Bureau block data (TIGER/Line with Selected Demographic and Economic Data (census.gov). At the time of this analysis, 2020 data was not available down to the block level. Total housing units and population by block were adjusted to remove the number of acquired properties in the Ontario Quiet Home Program. The population and housing units initially calculated within a contour were based on the assumption that housing units and population within a block were evenly distributed by area. (Note: These population and housing unit counts are not associated with the acreage of residential land use types.) Provided that the initial estimate of housing units based on block data was low, Google earth

was then utilized to confirm the actual number of housing units occurring within the contour in a given block (2021 aerial). The average population per housing unit determined from the census block data was used to determine the estimated population. It was also noted whether the housing units within the contour have been mitigated (sound insulated) or are eligible for voluntary acquisition.

[15] ONT Rules and Regulations, Section 3 – Aircraft Operations, and Section 5 – Aircraft Noise Mitigation Operating Procedures and Restrictions, September 2020, https://www.flyontario.com/corporate/rules-and-regulations

[16] Governor's Office of Planning and Research (OPR), Technical Advisory on Evaluating Transportation Impacts in CEQA, April 2018, p. 20.

[17] Caltrans, "Transportation Analysis Under CEQA," September 2020, p. 13.

[18] Ontario City Council, City of Ontario Resolution No. 2020-071, June 16, 2020, https://www.ontarioca.gov/sites/default/files/Ontario-Files/City-Clerk-Records-Management/Minutes%2020200616.pdf, p. 4.

[19] CARB, 2015, Risk Management Guidance for Stationary Sources of Air Toxics, https://www.arb.ca.gov/toxics/rma/rmgssat.pdf

[20] SCAQMD, MATES V Multiple Air Toxics Exposure Study. Available at: http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v. Accessed April 4, 2022.

[21] FAA, "Order 5090.5: Formulation of the National Plan of Integrated Airport Systems (NPIAS) and the Airports Capital Improvement Plan (ACIP)," issued September 3, 2019.

[22] Rental Equipment Register Magazine, "Skilled Labor Shortage is Contributing to Construction Services Costs, Marcum LLP Says," https://www.rermag.com/news-analysis/contractor-news/article/21235554/skilled-labor-shortage-is-contributing-to-construction-services-costs-marcum-llp-says March 8, 2022 (accessed 4/17/22).

[23] OIAA, ONT Rules and Regulations, August 16, 2019, Section 5, pp. 1-3.

[24] ONT Runway 26R Touchdown Zone Light System Installation Safety Risk Management Panel Notes, 8/28/2020.

[25] Email from ONT Tower Manager (Sylvia Dee [FAA]) to Director of Planning (Michelle Brantley [OIAA]), 11/5/2020.

9.0 Mitigation, Monitoring and Reporting Program

CEQA, Section 21081.6, requires that a mitigation monitoring and reporting program (MMRP) be adopted upon certification of an EIR to ensure that the mitigation measures are implemented. The mitigation monitoring and reporting program will specify what the mitigation is, the entity responsible for monitoring the program, and when in the process it should be accomplished. This MMRP will be designed to ensure compliance with Public Resources Code Section 21081.6 during implementation of mitigation measures. A record of the MMRP will be maintained at the offices of the OIAA, 1923 East Avion Street, Ontario, CA 91761.

[The MMRP will be included as part of the Final SEIR.]

10.0 Consultation

The following people and agencies were consulted during the preparation of this SEIR and its supporting technical studies.

10.1 Notice of Preparation (NOP)

In accordance with Sections 15063 and 15082 of the CEQA Guidelines, OIAA prepared a Notice of Preparation (NOP) for this SEIR. The NOP was circulated to local, state, and federal agencies from June 17, 2021 through July 17, 2021 during the 30-day public review period regarding the scope and content of environmental information. The NOP provided a general description of the Proposed Project and identified possible environmental impacts that could result from implementation of the Project. The NOP and IS were published by the Office of Planning and Research State Clearinghouse and also posted on the OIAA website.

Eight (8) comments were received from agencies, groups and individuals. The main topic of concern from stakeholder is the potential impact to the Burrowing Owl, a California State Species of Special Concern, which has been known to occur on Airport property during certain periods. The six following agencies and organizations responded with comments:

- Native American Heritage Commission
- South Coast Air Quality Management District
- San Bernardino County Department of Public Works
- CDFW – Pomona Valley Audubon Society
- CBCM LLP (representing Audubon Society)
- Pomona Valley Audubon Burrowing Owl Committee

The two other comments were from members of the public related to the preservation of the burrowing owl. *Appendix A, NOP and Initial Study,* of this SEIR includes the NOP and June 2021 IS, and *Appendix B* contains the comments received on the NOP.

10.2 Tribal Consultation

As required by the State of California Public Resources Code and in accordance with Assembly Bill (AB) 52 Tribal Consultation, OIAA provided formal notification of the Proposed Project to the designated tribal representatives of California Native American tribes that may be traditionally and culturally affiliated with the geographic area. The initial notification was received by the Native American Heritage Commission (NAHC) on April 13, 2021. On August 27, 2021, OIAA sent letters to the Native American representatives and interested parties as identified by the NAHC. Three responses were received. San Manuel Band of Mission Indians (SMBMI) responded via email on September 1, 2021, and Agua Caliente Band of Cahuilla Indians (ACBCI) responded via email on September 2, 2021 to indicate the project is not located within the boundaries of the Tribes' Traditional Use Area. The Gabrieleño

Band of Mission Indians – Kizh Nation (Kizh Nation) responded via email on September 17, 2021 to request a consultation with the lead agency.

OIAA initiated consultation on November 4, 2021 with Kizh Nation. A second meeting was held February 24, 2022 to discuss and finalize agreed upon mitigation measures. As such, the tribe requests Native American monitoring during all ground-disturbing activities related to the project. Mitigation measures intended to reduce the impact to potential tribal cultural resources were agreed upon by Kizh Nation and OIAA on March 30, 2022 and consultation was concluded. The final mitigation measures on tribal cultural resources are documented in *Chapter 4.0, Environmental Impacts and Mitigation. Appendix F, Attachment C, Tribal [CONFIDENTIAL])* provides tribal consultation conducted for this SEIR.

11.0 Lead Agency and Consultants

11.1 Lead Agency

Ontario International Airport Authority (OIAA)

The CEQA Lead Agency for this SEIR is the OIAA, which governs ONT. The OIAA was created in August 2012 under a Joint Powers Agreement between the City of Ontario, California and San Bernardino County. As a joint powers authority, the OIAA is a separate and independent "public agency" under State law. (Govt. Code, § 6500.) The OIAA "is a public entity separate from the parties to the agreement" that formed the OIAA as a joint powers authority. (Govt. Code, § 6507.) This SEIR reflects the OIAA's independent review and judgment. Key OIAA team members for this SEIR include:

Michelle Brantley, Chief Planning Officer
Nicole Walker, Environmental Manager
Keith Owens, Director of Program Management
Kevin Keith, Planning Manager
Jeffrey Smith, Program Manager
Kevin Sullivan, Assistant General Counsel for OIAA

11.2 Consultants

HNTB Corporation

HNTB Corporation (HNTB) is the prime consultant for the development of the SEIR. HNTB provided project management, technical analysis, and overall SEIR preparation and document development. Key HNTB team members for this SEIR include:

Kim Hughes, Project Manager
Caroline Pinegar, SEIR Task Lead
Yue Xu, Noise and Air Quality
Ryan Lombardi, Construction Emissions Analysis, Document Development
Kent Miller, GIS and Graphics
Justin Bychek, Aviation Planning Lead
Ken Poon, Aviation Planning, Airfield Simulation

HELIX

Helix Environmental Consultants, Inc. (HELIX) prepared the cultural resources, biological resources, tribal cultural resources, water resources, and Health Risk Assessment components of the SEIR. Key HELIX team members for this SEIR include:

Kassie Sugimoto, Cultural and Tribal Cultural Resources
Stacie Wilson, Cultural Resources
Ezekiel Cooley, Biological Resources, Water Resources

Laura Moreton, Biological Resources
Martin Rolph, Health Risk Assessment
Victor Ortiz, Health Risk Assessment

12.0 Abbreviations and Acronyms and References

12.1 Abbreviations and Acronyms

AAM	Annual Arithmetic Mean
AB	Assembly Bill
AC	Advisory Circular
AC	Asphalt Concrete
ACI	Airports Council International
ACIP	Airport Capital Improvement Plan
ACBCI	Agua Caliente Band of Cahuilla Indians
ACRP	Airport Cooperative Research Program
ACEIT	Airport Construction Emissions Inventory Tool
ACI-NA	Airport Councils International-North America
ACBCI	Agua Caliente Band of Cahuilla Indians
ADMRT	Air Dispersion Modeling and Risk Tool
AEDT	Aviation Environmental Design Tool
AERMAP	AERMOD terrain preprocessor
AIP	Airport Improvement Program
AMSL	above mean sea level
ANOMS	Airport Noise & Operations Monitoring System
APU	Auxiliary Power Units
AQIP	Air Quality Improvement Plan
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARFF	Aircraft Rescue and Firefighting
ATADS	Air Traffic Activity System
ATC	Air Traffic Control
ATCT	Airport Traffic Control Tower
ASPM	Aviation System Performance Metrics
avgas	Aviation gas
BACTs	best available control technologies
BUOW	Burrowing Owl
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAEP	Committee on Aviation Environmental Protection
CAP	Climate Action Plan
CalEEMod®	California Emissions Estimator Model
CAP	Community Climate Action Plan
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFG	California Fish and Game Code
CFR	Code of Federal Regulations
CL	Centerline

CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CNS	Central Nervous System
CO	carbon monoxide
CRPR	California Rare Plant Rank
CWA	Clean Water Act
dB	decibels
Db	Delhi fine sand
DPM	Diesel Participate Matter
DSFLF	Delhi Sands Flower-loving Fly
°F	Fahrenheit
FAA	Federal Aviation Administration
FEIR	Final Environmental Impact Report
FESA	Federal Endangered Species Act
GA	General Aviation
GHG	Greenhouse Gas Emissions
GSE	Ground Support Equipment
H_2S	Hydrogen Sulfide
HaC	Hanford coarse sandy loam
HAP	Hazardous air pollutant
HARP	Hotspots Analysis and Reporting Program
HFC	hydrofluorocarbons
HI	hazard index
Hr	Hilmar loamy fine sand
HRA	health risk assessment
IARC	International Agency on Research for Cancer
ICAO	International Civil Aviation Organization
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
JOLTS	Job Openings and Labor Turnover Survey
JPA	joint powers authority
lbs	pounds
LOA	Letter of Agreement
LOS	Level of Service
MAP	million annual passengers
MATES	Multiple Air Toxics Exposure Study
MBTA	Migratory Bird Treaty Act
MCV	Manual of California Vegetation

MEIR	maximally exposed individual resident
MEIW	maximally exposed individual worker
MND	Mitigated Negative Declaration
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MT	Metric tons
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAVAIDS	Navigational Aids
NCP	Noise Compatibility Program
ND	Negative Declaration
NED	National Elevation Dataset
NHTSA	National Highway Traffic Safety Administration
NOD	Notice of Determination
NOP	Notice of Preparation
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPPA	Native Plant Protection Act
NRC	National Research Council
NRHP	National Register of Historic Places
O_3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
OPR	Office of Planning and Research
OIAA	Ontario International Airport Authority
ONT	Ontario International Airport
OPR	Office of Planning and Research (California)
OSPNET	Operations Network
PAPI	precision approach path indicator
Pb	Lead
PCI	Pavement Condition Index
PCN	Pavement Classification Number
PFC	Passenger Facility Charge
PFC	perfluorocarbons
PMI	point of maximum impact
PMP	Pavement Management Program
$PM_{2.5}$	particulate matter equal to or less than 2.5 micrometers
PM_{10}	particulate matter equal to or less than 10 micrometers
PMI	point of maximum impact
ppb	parts per billion
ppm	parts per million
REL	Recommended Exposure Limit
RM7	Construction Equipment Policy
ROC	Reactive organic gases

ROFA	Runway Object Free Area
ROG	Reactive organic gases
RSA	Runway Safety Area
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SACC	South Airport Cargo Center
SBCTA	San Bernardino County Transportation Authority
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coastal Information Center
SCS	Sustainable Communities Strategy
SEIR	Supplemental Environmental Impact Report
SF	Square Feet
SF_6	sulphur hexafluoride
SFP	State Fully Protected
SIP	State Implementation Plan
SMBMI	San Manuel Band of Mission Indians
SO_2	sulfur dioxide
SR	State Route
SRM	Safety Risk Management
SSC	Species of Special Concern
TAC	Toxic Air Contaminants
TAF	Terminal Area Forecast
TCP	Traditional Cultural Properties
TCR	Tribal Cultural Resources
TDG	Taxiway Design Group
TFMSC	Traffic Flow Management System Count
TOFA	Taxiway Object Free Area
TOG	total organic gases
TRB	Transportation Research Board
TuB	Tujunga loamy sand
TvC	Tujunga gravelly loamy sand
TW	Taxiway
$\mu g/m^3$	microgram per cubic meter
USACE	U.S. Army Corps of Engineers
USDA/WS	U.S. Department of Agriculture Wildlife Services
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
USGCRP	United States Global Change Research Program
UTM	Universal Transverse Mercator
VALE	Voluntary Airport Low Emissions
VOC	volatile organic compounds

VMT	vehicle miles traveled
VSR	vehicle service road
WHMP	Wildlife Hazard Management Plan

12.2 List of References

American Ornithological Society. 2021. AOS checklist of North and Middle America birds. July 1, 2021. Retrieved from: http://checklist.aou.org/taxa/.

Association of Environmental Professionals, CEQA Guidelines, 2021, p. 211.

Baker, R.J., L.C. Bradley, R.D. Bradley, J.W. Dragoo, M.D. Engstrom, R.S. Hoffmann, C.A. Jones, F. Reid, D.W. Rice, and C. Jones. 2003. Revised checklist of North American mammals north of Mexico. Occasional Papers of the Museum, Texas Tech University 223.

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. The Jepson manual: Vascular plants of California. 2nd ed. University of California Press, Berkeley.

California Air Resources Board. 2005. Air Quality and Land Use Handbook: A Community Health Perspective, https://www.arb.ca.gov/ch/handbook.pdf

2015. Risk Management Guidance for Stationary Sources of Air Toxics, https://www.arb.ca.gov/toxics/rma/rmgssat.pdf

2021a. Advanced Clean Trucks Fact Sheet, August 20, 2021, https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-trucks-fact-sheet.

2021b. 2000-2019 GHG Inventory (2021 Edition), https://ww2.arb.ca.gov/ghg-inventory-data, accessed 11/19/2021.

California Code of Regulations Title 21, Division 2.5, Chapter 6, Article 1, Incompatible Land Uses Within the Noise Impact Boundary.

California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation. State of California Natural Resources Agency.

California Department of Fish and Wildlife (CDFW). 2021a. California Natural Diversity Database and Rarefind. Sacramento, California. Retrieved from: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed November 2, 2021.

2021b. California Natural Community List. The Vegetation Classification and Mapping Program.

California Energy Commission, Office of Planning and Research, California Natural Resources Agency. 2018. "California's Fourth Climate Change Assessment, California's Changing Climate 2018, https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf. Accessed 4/21/2022.

California Native Plant Society. 2021a. CNPS Rare Plant Ranks. Retrieved from: https://www.cnps.org/rare-plants/cnps-rare-plant-ranks. Accessed on November 2, 2021.

2021b. Inventory of Rare and Endangered Plants of California. California Native Plant Society. Retrieved from: http://www.rareplants.cnps.org/. Accessed November 2, 2021.

California Natural Resources Agency. 2009. Notice of Public Hearings and Notice of Proposed Amendment of Regulations Implementing the California Environmental Quality Act, 2009, https://resources.ca.gov/CNRALegacyFiles/ceqa/docs/Notice_of_Proposed_Action.pdf.

California Office of Environmental Health Hazard Assessment (OEHHA). 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments,: https://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0.

California Office of Historic Preservation (OHP). 1995. Instructions for Recording Historical Sources, March 1995, https://ohp.parks.ca.gov/pages/1054/files/manual95.pdf.

Caltrans, "Transportation Analysis Under CEQA," September 2020.

City of Los Angeles Department of Airports. 1991. "Ontario International Airport Final Environmental Impact Report for Terminals, Other Facilities and Operations to Support 12 Million Annual Passengers," November 1991.

City of Ontario. 2021. 2050 The Ontario Plan, https://www.ontarioplan.org/wp-content/uploads/sites/4/2021/08/ScopingMeeting_TOP_2050SEIR2.pdf, August 5, 2021. Accessed 10/20/21.

2014. Community Climate Action Plan, November 2014.

Clean Air Act. 2009. 74 Fed. Reg. 66496 (Dec. 15, 2009), Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a).

Dee, Sylvia (FAA). 2020. Email correspondence to Director of Planning (Michelle Brantley [OIAA]), 11/5/2020.

Emmel, T.C. and J.F. Emmel. 1973. The butterflies of Southern California. Natural History Museum of Los Angeles County, Science Series 26: 1-148.

Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Technical report Y-87-1. Vicksburg (MS): U.S. Army Engineer Waterways Experiment Station. 100 p. with Appendices.

Environmental Protection Agency (EPA). 2015. Final Rule for Carbon Pollution Emission Guidelines for Existing Stationary Sources Electric Utility Generating Units, 80 Fed. Reg. 64661, 64677 (Oct. 23, 2015).

2020. EPA Finalizes Airplane Greenhouse Gas Emission Standards, EPA Proposes Airplane Greenhouse Gas Emission Standards – Resource Information (EPA-420-F-20-057, December 2020), December 2020.

2022. Draft Inventory of U.S. Greenhouse Gas Emission and Sinks: 1990-2020, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-

emissions. The Draft U.S. Inventory of Greenhouse Gas Emissions and Sinks: 1990-2020 is under public review through March 11, 2022.

Federal Aviation Administration. 2019. Order 5090.5: Formulation of the National Plan of Integrated Airport Systems (NPIAS) and the Airports Capital Improvement Plan (ACIP), issued September 3, 2019.

2021. Terminal Area Forecast Executive Summary Fiscal Years 2020-2045. Retrieved from https://www.faa.gov/data_research/aviation/taf/. Accessed February 16, 2022.

2022a. Voluntary Airport Low Emissions Program (VALE), https://www.faa.gov/airports/environmental/vale/.

2022b. Airport Zero Emissions Vehicle and Infrastructure Pilot Program, https://www.faa.gov/airports/environmental/zero_emissions_vehicles/.

Global Change Research Act of 1990. Pub. L. 101–606, Sec. 103 (November 16, 1990). For additional information on the United States Global Change Research Program, http://www.globalchange.gov, January 2017.

Google Earth. 2021. Aerial Imagery of the Shady View Study Area, 34.055998°, -117.598092°. Aerial Imagery from August 2021. Retrieved from: http://www.google.com/earth/index.html. Accessed November 2, 2021.

Governor's Office of Planning and Research (OPR), "Frequently Asked Questions Regarding the Proposed Updates to the CEQA Guidelines," https://opr.ca.gov/ceqa/docs/20171127_FAQs_Nov_2017.pdf. (accessed 9/17/21).

2018a. Title 14, Division 6, Chapter 3 of the California Code of Regulations ("CEQA Guidelines").

2018b. "Technical Advisory on Evaluating Transportation Impacts in CEQA," April 2018.

Grumbles, B.H. and J.P. Woodley, Jr. 2007. Memorandum: Clean Water Act jurisdiction following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States. June 5.

HELIX Environmental Planning, Inc. 2021. Jurisdictional Delineation Letter Report for the Proposed Taxiway Improvements and Relocation of Localizer Equipment Building at Ontario International Airport, February 16, 2021.

2020. 2019/2020 Non-breeding Burrowing Owl Survey Report for Potential Development of Ontario International Airport's Parcel Study. February 11, 2020.

HNTB. 2020. Construction Phasing Schedule, July 2020.

Holland R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame-Heritage Program. 2022. Sacramento, 156 pp.

International Civil Aviation Organization (ICAO). 2017. Center for Climate and Energy Solutions, https://www.c2es.org/international/icao, January 2017.

2019. "United States Efforts to Address Aviation's Climate Impact," A40-WP/531, ICAO 40th General Assembly, Executive Committee, www.icao.int/Meetings/a40/Documents/WP/wp_531_en.pdf, accessed 12/15/21.

Oberbauer, T. 2008. Terrestrial vegetation communities in San Diego County based on Holland's Descriptions, San Diego Association of Governments, San Diego, CA.

Ontario City Council. 2020. City of Ontario Resolution No. 2020-071, June 16, 2020, https://www.ontarioca.gov/sites/default/files/Ontario-Files/City-Clerk-Records-Management/Minutes%2020200616.pdf.

Ontario International Airport, Pavement Management Plan, March 2020.

2016. Ontario Quiet Home Program Status Map, 6/20/2016, "Parcels with Completed Dwelling Units" and "Acquired Properties."

2019. Air Quality Improvement Plan (AQIP), September 17, 2019, http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/facility-based-mobile-source-measures/draft-aqip-ont.pdf?sfvrsn=7.

2020a. ONT Rules and Regulations, Section 3 – Aircraft Operations, and Section 5 – Aircraft Noise Mitigation Operating Procedures and Restrictions, September 2020, https://www.flyontario.com/corporate/rules-and-regulations.

2020b. Runway 26R Touchdown Zone Light System Installation Safety Risk Management Panel Notes, 8/28/2020.

Osborne, Kendall H. 2021. Personal communication (email). December 20.

Rental Equipment Register Magazine. 2022. "Skilled Labor Shortage is Contributing to Construction Services Costs, Marcum LLP Says," https://www.rermag.com/news-analysis/contractor-news/article/21235554/skilled-labor-shortage-is-contributing-to-construction-services-costs-marcum-llp-says, March 8, 2022.

Riley, D.T. 2005. Ordinary High Water Mark. RGL No. 05-05. 4 p.

San Bernardino County Transportation Authority (SBCTA). 2021. "Regional Greenhouse Gas Reduction Plan (March 2021), Regional Greenhouse Gas Reduction Plan (2021) - SBCTA (gosbcta.com).

Sawyer, J.O., T. Keeler-Wolf, and J. Evens. 2009. A manual of California vegetation. 2nd Ed. Sacramento: California Native Plant Society.

South Coast Wildlands. 2008. South Coast missing linkages: A wildland network for the South Coast ecoregion. Retrieved from: http://www.scwildlands.org/reports/SCMLRegionalReport.pdf. March.

Southern California Association of Governments (SCAG). 2019. Annual Land Use Data, 2019. Accessed January 2022.

2020a. "Adopted Final Connect SoCal," https://scag.ca.gov/read-plan-adopted-final-plan (accessed 3/4/22).

2020b. "Transportation System: Aviation and Airport Ground Access," 9/3/2020.

2021. Local Profiles, https://scag.ca.gov/data-tools-local-profiles, accessed 10/20/21.

South Coast Air Quality Management District (SCAQMD), 2022, Modeling Guidance for AERMOD, http://www.aqmd.gov/home/air-quality/meteorological-data/modeling-guidance. Accessed March 2022

2003. White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution, Appendix D – Cumulative Impact Analysis Requirements Pursuant to CEQA, August 2003, page D-3.

2019. Air Quality Significance Thresholds, http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf

2020. AB 2588 and Rule 1402 Supplemental Guidelines (Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act), https://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab-2588-supplemental-guidelines.pdf?sfvrsn=13, October 2020.

2022. MATES V Multiple Air Toxics Exposure Study, http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v, accessed April 4, 2022.

Taggart, T.W. 2016. The Center for North American Herpetology: The Academic Portal to North American Herpetology. Retrieved from: http://www.cnah.org/.

U.S. Army Corps of Engineers (USACE). 2015. Federal Register: Clean Water Rule: Definition of "Waters of the United States." 80 FR 37053; 37053-37127

2008a. Regional supplement to the Corps of Engineers wetland delineation manual: Arid west region (Version 2.0). Ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERCD/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

2008b. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Unites States. Technical Report TR-08-12, Ed. R.W. Lichvar, S.M. McColley. Hanover, New Hampshire: Cold Regions Research and Engineering Laboratory.

2007. Questions and Answers for Rapanos and Carabell Decisions. June 5. 21 pp.

--- and EPA. 2007. Jurisdictional Determination Form Instructional Guidebook. May 30. 60 pp.

U.S. Census Bureau. 2010. 2010 Census block data, TIGER/Line with Selected Demographic and Economic Data (census.gov), accessed March 2022.

United States Department of Agriculture (USDA). 2021. Natural Resources Conservation Service. 2021. Web Soil Survey. Retrieved from: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.Aspx. Accessed November 2, 2021.

U.S. Environmental Protection Agency (EPA). 2017. National Ambient Air Quality Standards (NAAQS), https://www.epa.gov/criteria-air-pollutants/naaqs-table. (January 2017).

2016. Final Rule for Phase 2 Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, October 25, 2016. https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-phase-2-greenhouse-gas-emissions-standards

2021. Control of Air Pollution from Airplanes and Airplane Engines: GHG Emission Standards and Test Procedures - Final Rulemaking, January 11, 2021. https://www.epa.gov/regulations-emissions-vehicles-and-engines/control-air-pollution-airplanes-and-airplane-engines-ghg

U.S. Fish and Wildlife Service (USFWS). 2021a. Critical habitat mapping. GIS files provided by USFWS. Retrieved from: https://ecos.fws.gov/ecp/report/table/critical-habitat.html. Accessed November 1, 2021.

2021b. National Wetlands Inventory. Retrieved from: https://www.fws.gov/wetlands/data/google-earth.html. Accessed November 1, 2021.

Wildlife & Habitat Data Analysis Branch. August 2021. Retrieved from: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline. Accessed November 2, 2021.

Appendix A

Notice of Preparation (NOP) and Initial Study

NOTICE OF PREPARATION

DATE: June 17, 2021

TO: Office of Planning and Research – State Clearinghouse, Responsible or Trustee Agency, and Interested Parties

FROM: Ontario International Airport Authority
1923 East Avion Street
Ontario, CA 91761

Subject: Notice of Preparation of a Draft Focused Supplemental Environmental Impact Report

Ontario International Airport Authority (OIAA) will be the Lead Agency and will prepare a focused Supplemental Environmental Impact Report (EIR) for the project identified below. We request the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the potential environmental effects are contained in the attached materials. A copy of the Initial Study is attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

Due Date for Public Comments: July 17, 2021

Project Location / Address:
Ontario International Airport (ONT), 2500 E Airport Drive, Ontario, CA 91761

ONT is located in San Bernardino County approximately 35 miles east of Downtown Los Angeles in the center of Southern California (Inland Empire). This project focuses on the rehabilitation and reconstruction of Runway 8R-26L, associated airfield improvements, and the relocation of several objects and a vehicle safety road (VSR) currently within the runway safety area (RSA) and/or runway object free area (ROFA) to outside of these areas. The regional and project location on a topographical base map is shown in **Figure 1**.

Project Description
A focused Supplemental EIR is being prepared to supplement the 1991 *Certified Final EIR for Terminals, Other Facilities and Operations to Support 12 Million Annual Passengers* ("1991 Certified FEIR") for improvements proposed at ONT to meet current Federal Aviation Administration (FAA) standards, improve safety, and enhance airfield efficiency. Connector taxiways will be reconstructed to align more closely with current FAA standards, as well as to improve pavement conditions for air traffic throughout the airfield. The proposed pavement sections will be designed for a 20-year life for all shoulder pavements, blast pad pavement, and

for the new taxiway pavement. Runway 8R-26L requires rehabilitation and reconstruction as it was built in 1979 and has exceeded the intended design service life of 20-years.

Additionally, there are objects located within the Runway Safety Area (RSA) and Runway Object Free Area (ROFA) that need to be relocated to meet FAA standards. The airfield drainage includes tributary areas on the airfield located between the runways and taxiways. The proposed improvements are not increasing the airfield drainage areas, however they are being modified to accommodate existing connector taxiways and construction of the new connector taxiways.

The proposed improvements will not result in increased runway capacity. During runway closure periods during construction, all operations would occur on a single runway. Due to the two runways being parallel and closely spaced, temporarily operating on a single runway would not significantly alter flight patterns. The only change in flight patterns during temporary runway closure periods may result from FAA Air Traffic Control (ATC) imposed restrictions on the use of contra-flow operations during nighttime operations, which is a noise mitigation strategy to minimize noise over residential areas at night. If contra-flow cannot be undertaken by ATC when operating on one runway, there is potential for temporary increases in noise exposure to the west of the Airport during nighttime. Runway use and flight patterns would be not be impacted after the project is implemented.

The 1991 Certified FEIR is available for review at OIAA Administration offices by appointment (909-544-5300).

The proposed improvements are illustrated on **Figure 2.**

Necessary Approvals: OIAA has principal responsibility for approving the proposed project. Agencies and City entities which may be required to take actions associated with the proposed projects include, but may not be limited to the following:

- U.S. Department of Transportation Federal Aviation Administration (FAA)
- South Coast Air Quality Management District (SCAQMD)
- SB County Flood Control District
- City of Ontario
- Other Federal, State or local approvals, permits, or actions as may be deemed necessary.

Environmental Resources Potentially Affected: Impacts related to air quality, biological resources, greenhouse gas emissions, hydrology/water quality, noise, and their related cumulative impacts have been found to be potentially significant and will be analyzed in a Supplemental EIR prepared for the proposed project. However, as outlined in the Initial Study, several individual topics within these resource areas would not result in potentially significant impacts and are not planned for further analysis in the Supplemental EIR. The Initial Study found that the proposed project would have no impact, or less than significant impacts, or less than significant impacts with mitigation incorporated on all other environmental resources (i.e., aesthetics, agricultural resources, cultural resources, geology/soils, hazard and hazardous materials, land use/planning, mineral resources, population/housing, public services, recreation, transportation/traffic, and utilities/ service systems).

Next Steps: OIAA is requesting input during the NOP 30-day public review period from interested agencies, organizations, and private citizens regarding the scope and content of environmental information to be included in the Supplemental EIR. In the future, public agencies receiving this notice may use the Supplemental EIR prepared by OIAA when considering their permits or other approvals for the proposed project.

OIAA requests any comments regarding the potential environmental impacts of the project and the issues to be addressed in the Supplemental EIR. All comments will be considered in the preparation of the Supplemental EIR. Written comments must be submitted to the contact and office noted below no later than 5:00 p.m. on July 17th, 2021.

Please direct your comments to Nicole Walker, Environmental Planning Manager, at the following address. Please include the name for a contact person in your agency.

Nicole Walker, Environmental Planning Manager
Ontario International Airport Authority
1923 East Avion Street
Ontario, CA 91761

Or email to: nwalker@flyontario.com

Date: June 17, 2021 **Signature**: _____

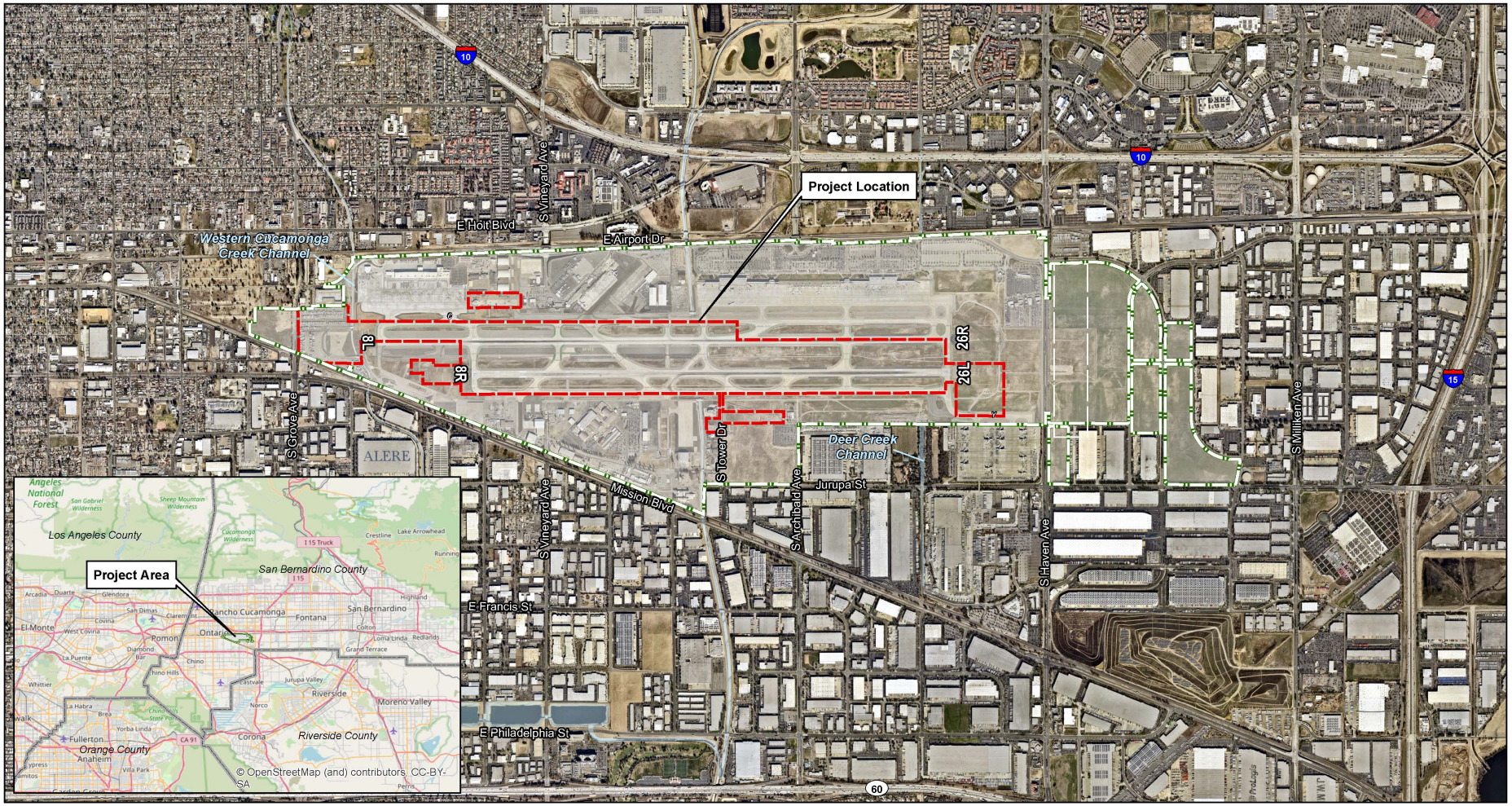
Nicole Walker

Title: Environmental Planning Manager

Telephone: 310-883-5812

Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

Rehabilitation of Runway 8R-26L and Associated Airfield Improvements Initial Study at Ontario International Airport



Legend

- Airport Property
- Direct Study Area
- County Boundary

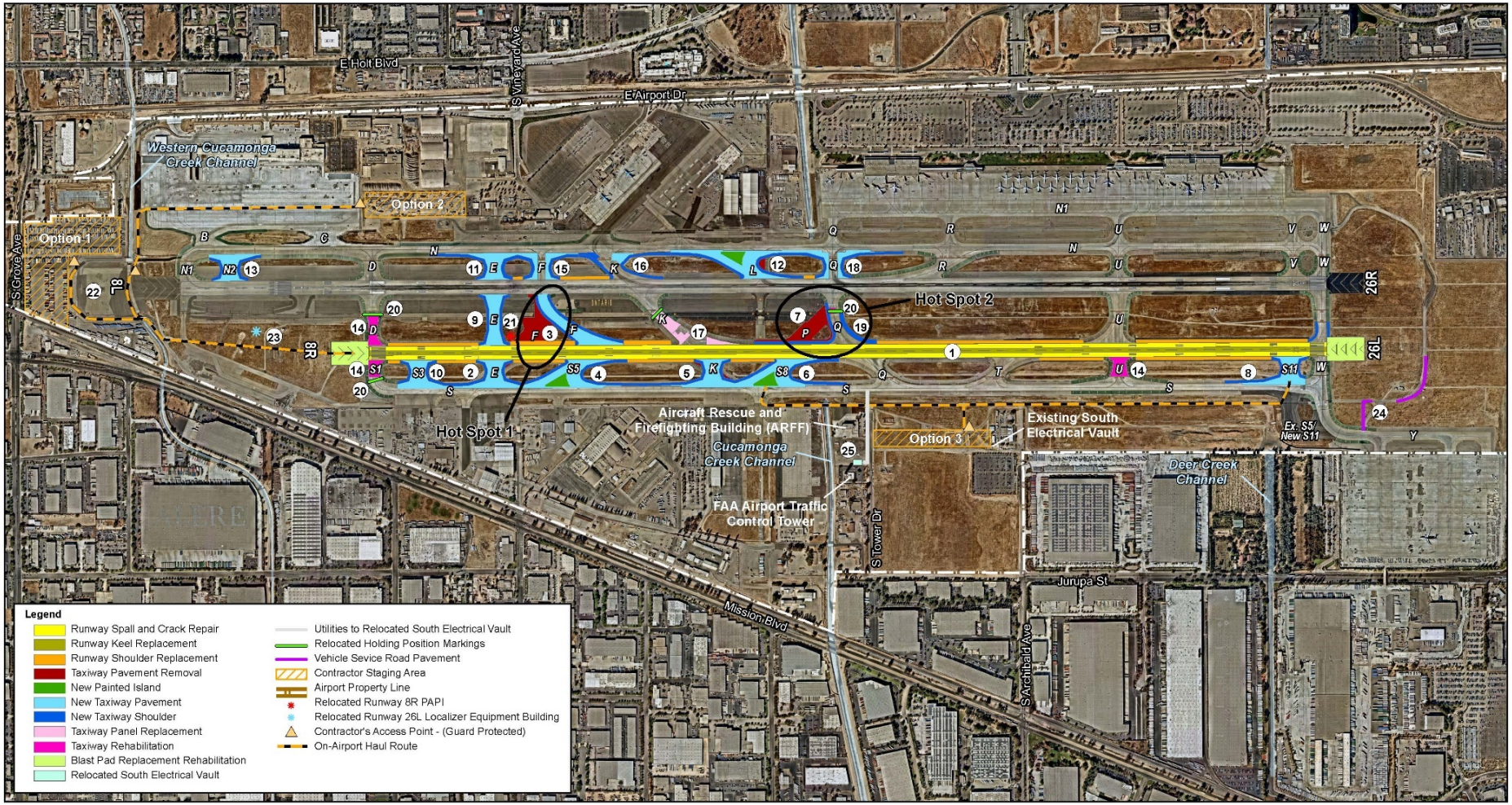
Figure 1
Regional and Project Location

N

0 500 1,000 2,000 Feet

Sources: OIAA, Nearmap, HNTB Analysis

Rehabilitation of Runway 8R-26L and Associated Airfield Improvements Initial Study at Ontario International Airport



PROPOSED ACTION PROJECTS

(1) REHABILITATE RUNWAY 8R-26L
(2) MODIFY EXISTING CONNECTOR TAXIWAY F AND REDESIGNATE AS TAXIWAY E
(3) REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F
(4) CONSTRUCT EXIT TAXIWAY S5
(5) RECONSTRUCT EXISTING EXIT TAXIWAY K
(6) RECONSTRUCT EXISTING EXIT TAXIWAY P TO A HIGH-SPEED EXIT AND REDESIGNATE AS TAXIWAY S8
(7) REMOVE EXISTING TAXIWAY P BETWEEN RUNWAYS 8L-26R AND 8R-26L
(8) CONSTRUCT BYPASS TAXIWAY S11
(9) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8R-26L AND 8L-26R
(10) CONSTRUCT BYPASS TAXIWAY S3
(11) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8L-26R AND TAXIWAY N
(12) RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED EXIT TAXIWAY
(13) CONSTRUCT BYPASS TAXIWAY N2
(14) RESURFACE TAXIWAY D, TAXIWAY S1 AND TAXIWAY U PAVEMENT
(15) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(16) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(17) REPLACE/REHABILITATE PANELS ON TAXIWAY K BETWEEN RUNWAYS
(18) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(19) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAYS
(20) RELOCATE HOLDING POSITION MARKINGS*
(21) RELOCATE RUNWAY 8R PAPI
(22) RELOCATE PERIMETER FENCE AND REMOVE OBJECTS WITHIN ROFA
(23) RELOCATE RUNWAY 26L (8R END) LOCALIZER EQUIPMENT BUILDING
(24) MODIFY EXISTING VEHICLE SERVICE ROAD
(25) RELOCATE SOUTH ELECTRICAL VAULT

* DEPICTED IN MULTIPLE LOCATIONS

Figure 2
Proposed Project

0 250 500 1,000 Feet

Sources: OIAA, Nearmap, HNTB Analysis

1.0 ONTARIO INTERNATIONAL AIRPORT REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED AIRFIELD IMPROVEMENTS INITIAL STUDY

1. **Project Title:**
   Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

2. **Lead agency name and address:**
   Ontario International Airport Authority
   1923 East Avion Street
   Ontario, CA 91761

3. **Contact person and phone number:**
   Nicole Walker, Environmental Planning Manager
   Phone: 310-883-5812
   Email: nwalker@flyontario.com

4. **Project location:**
   Ontario International Airport (ONT), 2500 E Airport Drive, Ontario, CA 91761

   ONT is located in San Bernardino County approximately 35 miles east of Downtown Los Angeles in the center of Southern California (Inland Empire). This project focuses on the rehabilitation and reconstruction of Runway 8R-26L, associated airfield improvements, and the relocation of several objects and a vehicle safety road (VSR) currently within the runway safety area (RSA) and/or runway object free area (ROFA) to outside of these areas. The regional and project location is shown on **Figure 1**.

5. **Project sponsor's name and address:**
   Ontario International Airport Authority
   1923 East Avion Street
   Ontario, CA 91761

6. **General plan designation:**
   Airport

7. **Zoning:**
   Airport

California Environmental Quality Act (CEQA) Initial Study at Ontario International Airport

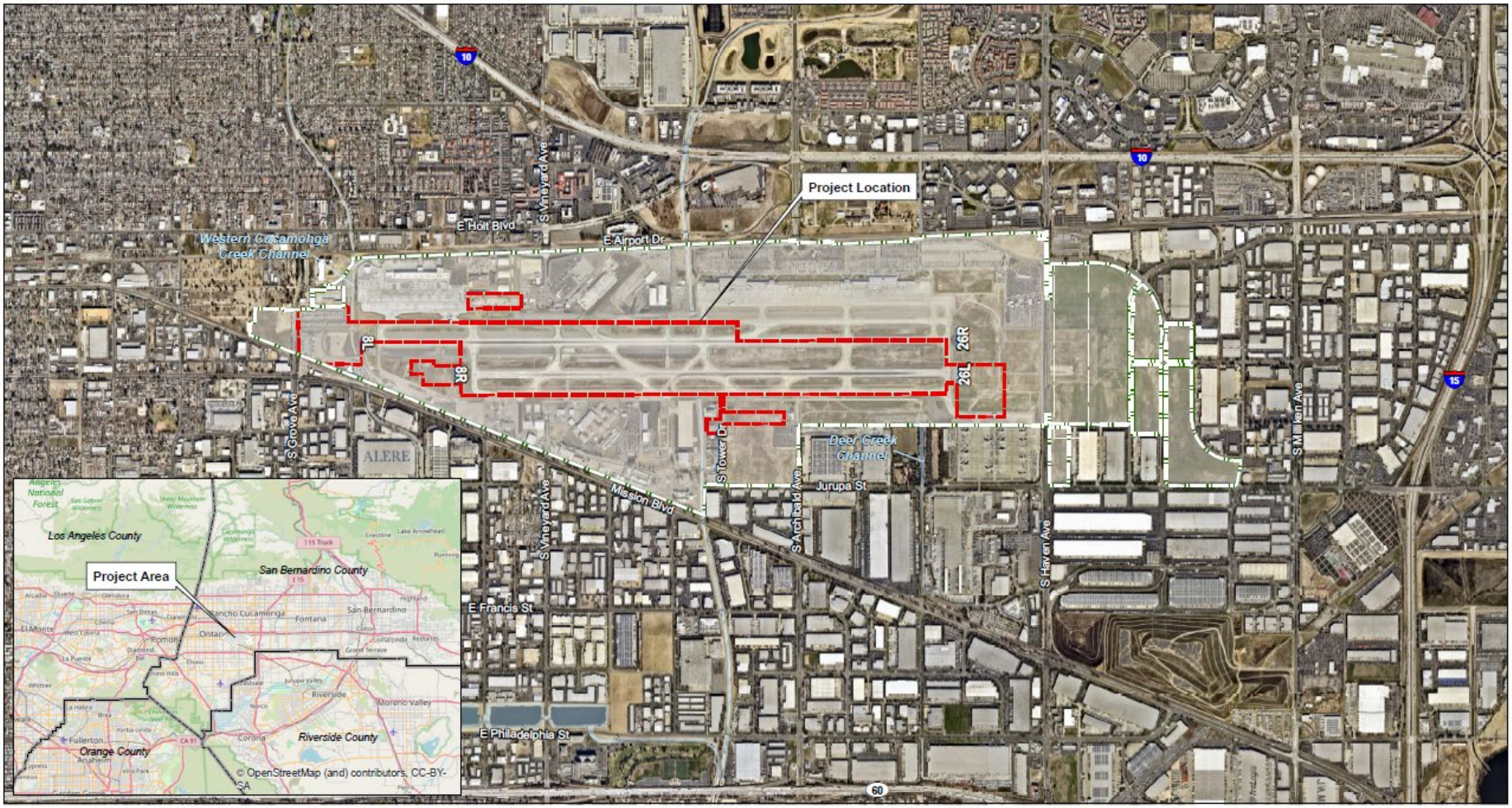


Figure 1
Regional and Project Location

8. Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)

Improvements are proposed at ONT to meet current Federal Aviation Administration (FAA) standards, improve safety, and enhance airfield efficiency. Connector taxiways will be reconstructed to align more closely with current FAA standards, as well as to improve pavement conditions for air traffic throughout the airfield. The proposed pavement sections will be designed for a 20-year life for all shoulder pavements, blast pad pavement, and for the new taxiway pavement. Runway 8R-26L requires rehabilitation and reconstruction as it was built in 1979 and has exceeded the intended design service life of 20-years. Runway shoulder replacement is also proposed along sections of Runway 8L-26R in the vicinity of taxiway improvements.

Additionally, there are objects located within the Runway Safety Area (RSA) and Runway Object Free Area (ROFA) that need to be relocated to meet FAA standards. The airfield drainage includes tributary areas on the airfield located between the runways and taxiways. The proposed improvements are not increasing the airfield drainage areas, however they are being modified to accommodate existing connector taxiways and construction of the new connector taxiways. The proposed improvements will not result in increased runway capacity.

The following provides a detailed list of the proposed improvements, including connected actions and justification for the proposed project, as illustrated on **Figure 2**.

1	**Rehabilitate Runway 8R-26L**	
	Details and Need	*Connected Action(s)*
	As noted in ONT's 2020 Airport Pavement Management System (APMS) update, Runway 8R-26L requires rehabilitation and reconstruction. The proposed project would replace or reconstruct the concrete keel section (center section) of the runway and associated centerline (CL) lights and striping. Approximately 714,000 SF of existing runway shoulder asphalt concrete (AC) would be replaced or reconstructed and associated edge lights would be replaced. Spall and crack repair on concrete on the north and south sides of the runway's keel section is also needed.	• The CL lights replacement includes the lights, pavement light cans, underground conduit and wiring. • For runway edge lighting and signage, the affected existing airfield signage, edge lights, pavement light cans, underground conduit and wiring will be replaced. • Replace or reconstruct the asphalt concrete blast pads, 200' Wide (W) x 400' Long (L) at both ends of Runway 8R-26L and associated striping (160,000 square feet (SF) total). • Replace runway shoulder as shown in Figure 2.
2	**Modify Existing Connector Taxiway F and Redesignate as Taxiway E**	
	Details and Need	*Connected Action(s)*
	The existing connector Taxiway F between Taxiway S and Runway 8R-26L does not meet the runway at a 90-degree angle and there is an elevation change of approximately five feet between the runway centerline and the Taxiway S centerline. These are contributing factors to	• Replace centerline striping with CL lights; • Replace taxiway edge striping with taxiway edge lights; • Shorten Runway Hold Bar by 50 feet (ft.) and relocate runway guard lights; and

	Hot Spot 1[1] at ONT, resulting in a potential loss of situational awareness. The proposed project is to modify the existing taxiway to a standard 90-degree runway exit taxiway by changing the fillet geometry and shifting Taxiway E's centerline start of curvature with Runway 8R-26L further to the west. The proposed crossing Taxiway E (depicted as Project 9) would connect to this connector taxiway. This project would result in a net increase of approx. 8,100 SF of pavement.	• Relocate six above ground directional signs.
3	**Remove Existing Taxiway F between Runways 8L-26R and 8R-26L and Construct New Exit Taxiway F**	
	Details and Need	*Connected Action(s)*
	This is the location of Hot Spot 1 at ONT. The removal of the existing Taxiway F would mitigate the Hot Spot. The new exit Taxiway F would allow aircraft landing on Runway 26L to exit and cross Runway 8L-26R to reach Taxiway N. Fillet modifications are proposed on Taxiway F between Runway 8L-26R and Taxiway N to meet FAA design standards. This project would result in a net increase of approx. 33,650 SF of pavement.	• Replace centerline striping with CL lights; • Replace taxiway edge striping with taxiway edge lights; • Install 300 ft. of Runway Hold Bar with Runway Guard Lights; Remove 315 ft. of Runway Hold Bar with Runway Guard Lights; and • Relocate ten above ground directional signs.
4	**Construct Exit Taxiway S5**	
	Details and Need	*Connected Action(s)*
	Exit Taxiway S5 would be located between Taxiways K and E, south of Runway 8R-26L and is a high-speed exit providing access to Taxiway S for heavy cargo arriving aircraft. This project includes 116,535 SF of new pavement and a painted island (19,000 SF).	• New centerline striping with CL lights; • New taxiway edge striping with taxiway edge Lights; • Install 280 ft. of Runway Hold Bar with Runway Guard Lights; and • Install six above ground directional signs.
5	**Reconstruct Existing Exit Taxiway K (South)**	
	Details and Need	*Connected Action(s)*
	The existing exit Taxiway K between Runway 8R-26L and Taxiway S does not meet the runway at a 90-degree angle. The proposed project is to modify the existing taxiway to a standard 90-degree runway exit taxiway by changing the fillet geometry and shifting Taxiway K's centerline start of curvature with Runway 8R-26L further to the east. This project would not result in a change in pavement area.	• Replace centerline striping with CL lights; • Replace taxiway edge striping with taxiway edge lights; • Relocate 250 ft. of Runway Hold Bar with Runway Guard Lights; and • Relocate four above ground directional signs.

[1] A Hot Spot is defined as a location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary.

6	**Reconstruct Existing Exit Taxiway P to a High-Speed Exit and Redesignate as Taxiway S8**	
	Details and Need	*Connected Action(s)*
	The proposed project would utilize the existing portion of the exit Taxiway P alignment to construct a high-speed exit between Runway 8R-26L and Taxiway S. This project would also assist in mitigating Hot Spot 2 by eliminating the ability to cross both runways at an acute angle in conjunction with the other improvements to Taxiways P and Q included in Projects 7 and 19. Taxiway S8 would meet FAA geometric standards through a change to the fillet design to allow for both west bound and eastbound movements on Taxiway S after existing Runway 26L. This project would result in a net increase of 65,647 SF of pavement and includes a new painted island (19,016 SF).	• Replace centerline striping with CL lights; • Replace taxiway edge striping with taxiway edge lights; • Install 280 ft. of Runway Hold Bar with Runway Guard Lights; Remove 225 ft. of existing Runway Hold Bar with Runway Guard Lights; and • Relocate six above ground directional signs.
7	**Remove Existing Taxiway P between Runways 8L-26R and 8R-26L**	
	Details and Need	*Connected Action(s)*
	The existing wide expanse of pavement formed by the intersection of Taxiways P and Q between Runways 8L-26R and 8R-26L would be removed. This intersection encompasses the location of Hot Spot 2, and is a wide expanse of pavement where pilots can experience a loss of situational awareness, which would be mitigated in conjunction with Projects 6 and 19. Aircraft existing Runway 8R to the north would now be directed to exit at Taxiway U, which is outside of the high-energy portion of Runway 8L-26R. This project would result in removal of 124,275 SF of pavement.	• Remove centerline striping with CL lights; • Remove taxiway edge striping with TW edge lights; • Remove 485 ft. of Runway Hold Bar with Runway Guard Lights; and • Remove 12 above ground directional signs.
8	**Construct Bypass Taxiway S11**	
	Details and Need	*Connected Action(s)*
	The construction of bypass Taxiway S11 would further enhance Air Traffic Control (ATC) staging and flexibility by ensuring that there is a bypass entrance onto Runway 26L within 500 feet west of Taxiway W. Taxiway S11 would connect Runway 8R-26L to Taxiway S. Existing Taxiway S5 south of Taxiway S will be redesignated as Taxiway S11. This project would result in the addition of 59,875 SF of pavement.	• New centerline striping with CL lights; • New taxiway edge striping with TW edge lights; • Install 250 ft. of Runway Hold Bar with Runway Guard Lights; and • Install 10 above ground directional signs.
9	**Construct Crossing Taxiway E between Runways 8R-26L and 8L-26R**	
	Details and Need	*Connected Action(s)*
	The construction of crossing Taxiway E between Runway 8R-26L and Runway 8L-26R	• New centerline striping with CL lights;

	would enhance ATC staging and ground maneuvers by facilitating a north-south airfield crossing without encumbering aircraft that are queued to depart the full length of Runway 8R-26L. This project would result in the addition of 145,100 SF of pavement.	• New taxiway edge striping with TW edge lights; • Install 500 ft. of Runway Hold Bar with Runway Guard Lights; and • Install 16 above ground directional signs.
10	**Construct Bypass Taxiway S3**	
	Details and Need	*Connected Action(s)*
	This project would provide a bypass entrance to Runway 8R from Taxiway S and would enhance ATC staging and flexibility by allowing for departures to the east to access Runway 8R within 500 feet of Taxiway S1, qualifying it as a full-length departure point and not subject to additional wake turbulence separation penalties. This would afford the ability to bypass traffic that are queued at Taxiway S1 that are either waiting for a clearance to depart Runway 8R or to transit to the north side of the field. This project would result in the addition of 63,300 SF of pavement.	• New centerline striping with CL lights; • New taxiway edge Striping with TW edge lights; • Install 250 ft. of Runway Hold Bar with Runway Guard Lights; and • Install six above ground directional signs.
11	**Construct Crossing Taxiway E between Runway 8L-26R and Taxiway N**	
	Details and Need	*Connected Action(s)*
	The construction of crossing Taxiway E between Runway 8L-26R and Taxiway N would enhance ATC staging and ground maneuvers by facilitating a north-south airfield crossing without encumbering aircraft that are queued to depart the full length of Runway 8R-26L. This project would result in the addition of 145,100 SF of pavement.	• New centerline striping with CL lights; • New taxiway edge striping with TW edge lights; • Install 500 ft. of Runway Hold Bar with Runway Guard Lights; and • Install 16 above ground directional signs.
12	**Reconstruct Existing Taxiway L as a High-Speed Exit Taxiway**	
	Details and Need	*Connected Action(s)*
	Existing Taxiway L is proposed to be reconstructed as a high-speed exit taxiway to allow aircraft landing on Runway 26R to efficiently exit the runway when landing in west flow. This project would allow aircraft to clear the runway environment to avoid a loss of separation. This reconstruction project includes new concrete pavement, a painted island (19,000 SF), and pavement demolition. The project would result in a net increase of 79,990 SF.	• New Centerline Striping with CL Lights; Remove Centerline Striping with CL Lights; • New Taxiway Edge Striping with TW Edge Lights; Remove Taxiway Edge Striping with TW Edge Lights; • Install 290 ft. of Runway Hold Bar with Runway Guard Lights; Remove 115 ft. of Runway Hold Bar with Runway Guard Lights; and • Relocate six above ground directional signs.
13	**Construct Bypass Taxiway N2**	
	Details and Need	*Connected Action(s)*
	This project would provide a bypass entrance to Runway 8L from Taxiway N and would enhance	• New Centerline Striping with CL Lights;

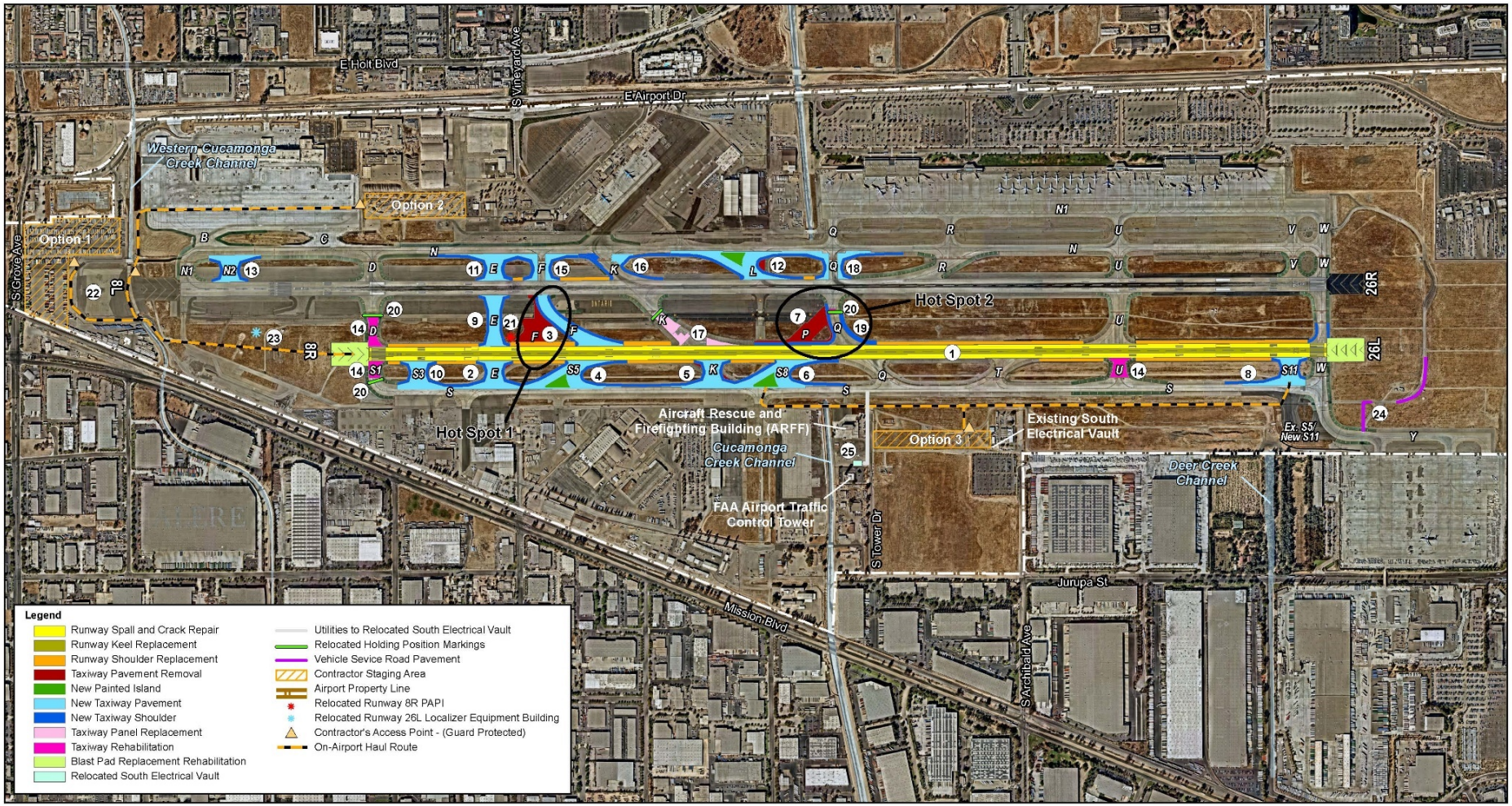
	Air Traffic Control (ATC) staging and flexibility by allowing for departures to the east to access Runway 8L within 500 feet of Taxiway N1, qualifying it as a full-length departure point and not subject to additional wake turbulence separation penalties. This would afford the ability to bypass traffic that are queued at Taxiway N1 that are waiting for a clearance to depart Runway 8L. The project would result in 58,280 SF of additional pavement.	• New Taxiway Edge Striping with TW Edge Lights; • Install 250 ft. of Runway Hold Bar with Runway Guard Lights; and • Install six above ground directional signs.
14	**Resurface Taxiway D, Taxiway S1 and Taxiway U Pavement**	
	Details and Need	*Connected Action(s)*
	Portions of Taxiway D, Taxiway S1 and Taxiway U (south of Runway 8R-26L) pavement need to be resurfaced, as indicated in ONT's 2020 Airport Pavement Management System (APMS) update. In total, approximately 165,000 SF of existing pavement will be resurfaced.	• N/A.
15	**Construct Fillet Modifications on Taxiway F between Runway 8L-26R and Taxiway N**	
	Details and Need	*Connected Action(s)*
	Fillet widening modifications are proposed on Taxiway F between Runway 8L-26R and Taxiway N to meet FAA design standards for TDG 6 aircraft. This project would result in the addition of 28,350 SF of pavement.	• New Taxiway Edge Striping with TW Edge Lights; Remove Taxiway Edge Striping with TW Edge Lights; • Install 250 ft. of Runway Hold Bar with Runway Guard Lights; Remove 115 ft. of Runway Hold Bar with Runway Guard Lights; and • Relocate five above ground directional signs.
16	**Construct Fillet Modifications on Taxiway K (North) between Runway 8L-26R and Taxiway N**	
	Details and Need	*Connected Action(s)*
	Fillet widening modifications are proposed on Taxiway K between Runway 8L-26R and Taxiway N to meet FAA design standards for Taxiway Design Group (TDG) 6 aircraft. This project would result in a net decrease of 22,080 SF of pavement.	• New Taxiway Edge Striping with TW Edge Lights; Remove Taxiway Edge Striping with TW Edge Lights.
17	**Replace/Rehabilitate Panels on Taxiway K (Middle) between Runways**	
	Details and Need	*Connected Action(s)*
	Panel rehabilitation/replacement is proposed on Taxiway K between Runway 8L-26R and Runway 8R-26L based on low Pavement Condition Index (PCI) values, as indicated in ONT's 2020 Airport Pavement Management System (APMS) update.	• N/A

18	**Construct Fillet Modifications on Taxiway Q between Runway 8L-26R and Taxiway N**	
	Details and Need	*Connected Action(s)*
	Fillet modifications are proposed on Taxiway Q between Runway 8L-26R and Taxiway N to meet FAA design standards for TDG 6 aircraft. The project would result in approx. 8,500 SF of additional pavement.	• New Taxiway Edge Striping with TW Edge Lights; Remove Taxiway Edge Striping with TW Edge Lights; • Install 250 ft. of Runway Hold Bar with Runway Guard Lights; Remove 115 ft. of Runway Hold Bar with Runway Guard Lights; and • Relocate six above ground directional signs.
19	**Construct Fillet Modifications on Taxiway Q between Runways**	
	Details and Need	*Connected Action(s)*
	Fillet modifications are proposed on Taxiway Q between the runways to meet FAA design standards for TDG aircraft. The project would not result in any additional pavement.	• New Taxiway Edge Striping with TW Edge Lights; Remove Taxiway Edge Striping with TW Edge Lights; • Install 250 ft. of Runway Hold Bar with Runway Guard Lights; Remove 115 ft. of Runway Hold Bar with Runway Guard Lights; and • Relocate two above ground directional signs.
20	**Relocate Holding Position Markings and Install In-Pavement and Above Ground Elevated Runway Guard Lights**	
	Details and Need	*Connected Action(s)*
	Standardize the runway holdbar locations to meet FAA design standards for runway centerline to holding position marking. This improvement would be made at the following locations: Taxiway D holding short of Runway 8L, Taxiway K holding short of Runway 8L, Taxiway Q holding short of Runway 8R, and Taxiway S1 holding short of Runway 8R.	• The relocated holding position markings would also include installation of in-pavement and above ground elevated runway guard lights to enhance situational awareness of approaching a runway environment and reduce the likelihood of a runway incursion to occur.
21	**Relocate Runway 8R PAPI**	
	Details and Need	*Connected Action(s)*
	The existing Runway 8R precision approach path indicator (PAPI) is located within the alignment designated for crossing Taxiway E. This project would relocate the Runway 8R PAPI approximately 250 feet east of its current position to be clear of the Taxiway E Taxiway Object Free Area (TOFA) while still maintaining a threshold crossing height within the standard range.	• N/A
22	**Relocate Perimeter Fence and Remove Objects within the Runway 8L-26R Runway Object Free Area (ROFA)**	
	Details and Need	*Connected Action(s)*
	Approximately 1,570 LF of existing perimeter fence is located within the ROFA beyond the	• N/A

	end of Runway 8L and would be relocated outside of the ROFA. The existing light poles, temporary concrete barriers (K-rail), parking lot and several of the trees that line the parking lot would be removed and/or relocated clear of the ROFA.	
23	**Relocate Runway 26L (8R End) Localizer Equipment Building**	
	Details and Need	*Connected Action(s)*
	The Runway 26L (8R End) localizer equipment building is currently located within the Runway Safety Area (RSA) for Runway 8R-26L. The proposed project would relocate the building approximately 165 feet west of its current location to clear both the RSA and ROFA.	• N/A
24	**Modify Existing Vehicle Service Road**	
	Details and Need	*Connected Action(s)*
	The existing vehicle service road (VSR) beyond the end of Runway 26L is located within the ROFA. The proposed project realigns the VSR to remain clear of the ROFA. The existing VSR pavement to be removed is 17,890 SF. The VSR pavement to be added is 32,810, a net increase of 14,920 SF.	• N/A
25	**Relocate South Electrical Vault**	
	Details and Need	*Connected Action(s)*
	To support the taxiway improvements and future rehabilitation of Runway 8R-26L, the existing south electrical vault must be relocated. The existing south electrical vault was built in 1980 and does not meet the latest building code (Ventilation) and Air Quality Management District (AQMD) requirements. The runway and connector taxiway safety program will result in additional demands for capacity that the existing south electrical vault, 41 years old, cannot accommodate. As a result, the existing south electrical vault will be relocated so that the new south electrical vault can accommodate the full existing electrical demand and anticipated demands (new connecting taxiways) from the runway and connector taxiway program. The south electrical vault is proposed to be relocated to an area between the Air Traffic Control Tower (ATCT) and the Aircraft Rescue and Firefighting (ARFF) building, in the ARFF Auxiliary Lot. Utility service to the relocated new south electrical vault would be provided along Tower Drive, tying into airfield utilities along Taxiway S. The new south electrical vault would be constructed at grade, however the utility service	• N/A

	connection to the relocated vault would require placement of underground conduit to contain the electrical feed. The conduit would be within four feet of the surface, which requires trench excavation to a maximum depth of six feet to construct the ductbank. The ductbank would be encased in concrete.	

Rehabilitation of Runway 8R-26L and Associated Airfield Improvements Initial Study at Ontario International Airport



PROPOSED ACTION PROJECTS

(1) REHABILITATE RUNWAY 8R-26L
(2) MODIFY EXISTING CONNECTOR TAXIWAY F AND REDESIGNATE AS TAXIWAY E
(3) REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F
(4) CONSTRUCT EXIT TAXIWAY S5
(5) RECONSTRUCT EXISTING EXIT TAXIWAY K
(6) RECONSTRUCT EXISTING EXIT TAXIWAY P TO A HIGH-SPEED EXIT AND REDESIGNATE AS TAXIWAY S8
(7) REMOVE EXISTING TAXIWAY P BETWEEN RUNWAYS 8L-26R AND 8R-26L
(8) CONSTRUCT BYPASS TAXIWAY S11
(9) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8R-26L AND 8L-26R
(10) CONSTRUCT BYPASS TAXIWAY S3
(11) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8L-26R AND TAXIWAY N
(12) RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED EXIT TAXIWAY
(13) CONSTRUCT BYPASS TAXIWAY N2
(14) RESURFACE TAXIWAY D, TAXIWAY S1 AND TAXIWAY U PAVEMENT
(15) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(16) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(17) REPLACE/REHABILITATE PANELS ON TAXIWAY K BETWEEN RUNWAYS
(18) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(19) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAYS
(20) RELOCATE HOLDING POSITION MARKINGS*
(21) RELOCATE RUNWAY 8R PAPI
(22) RELOCATE PERIMETER FENCE AND REMOVE OBJECTS WITHIN ROFA
(23) RELOCATE RUNWAY 26L (8R END) LOCALIZER EQUIPMENT BUILDING
(24) MODIFY EXISTING VEHICLE SERVICE ROAD
(25) RELOCATE SOUTH ELECTRICAL VAULT

* DEPICTED IN MULTIPLE LOCATIONS

Figure 2
Proposed Project

0 250 500 1,000 Feet

Sources: OIAA, Nearmap, HNTB Analysis

9. Surrounding land uses and setting: (Briefly describe the project's surroundings)

ONT is located in San Bernardino County approximately 35 miles east of Downtown Los Angeles in the center of Southern California (Inland Empire). The Airport resides on 1,741 acres of land with an elevation of 944 feet above mean sea level. The project site supports three drainages that flow beneath the work area through covered concrete channels. The drainages include Deer Creek Channel in the eastern portion of the project site, Cucamonga Creek Channel in the center of the project site, and West Cucamonga Creek Channel in the western portion of the project site.

The proposed project would be developed entirely within airport property. Land uses surrounding the project site include industrial and commercial uses. Surrounding land uses and designations are described below and shown on **Figure 3**. Specifically:

- **North:** The Airport is bordered to the north by E. Airport Drive and a railroad line. Land uses include business park, hospitality mixed-use (multi-modal and Guasti), and office commercial land uses. Beyond the industrial, mixed use, and business uses to the west and northwest of the Airport are low- and medium-density residential land uses.
- **South:** Industrial land uses, many of which are related to airport operations and cargo. Railroad track and Mission Boulevard run to the southeast along airport property.
- **West:** Grove Avenue and industrial land uses are adjacent to the airport to the west. Low density residential uses with an Industrial land use overlay district are farther west. Another mixed use development (East Holt) is northwest of the Airport.
- **East:** N. Haven Avenue and industrial land uses with sparse commercial and office commercial to the northeast and southeast. A commercial overlay district is southeast as well, south of E. Jurupa Rd. and east of N. Haven Avenue.

10. Other public agencies whose approval is required: (e.g., permits, financing approval, or participation agreement.)

Federal

- Federal Aviation Administration (FAA)

Regional

- South Coast Air Quality Management District (SCAQMD)
- San Bernardino County Flood Control District

Local

- City of Ontario
- Other Federal, State or local approvals, permits, or actions as may be deemed necessary.

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

A Local Government Tribal Consultation List Request Form was submitted to the Native American Heritage Commission (NAHC) on March 30, 2021. The NAHC responded that the result of the Sacred Lands File (SLF) check was negative (See ***Appendix A, Native American Heritage Commission***). A Supplemental Environmental Impact Report (EIR), supplementing the 1991 Certified *Final EIR for Terminals, Other Faculties and Operations to Support 12 Million Annual Passengers* [at ONT] ("1991 Certified FEIR"), will include consultation with the list of tribes provided by the NAHC that are traditionally and culturally affiliated with the geographic area of the proposed project. Additionally, the proposed project would take place upon existing pavement and areas that have been previously disturbed for development of the airfield and thus is not expected to impact any cultural or tribal resources.

The 1991 Certified FEIR is available for review at OIAA offices by appointment (909-544-5300).

Rehabilitation of Runway 8R-26L and Associated Airfield Improvements Initial Study at Ontario International Airport

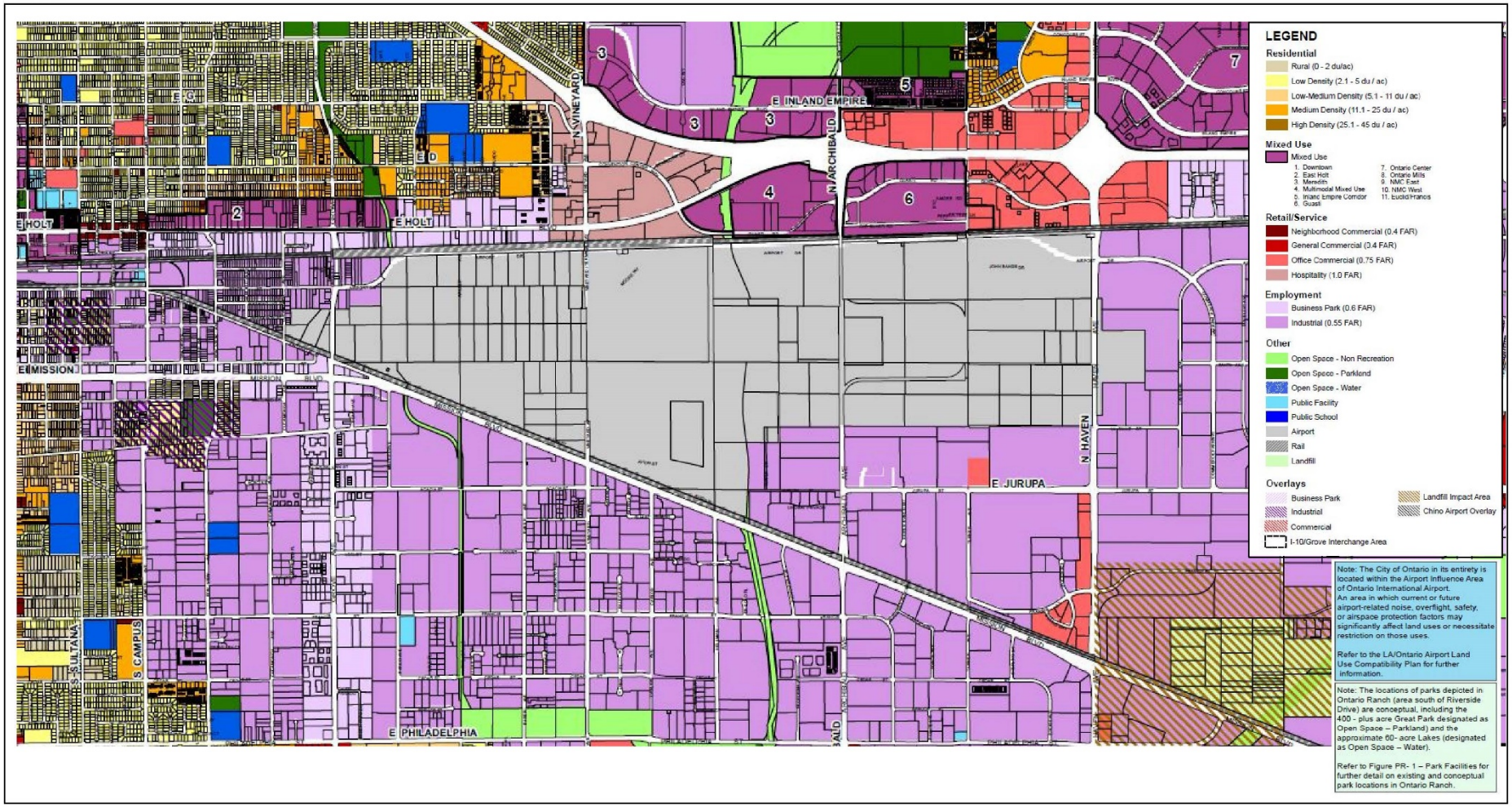


Figure 3
Land Use

Not to Scale

Sources: www.ontarioplan.org (Approved by City Council on January 27, 2010)

2.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☒ Air Quality
☒ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☒ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☒ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☒ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☐ Transportation/ Traffic	☐ Utilities/Service Systems	☒ Mandatory Findings of Significance

3.0 DETERMINATION

On the basis of this initial evaluation:

☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☐	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☒	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (1) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (2) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature *Date*

Mark A. Thorpe
Chief Executive Officer
Ontario International Airport Authority

4.0 EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) The significance criteria or threshold, if any, used to evaluate each question; and

   b) The mitigation measure identified, if any, to reduce the impact to less than significance.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS. Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

A) HAVE A SUBSTANTIAL ADVERSE EFFECT ON A SCENIC VISTA?

No impact. The proposed project would be located entirely on Airport property. The runway rehabilitation, taxiway pavement improvements, relocated facilities, and the relocated south electrical vault would be consistent with the aesthetics of the existing Airport and therefore would not result in visual impacts.

B) SUBSTANTIALLY DAMAGE SCENIC RESOURCES, INCLUDING, BUT NOT LIMITED TO, TREES, ROCK OUTCROPPINGS, AND HISTORIC BUILDINGS WITHIN A STATE SCENIC HIGHWAY?

No impact. The subject project is not located within or adjacent to a State-designated scenic highway; therefore, the project would have no impact to a state scenic highway.

C) IN NONURBANIZED AREAS, SUBSTANTIALLY DEGRADE THE EXISTING VISUAL CHARACTER OR QUALITY OF PUBLIC VIEWS OF THE SITE AND ITS SURROUNDINGS? (PUBLIC VIEWS ARE THOSE THAT ARE EXPERIENCED FROM PUBLICLY ACCESSIBLE VANTAGE POINT). IF THE PROJECT IS IN AN URBANIZED AREA, WOULD THE PROJECT CONFLICT WITH APPLICABLE ZONING AND OTHER REGULATIONS GOVERNING SCENIC QUALITY?

No impact. The proposed project would be located entirely on Airport property. The taxiway pavement improvements and the relocated south electrical vault would be consistent with the aesthetics of the existing Airport and therefore would not result in visual impacts. The project is consistent with applicable zoning and other regulations governing scenic quality.

D) CREATE A NEW SOURCE OF SUBSTANTIAL LIGHT OR GLARE WHICH WOULD ADVERSELY AFFECT DAY OR NIGHTTIME VIEWS IN THE AREA?

Less than significant impact. It is anticipated that construction of the proposed project would be performed primarily during daytime hours, but some nighttime work may be required to mitigate airfield

operational impacts and reduce runway closure periods. Any necessary construction lighting would be properly shielded so as not to impact airfield operations or surrounding land uses. Minor upgrades to runway and taxiway lighting associated with runway rehabilitation and taxiway improvements would be similar to the lighting that exists on the airfield today.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURAL AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104 (g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

A) CONVERT PRIME FARMLAND, UNIQUE FARMLAND, OR FARMLAND OF STATEWIDE IMPORTANCE (FARMLAND), AS SHOWN ON THE MAPS PREPARED PURSUANT TO THE FARMLAND MAPPING AND MONITORING PROGRAM OF THE CALIFORNIA RESOURCES AGENCY, TO NON-AGRICULTURAL USE?

No impact. According to the USDA NRCS Web Soil Survey (see ***Appendix B, Farmlands***), the majority of soils at ONT and within the project area are considered to be farmland of statewide importance. However, the proposed project would occur on previously developed land at ONT and therefore, would not affect farmlands or be converted to non-agricultural use.

B) CONFLICT WITH EXISTING ZONING FOR AGRICULTURAL USE, OR A WILLIAMSON ACT CONTRACT?

No impact. The proposed project is not within or adjacent to an area zoned for agricultural use or under a Williamson Act contract. The nearest Williamson Act lands are approximately thirteen miles from the project site in Garner Valley. Therefore, no impact would occur.

C) CONFLICT WITH EXISTING ZONING FOR, OR CAUSE REZONING OF, FOREST LAND (AS DEFINED IN PUBLIC RESOURCES CODE SECTION 12220(G)), TIMBERLAND (AS DEFINED BY PUBLIC RESOURCES CODE SECTION 4526), OR TIMBERLAND ZONED TIMBERLAND PRODUCTION (AS DEFINED BY GOVERNMENT CODE SECTION 51104 (G))?

No impact. The proposed project is not within or adjacent to an area zoned for forest land or timberland. Therefore, no impact would occur.

D) RESULT IN THE LOSS OF FOREST LAND OR CONVERSION OF FOREST LAND TO NON-FOREST USE?

No impact. There are no forest lands within or adjacent to the project area. Therefore, no impact would occur.

E) INVOLVE OTHER CHANGES IN THE EXISTING ENVIRONMENT THAT, DUE TO THEIR LOCATION OR NATURE, COULD RESULT IN CONVERSION OF FARMLAND TO NON-AGRICULTURAL USE OR CONVERSION OF FOREST LAND TO NON-FOREST USE?

No impact. The proposed project is not within the vicinity of an area currently used for agricultural purposes nor is it within the vicinity of any forest land. Therefore, no impact will occur.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

A) CONFLICT WITH OR OBSTRUCT IMPLEMENTATION OF THE APPLICABLE AIR QUALITY PLAN?

No Impact. ONT is located in San Bernardino County within the Los Angeles South Coast Air Basin. The applicable "Air Quality Plan" is the 2016 Air Quality Management Plan (AQMP) prepared by the South Coast Air Quality Management District (SCAQMD). The AQMP is, in turn, based upon the adopted general plans (and resulting vehicular trip generation) from the local jurisdictions that were in place when the AQMP was developed. Proposed land uses that are consistent with such adopted general plans are considered consistent with the AQMP and will not conflict with or obstruct implementation of the applicable air quality plan. The project does not propose new land uses; therefore, it is consistent with the AQMP. The project will not conflict or obstruct the implementation of the AQMP, and will not result in any impacts.

B) RESULT IN A CUMULATIVELY CONSIDERABLE NET INCREASE OF ANY CRITERIA POLLUTANT FOR WHICH THE PROJECT REGION IS NON-ATTAINMENT UNDER AN APPLICABLE FEDERAL OR STATE AMBIENT AIR QUALITY STANDARD (INCLUDING RELEASING EMISSIONS THAT EXCEED QUANTITATIVE THRESHOLDS FOR OZONE PRECURSORS)?

Less than significant impact. ONT is located in San Bernardino County within the South Coast Air Basin. **Table 1** summarizes the attainment status for the CAAQS in the South Coast Air Basin, according to California Air Resources Board (CARB) Ambient Air Quality Standards Designation Tool. The 1991 Certified FEIR determined that air quality impacts to ambient air quality standards for aviation operations would be significant but less than in the Air Quality Certification restrictions. The Supplemental EIR will use the 1991 Certified FEIR and this Initial Study as the basis to focus the Supplemental EIR.

Table 1
Current Attainment / Non-attainment Designations

Level	Pollutant/Standard	Attainment Status
Federal	Ozone (2008 standard)	Nonattainment – Extreme
	Ozone (2015 standard)	Nonattainment – Extreme
	PM2.5 (2006 standard)	Nonattainment – Serious
	PM2.5 (2012 standard)	Nonattainment – Moderate
	PM10	Maintenance – Serious
State	Ozone	Nonattainment
	PM2.5	Nonattainment
	PM10	Nonattainment

Source: California Air Resources Board (CARB), Ambient Air Quality Standards Designation Tool, https://ww2.arb.ca.gov/aaqs-designation-tool, zip code 91761 (accessed 4/6/21).

The 1991 Certified FEIR determined that construction emissions associated with the proposed program would be significant and mitigation measures were applied for construction efforts to reduce the impact. Mitigation measures included preparation of a comprehensive dust control plan; use of existing power sources and avoidance of on-site power generation whenever possible; use of unleaded or low sulfur fuel, catalytic converter, or propane fuel on all welding machines, proper maintenance of construction equipment; and encouragement of ride sharing and use of urban mass transit for construction personnel.

Analysis completed for construction emissions associated with the development of Categorial Exclusions that reviewed the proposed project, and subsequently approved by the FAA in March/April 2021, found the proposed project would generate *de minimis* emissions in consideration of the National Ambient Air Quality Standards (NAAQS).

A construction emissions analysis will be completed as part of a Supplemental EIR that will be completed for this project to determine if a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment in accordance with California Ambient Air Quality Standards (CAAQS). Mitigation measures included within the 1991 Certified FEIR for construction impacts to air quality will be reviewed and updated as appropriate to reflect current industry standards for construction.

It is not expected that aircraft emissions will vary extensively with and without the project as the operational levels will be consistent with or without the proposed project. It is expected that there will be a less than significant impact.

C) EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS?

Less than Significant Impact. The primary pollutant of concern for sensitive receptors is carbon monoxide (CO). The State of California set a standard of 9 parts per million (ppm) for a one-hour concentration, and 20.0 ppm for an eight-hour concentration. The project emissions are not expected to cause CO concentrations to exceed the standard and the daily level of CO exposure is well below thresholds as shown in section B above, the project is expected to have less than significant impacts to sensitive receptors. A Supplemental EIR will provide detail on this response.

D) RESULT IN OTHER EMISSIONS (SUCH AS THOSE LEADING TO ODORS) ADVERSELY AFFECTING A SUBSTANTIAL NUMBER OF PEOPLE?

Less than significant impact. According to SCAQMD significance thresholds, odor would be significant if "Project creates an odor nuisance pursuant to South Coast AQMD Rule 402." *RULE 402, NUISANCE* states "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."

During construction, the use of diesel equipment would produce odor that may be considered a nuisance to some individuals, but the number would not be considerable, and the nuisance of the odor is subjective. The project is on airport property and the closest sensitive receptors to the project site are residential uses approximately ½-mile northwest of ONT, however there are roadways and industrial uses that separate the Airport from any sensitive receptors. During construction, impacts would be less than significant.

Additionally, according the SCAQMD, the following land uses are considered potentially odor producing: Agriculture (farming and livestock), Wastewater Treatment Plant, Food Processing Plants, Chemical Plants, Composting, Refineries, Landfills, Dairies, and Fiberglass Molding. No such land uses are proposed with the current project, and no sources of odor from the proposed improvements are considered to have an impact under SCAQMD guidelines, have been identified. Thus, no impacts will occur once the project is implemented.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.), through direct removal, filling, hydrological interruption or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan?	☐	☐	☐	☒

A) HAVE A SUBSTANTIAL ADVERSE EFFECT, EITHER DIRECTLY OR THROUGH HABITAT MODIFICATIONS, ON ANY SPECIES IDENTIFIED AS A CANDIDATE, SENSITIVE, OR SPECIAL STATUS SPECIES IN LOCAL OR REGIONAL PLANS, POLICIES, OR REGULATIONS, OR BY THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE OR U.S. FISH AND WILDLIFE SERVICE?

Less Than Significant Impact With Mitigation Incorporated. Federally-listed threatened or endangered species that have the potential to occur within or near the general area of ONT are the San Bernardino Merriam's kangaroo rat (*Dipodomys mirriami parvus*), the Coastal California Gnatcatcher (*Polioptila californica californica*), the Delhi Sands flower-loving fly (DSF) (*Rhaphiomidas terminatus abdominalis*), and the San Diego Ambrosia (*Ambrosia pumila*). It is known that potential habitat exists for the DSF on ONT property. Using the previous surveys and on-going survey work for the DSF, more detail on areas

where these species may be present and/or where suitable habitat exists, and any mitigation measures prescribed will be included as part of a Supplemental EIR.

There are no other federal or state listed endangered, threatened, or candidate species or designated critical habitat in or near the project area.

The project area has been extensively developed, however suitable habitat exists in the proposed project area for the burrowing owl, a California Bird Species of Special Concern. A survey completed in 2019 by Helix Environmental Planning identified three active burrows at ONT, with two burrows (AB-1 and AB-3) located in the infield just north of the Runway 8R end within the project area and adjacent to proposed taxiway improvements. Additional detail on areas where these species may be present and/or where suitable habitat exists, and any mitigation measures prescribed will be included in a Supplemental EIR.

See ***Appendix C, Biological Resources*** for the U.S. Fish and Wildlife Official Species List, for federal listed species, and for the 2019 Non-Breeding Burrowing Owl Survey Report.

MM BIO-1 Focused protocol surveys for burrowing owls within suitable habitat in the proposed project area should be completed in accordance with approved protocols prior to mobilization for construction so that any required mitigation/relocation of burrowing owls can be completed to ensure no direct or indirect impacts to active burrows/nesting owls will occur.

B) HAVE A SUBSTANTIAL ADVERSE EFFECT ON ANY RIPARIAN HABITAT OR OTHER SENSITIVE NATURAL COMMUNITY IDENTIFIED IN LOCAL OR REGIONAL PLANS, POLICIES, OR REGULATIONS, OR BY THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE OR U.S. FISH AND WILDLIFE SERVICE?

No Impact. No riparian habitat or other sensitive natural community is located on the site. Therefore, no associated impact will occur.

C) HAVE A SUBSTANTIAL ADVERSE EFFECT ON FEDERALLY PROTECTED WETLANDS AS DEFINED BY SECTION 404 OF THE CLEAN WATER ACT (INCLUDING, BUT NOT LIMITED TO, MARSH, VERNAL POOL, COASTAL, ETC.) THROUGH DIRECT REMOVAL, FILLING, HYDROLOGICAL INTERRUPTION, OR OTHER MEANS?

No Impact. A field review was completed on 1/12/21 by Helix Environmental Planning, Inc. No wetlands were found within the project's expected limits of disturbance. Based on the results of the jurisdictional delineation, Cucamonga Creek Channel, Deer Creek Channel and West Cucamonga Creek Channel are considered USACE/RWQCB non-wetland waters of the U.S. and CDFW jurisdiction. These jurisdictional features are underground through the extent of the project site within lined channels. See ***Appendix D, Water Resources.***

D) INTERFERE SUBSTANTIALLY WITH THE MOVEMENT OF ANY NATIVE RESIDENT OR MIGRATORY FISH OR WILDLIFE SPECIES OR WITH ESTABLISHED NATIVE RESIDENT OR MIGRATORY WILDLIFE CORRIDORS, OR IMPEDE THE USE OF NATIVE WILDLIFE NURSERY SITES?

Less Than Significant With Mitigation Incorporated. The project area has been extensively developed, however suitable habitat exists in the proposed project area for the burrowing owl. Nesting bird species, including the burrowing owl, a California Bird Species of Special Concern are protected by CDFG Code, and by the MBTA of 1918 (16 USC 703-711). These laws make it unlawful to take, possess, or needlessly destroy the nest or eggs of any migratory bird or bird of prey. With the incorporation of the mitigation measure BIO-1, project impacts to the affected species will be reduced to below a level of significance. See *Appendix C, Biological Resources* for the 2019 Non-Breeding Burrowing Owl Survey Report.

E) CONFLICT WITH ANY LOCAL POLICIES OR ORDINANCES PROTECTING BIOLOGICAL RESOURCES, SUCH AS A TREE PRESERVATION POLICY OR ORDINANCE?

No Impact. The proposed project will not conflict with any local policies or ordinances. Thus, the proposed project will have no impacts to local policies and ordinances.

F) CONFLICT WITH THE PROVISIONS OF AN ADOPTED HABITAT CONSERVATION PLAN, NATURAL COMMUNITY CONSERVATION PLAN, OR OTHER APPROVED LOCAL, REGIONAL, OR STATE HABITAT CONSERVATION PLAN?

No Impact. The proposed project will not conflict with any habitat conservation plan, natural community conservation plan, or other local, regional or state habitat conservation plans.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☐	☐	☒
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

A) CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A HISTORICAL RESOURCE AS DEFINED IN §15064.5?

No impact. There are no known historic or cultural resources within the Area of Potential Effect (APE), as illustrated on **Figure 4**; this will be confirmed within a Supplemental EIR. There are potentially eligible districts and properties within the airport property but not within the APE.

B) CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF AN ARCHAEOLOGICAL RESOURCE PURSUANT TO §15064.5?

No impact. The proposed project would occur on Airport property in areas that have been previously disturbed as a result of past construction and maintenance activities. The utility connection associated with the relocation of the South Electrical Vault would require excavation of duct bank to depths up to six feet. Although this utility connection location is not currently developed, several previous projects have required grading depths of 8-12 feet across the site.

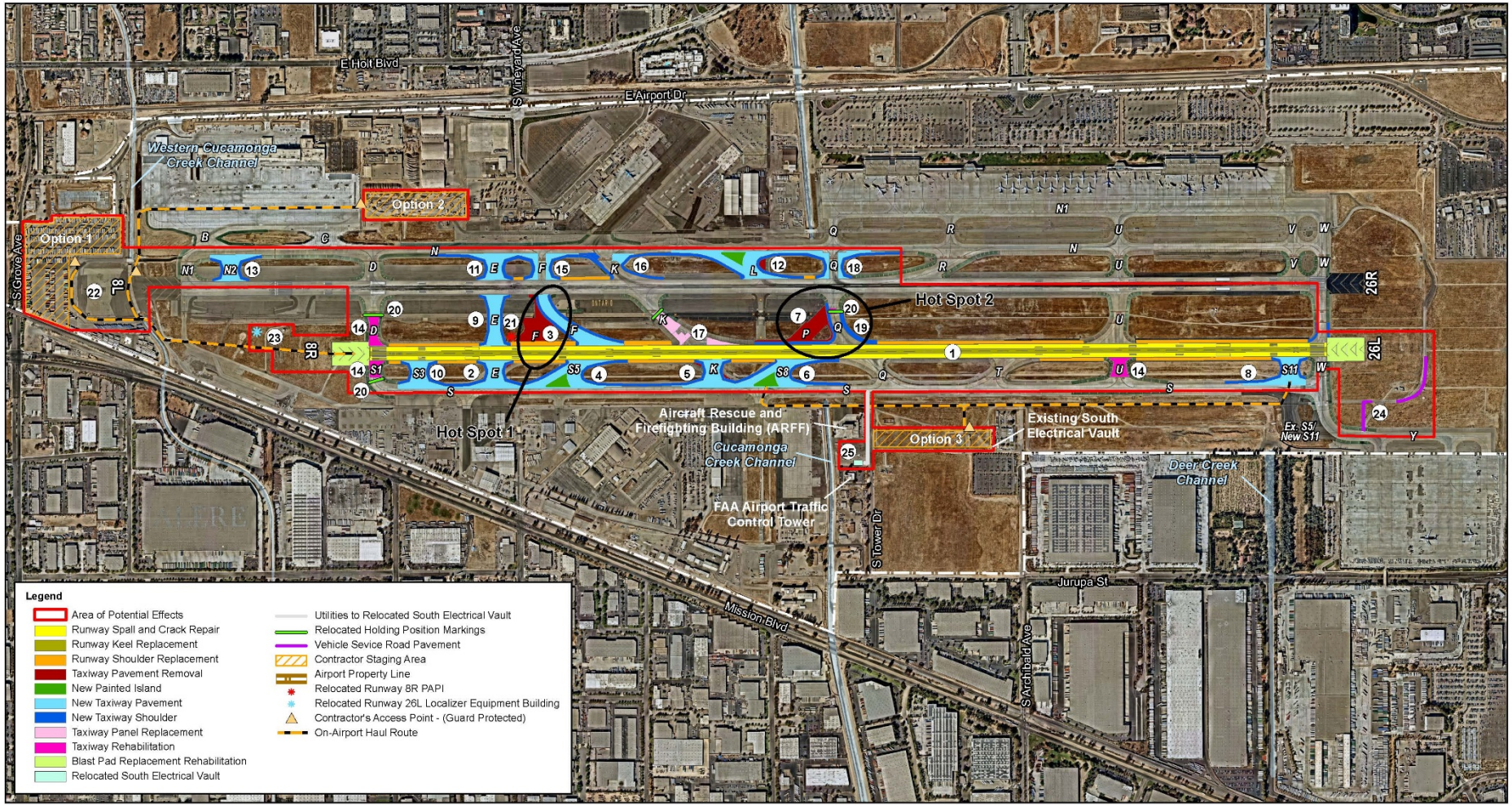
The South Electrical Vault is proposed between the Air Traffic Control Tower (ATCT) and the Aircraft Rescue Fire Facility (ARFF). In the 1980s, the ATCT, located just south of the proposed vault location, required grading depths of 8-12 feet across the site. In 1988, ONT's ARFF station was constructed, just north of the proposed site, and also required grading depths of 8' to 12' across the site. The ATCT and ARFF's grading operations overlapped given the proximity of both sites. Additionally, the Cucamonga Creek channel (located just west of the project site) design plans from 1952 indicate the channel has been straightened and has required extensive cuts with 9-foot minimum depths. With the setback needed for the channel wall, the location of the proposed south electrical vault and the utility connection has been previously disturbed. The area thus has low potential for archaeological resources. Additionally, the

structures associated with the Air National Guard historic area were located to the south of the proposed electrical vault area and not within locations that would provide connectivity (e.g. utilities) to the proposed electrical vault. Thus, the proposed project is not expected to impact any cultural resources. Should there be an unexpected discovery, construction would halt until the Tribal, state and Federal requirements and regulations are addressed. Additional detail will be provided as part of a Supplemental EIR.

C) DISTURB ANY HUMAN REMAINS, INCLUDING THOSE INTERRED OUTSIDE OF FORMAL CEMETERIES?

No impact. The proposed project would occur on Airport property in areas that have been previously disturbed due to past construction and maintenance activities. It is not expected that any human remains are located on the site. Should there be an unexpected discovery, construction would halt until the Tribal, state and Federal requirements and regulations are addressed.

Rehabilitation of Runway 8R-26L and Associated Airfield Improvements Initial Study at Ontario International Airport



PROPOSED ACTION PROJECTS

(1) REHABILITATE RUNWAY 8R-26L
(2) MODIFY EXISTING CONNECTOR TAXIWAY F AND REDESIGNATE AS TAXIWAY E
(3) REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F
(4) CONSTRUCT EXIT TAXIWAY S5
(5) RECONSTRUCT EXISTING EXIT TAXIWAY K
(6) RECONSTRUCT EXISTING EXIT TAXIWAY P TO A HIGH-SPEED EXIT AND REDESIGNATE AS TAXIWAY S8
(7) REMOVE EXISTING TAXIWAY P BETWEEN RUNWAYS 8L-26R AND 8R-26L
(8) CONSTRUCT BYPASS TAXIWAY S11
(9) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8R-26L AND 8L-26R
(10) CONSTRUCT BYPASS TAXIWAY S3
(11) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8L-26R AND TAXIWAY N
(12) RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED EXIT TAXIWAY
(13) CONSTRUCT BYPASS TAXIWAY N2
(14) RESURFACE TAXIWAY D, TAXIWAY S1 AND TAXIWAY U PAVEMENT
(15) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(16) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(17) REPLACE/REHABILITATE PANELS ON TAXIWAY K BETWEEN RUNWAYS
(18) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(19) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAYS
(20) RELOCATE HOLDING POSITION MARKINGS*
(21) RELOCATE RUNWAY 8R PAPI
(22) RELOCATE PERIMETER FENCE AND REMOVE OBJECTS WITHIN ROFA
(23) RELOCATE RUNWAY 26L (8R END) LOCALIZER EQUIPMENT BUILDING
(24) MODIFY EXISTING VEHICLE SERVICE ROAD
(25) RELOCATE SOUTH ELECTRICAL VAULT

* DEPICTED IN MULTIPLE LOCATIONS

Figure 4
Area of Potential Effects

0 250 500 1,000 Feet

Sources: OIAA, Nearmap, HNTB Analysis

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. ENERGY. Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

A) RESULT IN POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACT DUE TO WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY RESOURCES, DURING PROJECT CONSTRUCTION OR OPERATION?

Less than significant impact. The project is not expected to have significant impacts that would have a significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. Natural resources used to construct the proposed projects would primarily include asphalt and concrete (cement and aggregate). Operations-related energy demands would include temporary additional energy needs for a short period during the relocation of the electrical vault and taxiway lighting, however once implemented the lights will be more energy efficient.

B) CONFLICT WITH OR OBSTRUCT A STATE OR LOCAL PLAN FOR RENEWABLE ENERGY OR ENERGY EFFICIENCY?

No impact. The project would not conflict with or obstruct any state or local plans for renewable energy or energy efficiency.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS. Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

A) DIRECTLY OR INDIRECTLY CAUSE POTENTIAL SUBSTANTIAL ADVERSE EFFECTS, INCLUDING THE RISK OF LOSS, INJURY, OR DEATH INVOLVING:

I) RUPTURE OF A KNOWN EARTHQUAKE FAULT, AS DELINEATED ON THE MOST RECENT ALQUIST-PRIOLO EARTHQUAKE FAULT ZONING MAP ISSUED BY THE STATE GEOLOGIST FOR THE AREA OR BASED ON OTHER SUBSTANTIAL EVIDENCE OF A KNOWN FAULT? REFER TO DIVISION OF MINES AND GEOLOGY SPECIAL PUBLICATION 42.

No impact. Southern California is a seismically active region that is subject to seismic hazards of varying degrees, however *t*he proposed project is not located within an Earthquake Fault Zone according to the California Department of Conservation California Earthquake Hazards Zone Application (EQ Zapp) (Formerly known as the Alquist-Priolo Special Study Zone). The closest known fault zones are Sierra Madre Fault Zone (Cucamonga Fault) (7 miles north of the project site) and Elsinore Fault Zone (Chino Fault) (8 miles southwest of the project site). (See **Figure 5**). Therefore, no impact related to fault rupture are expected to occur.

II) STRONG SEISMIC GROUND SHAKING?

Less than Significant Impact. The City of Ontario is located in a seismically active region, and the region has experienced several earthquakes with magnitudes of 6.0 or greater within the last 100

years. No earthquake faults are known to cross the City or the project site. However, there are several known active earthquake faults near the City of Ontario. The closest known fault zones are Sierra Madre Fault Zone (Cucamonga Fault) (7 miles north of the project site) and Elsinore Fault Zone (Chino Fault) (8 miles southwest of the project site).

The Airport will require, as part of its standard conditions, that the project be built to the latest geotechnical standards and applicable standards for ground structures in accordance with the California Building Code, thereby minimizing the risk of loss, injury, or death due to seismic ground shaking. Thus, potential impacts associated with strong seismic groundshaking are expected to be less than significant.

III) SEISMIC-RELATED GROUND FAILURE, INCLUDING LIQUEFACTION?

Less than Significant Impact: According California Department of Conservation EQ Zapp, ONT is not in a liquefaction zone. The nearest liquefaction zone is 7 miles west of the project area, San Dimas. Also, the project will be designed in compliance with City codes. Therefore, impacts are less than significant.

IV) LANDSLIDES?

No Impact. The topography of the developed site is generally flat with no slopes in the project area exceeding 15%. The facility is relatively flat from east to west, and slopes to the south. The elevation of the entire site ranges from approximately 890 to 955 feet above mean sea level (msl). The closest landside zone is 8 miles west of ONT. Given this separation, no impact will occur.

B) RESULT IN SUBSTANTIAL SOIL EROSION OR THE LOSS OF TOPSOIL?

Less than Significant Impact. The subject site is generally flat and proposed development associated with the project will not change the topography in such a way as to result in substantial soil erosion or the loss of topsoil. Adherence to standard erosion control measures will reduce potential impacts associated with this issue to a less than significant level.

C) BE LOCATED ON A GEOLOGIC UNIT OR SOIL THAT IS UNSTABLE, OR THAT WOULD BECOME UNSTABLE AS A RESULT OF THE PROJECT, AND POTENTIALLY RESULT IN ON- OR OFF-SITE LANDSLIDE, LATERAL SPREADING, SUBSIDENCE, LIQUEFACTION OR COLLAPSE?

Less than significant impact. The site is not known to have been subject to landslide, lateral spreading, subsidence, liquefaction, or collapse. Thus, the proposed project is not expected to be exposed to nor create off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

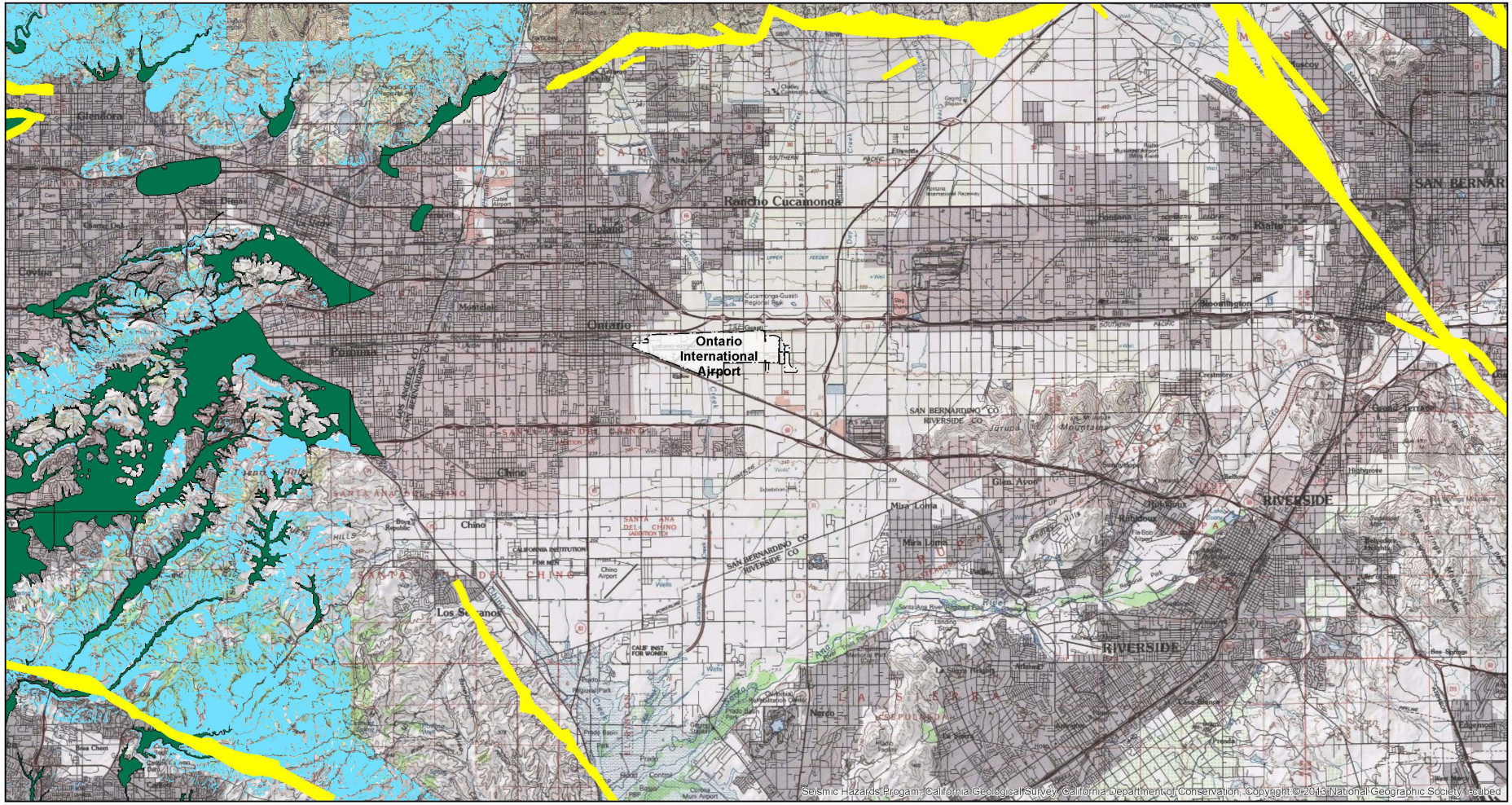
D) BE LOCATED ON EXPANSIVE SOIL, AS DEFINED IN TABLE 18-1-B OF THE UNIFORM BUILDING CODE (1994), CREATING SUBSTANTIAL RISKS TO LIFE OR PROPERTY?

Less than Significant Impact. Surficial deposits expected to occur within the project area consist predominantly of alluvial or fill materials with no substantial clay content. Based on these conditions, no significant impacts related to expansive soils are expected to occur in association with project implementation.

E) HAVE SOILS INCAPABLE OF ADEQUATELY SUPPORTING THE USE OF SEPTIC TANKS OR ALTERNATIVE WASTEWATER DISPOSAL SYSTEMS WHERE SEWERS ARE NOT AVAILABLE FOR THE DISPOSAL OF WASTEWATER?

No Impact. The project site is currently served by sewers. As septic tanks or alternative wastewater disposal systems will not be used, no impact related to this issue will occur.

Rehabilitation of Runway 8R-26L and Associated Airfield Improvements Initial Study at Ontario International Airport



Legend

- Airport Property
- Fault Zone
- Liquefaction Zone
- Landslide Zone

Figure 5
Earthquake Zones of Required Investigation

0 3,000 6,000 12,000 Feet

N

Sources: OIAA, California Geological Survey - California Department of Conservation, National Geographic Society, HNTB Analysis

F) DIRECTLY OR INDIRECTLY DESTROY A UNIQUE PALEONTOLOGICAL RESOURCE OR SITE OR UNIQUE GEOLOGIC FEATURE?

Less Than Significant Impact. The geology of the site is categorized as Delhi fine sand, Hanford coarse sandy loam, Tujunga loamy sand and gravelly loamy sand, which is not a unique feature. The proposed project would occur on Airport property in areas that have been previously disturbed as a result of past construction and maintenance activities. With the exception of the utility connection associated with the relocation of the South Electrical Vault that would require excavation of duct bank to depths up to six feet, the proposed project would require a maximum of three-foot depth of ground disturbance beneath existing pavement sections. Although the utility connection location is not currently developed, several previous projects have required grading depths of 8-12 feet across the site. Thus, the area has low potential for paleontological resources that could be directly or indirectly impacted.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

A) GENERATE GREENHOUSE GAS EMISSIONS, EITHER DIRECTLY OR INDIRECTLY, THAT MAY HAVE A SIGNIFICANT IMPACT ON THE ENVIRONMENT?

Less than significant impact. Construction of the project would generate greenhouse gas (GHG) emissions from vehicle exhaust associated with construction related activities, including off-road construction equipment and construction worker commuting. Once operational, additional GHG emissions are not expected. GHGs would be generated during the project's construction years (2023-2025). Detailed analysis of impacts to the environment based on GHGs during construction will be analyzed as part of a Supplemental EIR.

B) CONFLICT WITH AN APPLICABLE PLAN, POLICY OR REGULATION ADOPTED FOR THE PURPOSE OF REDUCING THE EMISSIONS OF GREENHOUSE GASES?

Less than significant impact. The City of Ontario has a Community Climate Action Plan that has greenhouse gas reduction plans through air quality regulation. *The Ontario Plan*, the City's General Plan includes air quality policies including *ER4-3, "reduce GHG emissions in accordance with regional, state and federal regulations*." Detailed analysis of impacts to the environmental based on GHGs during construction will be analyzed as part of a Supplemental EIR.

It is expected that any increase of GHGs would not conflict with applicable plans, policies or regulations adopted for the purpose of reducing the emissions of greenhouse gases, thus any impact would be less than significant with implementation of the proposed project.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan area or, where such a plan has not been adopted, within two miles of a public airport or a public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒

A) CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT THROUGH THE ROUTINE TRANSPORT, USE, OR DISPOSAL OF HAZARDOUS MATERIALS?

Less than Significant Impact. To the extent that hazardous materials such as asphalt, paints, and fossil fuels are used on site during construction, they would continue to be handled, used, stored, transported, and disposed of pursuant to applicable State, federal, and local regulations. The proposed project is not expected to produce new hazardous waste during construction or following implementation. The proposed project would not require changes in any routine transport, use, or disposal of hazardous materials and/or solid waste associated with operations at ONT. The OIAA has hazardous material spill protocols that would be implemented during construction and regular operations. The OIAA also requires that all contractors develop a program to coordinate all efforts associated with the handling of contaminated materials and construction debris. Therefore, the impact will be less than significant.

B) CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT THROUGH REASONABLY FORESEEABLE UPSET AND ACCIDENT CONDITIONS INVOLVING THE RELEASE OF HAZARDOUS MATERIALS INTO THE ENVIRONMENT?

Less than Significant Impact. To the extent that hazardous materials such as asphalt, paints, and fossil fuels are used on site during construction, they would continue to be handled, used, stored, transported, and disposed of pursuant to applicable State, federal, and local regulations. The OIAA has hazardous material spill protocols that would be implemented during construction and regular operations. The OIAA also requires that all contractors develop a program to coordinate all efforts associated with the handling of contaminated materials and construction debris. Therefore, the impact will be less than significant.

C) EMIT HAZARDOUS EMISSIONS OR HANDLE HAZARDOUS OR ACUTELY HAZARDOUS MATERIALS, SUBSTANCES, OR WASTE WITHIN ONE-QUARTER MILE OF AN EXISTING OR PROPOSED SCHOOL?

Less than Significant Impact. Mariposa Elementary School (1605 E D St, Ontario, CA 91764) is located approximately 0.4 miles north of ONT. Other schools and day care facilities are located within a half-mile of ONT. There would be no new additional functions associated with the project that would result in an increase in likelihood of release of hazardous or acutely hazardous materials. Response to any reasonably foreseeable upset or accident conditions involving the release of hazardous or acutely materials into the environment regardless of proximity to schools will continue to be managed pursuant to applicable State, federal, and local regulations. Therefore, the impact will be less than significant.

D) BE LOCATED ON A SITE WHICH IS INCLUDED ON A LIST OF HAZARDOUS MATERIALS SITES COMPILED PURSUANT TO GOVERNMENT CODE SECTION 65962.5 AND, AS A RESULT, WOULD IT CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT?

Less than Significant Impact. The proposed project area has been disturbed and does not involve any land that is known to contain hazardous materials and is not expected to cause contamination from hazardous materials. The following EPA websites were consulted to confirm no hazardous materials in the proposed project areas:

- https://cumulis.epa.gov/supercpad/cursites/srchsites.cfm
- https://echo.epa.gov/
- https://www3.epa.gov/enviro/
- https://www3.epa.gov/myem/envmap/find.html

If any hazardous materials are encountered during construction, they would be disposed of in accordance with applicable laws and regulations. Therefore the impact would be less than significant.

E) FOR A PROJECT LOCATED WITHIN AN AIRPORT LAND USE PLAN OR, WHERE SUCH A PLAN HAS NOT BEEN ADOPTED, WITHIN TWO MILES OF A PUBLIC AIRPORT OR PUBLIC USE AIRPORT, WOULD THE PROJECT RESULT IN A SAFETY HAZARD FOR PEOPLE RESIDING OR WORKING IN THE PROJECT AREA?

Less than Significant Impact. The project includes improvements for a public airport. The project addresses safety hazards associated with the airport through design; therefore, safety hazard impacts for people residing or working in the project area will be less than significant.

F) IMPAIR IMPLEMENTATION OF OR PHYSICALLY INTERFERE WITH AN ADOPTED EMERGENCY RESPONSE PLAN OR EMERGENCY EVACUATION PLAN?

No Impact. The project will not have any impact on the implementation of any emergency response or evaluation plans as it will be entirely on airport property and will not impact access in or around highways, local roads or typical routes. Therefore, there are no impacts.

G) EXPOSE PEOPLE OR STRUCTURES TO A SIGNIFICANT RISK OF LOSS, INJURY OR DEATH INVOLVING WILDLAND FIRES, INCLUDING WHERE WILDLANDS ARE ADJACENT TO URBANIZED AREAS OR WHERE RESIDENCES ARE INTERMIXED WITH WILDLANDS?

No Impact. The project site and the surrounding properties are urbanized. This land development isolates the subject property from the potential of wildland fires. No impact related to this issue will occur.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in a substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☒	☐	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☒	☐	☐
iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☒	☐	☐

A) VIOLATE ANY WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS OR OTHERWISE SUBSTANTIALLY DEGRADE SURFACE OR GROUND WATER QUALITY?

Less than Significant Impact. The project would comply with all local standards and permitting requirements regarding water quality and storm water discharge, to eliminate or reduce non-storm water discharges to storm water systems and other waters of the nation, develop and implement any related storm water pollution prevention plans, and perform inspections of storm water control structures and pollution prevention measures. A project-specific Construction Stormwater Pollution Prevention Plan (SWPPP) would address construction-related surface water quality impacts and delineate water quality control measures to address those impacts. Compliance with standard city rules and regulations will reduce project impacts below a level of significance.

B) SUBSTANTIALLY DECREASE GROUNDWATER SUPPLIES OR INTERFERE SUBSTANTIALLY WITH GROUNDWATER RECHARGE SUCH THAT THE PROJECT MAY IMPEDE SUSTAINABLE GROUNDWATER MANAGEMENT OF THE BASIN?

Less than significant impact. The project will be served by public water supply during construction and will not require its own well supplies. The project will result in the development of uses consistent with the existing uses at the airport and will not require any additional water that what is currently needed once constructed. The project is not likely to affect groundwater recharge on a project level because of the previously disturbed nature of the project area and limited change in total impervious surface. Therefore, project impacts are less than significant.

C) SUBSTANTIALLY ALTER THE EXISTING DRAINAGE PATTERN OF THE SITE OR AREA, INCLUDING THROUGH THE ALTERATION OF THE COURSE OF A STREAM OR RIVER OR THROUGH THE ADDITION OF IMPERVIOUS SURFACES, IN A MANNER WHICH WOULD:

I) RESULT IN A SUBSTANTIAL EROSION OR SILTATION ON- OR OFF-SITE;

Less Than Significant Impact. The project site is largely disturbed. While the plan will result in an increase in impervious surfaces, the basic drainage pattern for the project area will remain unchanged. Because the project will adhere to City standard erosion control methods throughout construction, less than significant impacts related to erosion or siltation on- or off-site will occur.

II) SUBSTANTIALLY INCREASE THE RATE OR AMOUNT OF SURFACE RUNOFF IN A MANNER WHICH WOULD RESULT IN FLOODING ON- OR OFFSITE;

Less than Significant with Mitigation Incorporated. No stream-beds or rivers cross the site. The project site supports three drainages that flow beneath the work area through covered concrete channels. The drainages include Deer Creek Channel in the eastern portion of the project site, Cucamonga Creek Channel in the center of the project site, and West Cucamonga Creek Channel in the western portion of the project site. The airfield drainage includes tributary areas on the airfield located between the runways and taxiways. Additionally, the project site includes multiple storm drain inlets that convey flows into the three concrete channels. The project would require removal and installation of storm drain inlets. The removal and installation of storm drain inlets would be performed in such a way that no incidental fall back to the storm drain system would occur.

Construction of the project could result in the potential for short-term impacts to surface water (i.e., stormwater) quality, due to temporary surface disturbance. The project would not require regulatory permits from the regulatory agencies, however a project-specific Construction SWPPP would address construction-related surface water quality impacts and delineate water quality control measures to address those impacts.

To ensure that the project does not result in any risk of downstream flooding, control measures for the proposed project, including BMPs, the following minimization measures shall be conditioned on the project (also see *Appendix D)*:

MM HYD-1 General Stormwater Construction Permit compliance.

MM HYD-2 Municipal Storm Drain Permit (MS4) compliance.

MM HYD-3 Source control and treatment control BMPs shall be implemented to minimize the potential contaminants that are generated during and after construction. Source control BMPs and Treatment control BMPs will follow the ONT Storm Water Pollution Prevention Plan (SWPPP) and standard construction BMPs.

MM HYD-4 A project-specific Construction SWPPP would address construction-related surface water quality impacts and delineate water quality control measures to address those impacts.

MM HYD-5 BMPs would include those outlined in FAA AC 150/5371-10, Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water pollution, Soil Erosion and Siltation Control.

MM HYD-6 Employees shall strictly limit their activities, vehicles, equipment, and construction material to the proposed project footprint, staging areas, and designated routes of travel.

III) CREATE OR CONTRIBUTE RUNOFF WATER WHICH WOULD EXCEED THE CAPACITY OF EXISTING OR PLANNED STORMWATER DRAINAGE SYSTEMS OR PROVIDE SUBSTANTIAL ADDITIONAL SOURCES OF POLLUTED RUNOFF; OR

Less than significant impact with mitigation incorporated. The proposed project would occur in areas that have been previously disturbed. The proposed improvements would not increase the airfield drainage areas between the runways and taxiways, however these areas would be modified to incorporate existing connector taxiways and construction of the new connector taxiways. The project would result in a net increase of impervious area which would result in an increased stormwater runoff. Stormwater management will necessarily be included for design of the taxiway improvements to control storm flow per FAA AC 150/5320-5D, Airport Drainage Design. State and local storm drainage design criteria will also be incorporated, as applicable.

To ensure that the project does not exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff, MMs HYD-1 through MM HYD-6 as shown in item "II" above shall be implemented along with implementation and adherence to standard city policies and procedures. Such implementation will ensure that drainage impacts will be less than significant.

IV) IMPEDE OR REDIRECT FLOOD FLOWS?

Less Than Significant Impact. The project site is largely disturbed. While the plan will result in an increase in impervious surfaces, the basic drainage pattern for the project area will remain unchanged. Because the project will adhere to City standard erosion control methods throughout construction, less than significant impacts related to erosion or siltation on- or off-site will occur.

D) IN FLOOD HAZARD, TSUNAMI, OR SEICHE ZONES, RISK RELEASE OF POLLUTANTS DUE TO PROJECT INUNDATION?

No Impact. See *Appendix D, Water Resources* for floodplain maps in the vicinity of the Airport that illustrate the project area is not within a flood hazard zone. Impacts associated with a seiche or a tsunami

must have proximity to a standing water body or the ocean. The proposed project is not close to standing water, and is not in a coastal area. The project is not in an area subject to potential mudflow, either. Thus, no impacts from seiche, tsunami, or mudflow would occur.

E) CONFLICT WITH OR OBSTRUCT IMPLEMENTATION OF A WATER QUALITY CONTROL PLAN OR SUSTAINABLE GROUNDWATER MANAGEMENT PLAN?

Less than significant impact with mitigation incorporated. The proposed project would occur in areas that have been previously disturbed. The proposed improvements would not increase the airfield drainage areas between the runways and taxiways, however these areas would be modified to incorporate existing connector taxiways and construction of the new connector taxiways. The project would result in a net increase of impervious area which would result in an increased stormwater runoff. Stormwater management will necessarily be included for design of the taxiway improvements to control storm flow per FAA AC 150/5320-5D, Airport Drainage Design. State and local storm drainage design criteria will also be incorporated, as applicable.

To ensure that the project does not obstruct implementation of a water quality control plan or sustainable groundwater management plan, MMs HYD-1 through MM HYD-6 as shown in item "II" above shall be implemented along with implementation and adherence to standard city policies and procedures. Such implementation will ensure that drainage impacts will be less than significant.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

A) PHYSICALLY DIVIDE AN ESTABLISHED COMMUNITY?

No impact. The project is entirely on airport property. Adjacent properties are developed with compatible uses per the City of Ontario's general plan and zoning ordinance, and therefore are or will be land uses that are compatible with the airport's uses. Existing roadways have already been established. Thus, the project will not divide an established community.

B) CAUSE A SIGNIFICANT ENVIRONMENTAL IMPACT DUE TO A CONFLICT WITH ANY LAND USE PLAN, POLICY, OR REGULATION ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT?

No impact. The project would be developed entirely within airport property and no changes to land uses on or off airport property would occur. Land uses surrounding the project site include airport-related, industrial uses. No land use acquisition or new facilities are proposed in the surrounding communities as a result of this project. The project is consistent with plans, goals, policies, zoning and local controls that have been adopted and govern over the project site.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

A) RESULT IN THE LOSS OF AVAILABILITY OF A KNOWN MINERAL RESOURCE THAT WOULD BE OF VALUE TO THE REGION AND THE RESIDENTS OF THE STATE?

No impact. According to the California Department of Conservation Mineral Lands Classification, ONT is located in an "Urban Area." Just north of the Airport (north of Interstate 10), there is an area identified as "MRZ-2: Areas where geologic data indicate that significant PCC-Grade aggregate resources are present," however ONT is not within this zone. Additionally, the Airport is not zoned for mineral extraction. Because mining is not a permitted use on the property, even if mineral resources did exist on the site they would be unrecoverable. Thus, the project will not result in the loss of availability of a known mineral resource in an area classified or designated by the state that would be of value to the region or to the residents of the state; therefore, there would be no impact.

B) RESULT IN THE LOSS OF AVAILABILITY OF A LOCALLY IMPORTANT MINERAL RESOURCE RECOVERY SITE DELINEATED ON A LOCAL GENERAL PLAN, SPECIFIC PLAN OR OTHER LAND USE PLAN?

No Impact. No locally important mineral source is delineated within the project area; therefore, there is no impact to local mineral resource recovery.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. NOISE. Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☒	☐	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☒	☐	☐	☐

A) GENERATION OF A SUBSTANTIAL TEMPORARY OR PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE VICINITY OF THE PROJECT IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES?

Potentially significant impact. Runway use and flight patterns would be temporarily impacted during construction in 2023 through 2025. A maximum combined nine-month runway closure period would occur in 2023, with Runway 8R-26L closed for approximately seven months, followed by Runway 8L-26R closed for approximately two months. Temporary runway closures would also occur in 2024 with a maximum combined nine-month runway closure period, and in 2025 with a maximum six-month runway closure period. During these runway closure periods, all operations would occur on a single runway. Due to the two runways being parallel and closely spaced, temporarily operating on a single runway would not significantly alter flight patterns.

ONT typically operates with "contra-flow" from 10 pm to 7 am where, depending on wind conditions, aircraft take off to the east while still landing to the west. Contra-flow is used as a noise mitigation strategy to minimize noise over residential areas at night. The FAA Air Traffic Organization (ATO) informed ONT that it will prohibit "contra flow" operations during construction periods in 2023, 2024 and 2025 when the Airport is operating with a single open runway to ensure safe operations while operating with one runway. As a result, there is potential for temporary increases in noise exposure to the west of the Airport during the nighttime hours during these construction periods.

The OIAA has requested that FAA continue the use of contra-flow during the construction periods when only one runway is open because ONT's runways essentially operate as one runway during normal conditions due to their close spacing (i.e., they cannot operate independently). A request to hold a Safety Risk Management (SRM) panel has been initiated with the FAA's ATO to discuss potential mitigation options for the temporary impacts.

Temporary noise impacts during construction will be modeled, evaluated, and disclosed as part of a Supplemental EIR. The Supplemental EIR will use the 1991 Certified FEIR, that found noise impacts to be significant but less than existing conditions, and this Initial Study as the basis to focus the Supplemental EIR. Runway use and flight patterns would be not be impacted once the project is implemented, thus no permanent noise impacts will occur.

Runway use and flight patterns would be not be impacted after the project is implemented.

B) GENERATION OF EXCESSIVE GROUNDBORNE VIBRATION OR GROUNDBORNE NOISE LEVELS?

Less than Significant Impact. The construction of the project may result in substantial vibration impacts. The project area is located within the active airfield and adjacent airport property. The properties immediately surrounding ONT are zoned industrial or commercial.

The nearest noise sensitive receptor to the airport is an apartment complex located approximately 2,100 feet north of the closest proposed construction activity.

Between the Proposed Action site and the residential receivers, there are two major roadways, industrial and commercial facilities, and a tow yard. Due to distance, the existing noise environment, and obstructions between noise sources and the residential receptors, construction noise levels would not be discernable over the existing ambient noise environment.

C) FOR A PROJECT LOCATED WITHIN THE VICINITY OF A PRIVATE AIRSTRIP OR AN AIRPORT LAND USE PLAN OR, WHERE SUCH A PLAN HAS NOT BEEN ADOPTED, WITHIN TWO MILES OF A PUBLIC AIRPORT OR PUBLIC USE AIRPORT, WOULD THE PROJECT EXPOSE PEOPLE RESIDING OR WORKING IN THE PROJECT AREA TO EXCESSIVE NOISE LEVELS?

Potentially significant impact. During runway closure periods in 2023, 2024 and 2025, all operations would occur on a single runway which may prevent the use of contra-flow operations at nighttime which is used as a noise mitigation strategy to minimize noise over residential areas at night. As discussed in XIII, Noise (A), if contra-flow cannot be undertaken by ATC when operating on one runway, there is potential for temporary increases in noise exposure to the west of the Airport during nighttime.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

A) INDUCE SUBSTANTIAL POPULATION GROWTH IN AN AREA, EITHER DIRECTLY (FOR EXAMPLE, BY PROPOSING NEW HOMES AND BUSINESSES) OR INDIRECTLY (FOR EXAMPLE, THROUGH EXTENSION OF ROADS OR OTHER INFRASTRUCTURE)?

No impact. The project is intended to improve safety and enhance airfield efficiency; the project accommodates existing airport traffic and does not propose facilities beyond the needs of current airport circulation. Construction activities at the site will be short-term and likely will employ local workers. Therefore, the project will have no impact on growth inducement.

B) DISPLACE SUBSTANTIAL NUMBERS OF EXISTING HOUSING, NECESSITATING THE CONSTRUCTION OF REPLACEMENT HOUSING ELSEWHERE?

No impact. The proposed project would not displace any housing. Business relocation within Airport property is part of the project; therefore, there would be no impact to the project.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. PUBLIC SERVICES. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

A) RESULT IN SUBSTANTIAL ADVERSE PHYSICAL IMPACTS ASSOCIATED WITH THE PROVISION OF NEW OR PHYSICALLY ALTERED GOVERNMENTAL FACILITIES, NEED FOR NEW OR PHYSICALLY ALTERED GOVERNMENTAL FACILITIES, THE CONSTRUCTION OF WHICH COULD CAUSE SIGNIFICANT ENVIRONMENTAL IMPACTS, IN ORDER TO MAINTAIN ACCEPTABLE SERVICE RATIOS, RESPONSE TIMES OR OTHER PERFORMANCE OBJECTIVES FOR ANY OF THE FOLLOWING PUBLIC SERVICES:

FIRE PROTECTION? *No impact*. The project involves minimal new facilities and primarily consists of runway and taxiway improvements, all on airport property. The relocated south electrical vault and relocated NAVAIDS are of a type already existing at ONT and thus would not result in new types of fire protection requirements. Therefore, project impacts related to fire protection will have no impact.

POLICE PROTECTION? *No Impact*. The project involves minimal new facilities and primarily consists of runway and taxiway improvements, all on airport property. The relocated south electrical vault and relocated NAVAIDS are of a type already existing at ONT and thus would not result in new types of police protection requirements. Therefore, project impacts related to police protection will have no impact.

SCHOOLS? *No Impact*. The proposed project will not result in a population increase or encroach upon any existing schools, so no impact will occur.

PARKS? *Less Than Significant Impact*. The proposed project will not result in a resident-population increase or increased burden on any existing parks. James Galanis Park, Veterans Memorial Park and Cucamonga-Guasti Regional Park (the parks nearest to ONT) are separated from the Airport by major roadways and Interstate 10 and would not be impacted by construction or implementation of the project. Bon View Park and Sam Alba Memorial Park are in the flight path of the Airport. Both of these parks are active recreation parks but are either closed or have limited use by the public during times when ONT may not be able to perform contra-flow operations (between 10 pm and 7 am) for construction purposes. Therefore, these parks would not experience physical or (indirect) noise impacts after the project is implemented.

OTHER PUBLIC FACILITIES? *Less Than Significant Impact*. The proposed project will not result in a population increase or encroach upon any other known public facilities, therefore a less than significant impact is expected to occur.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. RECREATION. Would the project:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities, or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒

A) WOULD THE PROJECT INCREASE THE USE OF EXISTING NEIGHBORHOOD AND REGIONAL PARKS OR OTHER RECREATIONAL FACILITIES SUCH THAT SUBSTANTIAL PHYSICAL DETERIORATION OF THE FACILITY WOULD OCCUR OR BE ACCELERATED?

No Impact. The proposed project will not result in a population increase or adversely affect any existing parks or recreational facilities, so no impact will occur.

B) DOES THE PROJECT INCLUDE RECREATIONAL FACILITIES OR REQUIRE THE CONSTRUCTION OR EXPANSION OF RECREATIONAL FACILITIES WHICH MIGHT HAVE AN ADVERSE PHYSICAL EFFECT ON THE ENVIRONMENT?

No Impact. The project does not entail the construction or expansion of recreational facilities, so no impact related to this issue will occur.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. TRANSPORTATION/TRAFFIC. Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☐	☒

A) CONFLICT WITH A PROGRAM, PLAN, ORDINANCE OR POLICY ADDRESSING THE CIRCULATION SYSTEM, INCLUDING TRANSIT, ROADWAY, BICYCLE AND PEDESTRIAN FACILITIES?

Less than Significant Impact. The proposed project would not change aviation activity levels and thereby does not increase surface traffic. Any surface traffic changes associated with construction of the proposed project would be minor and mitigated, if necessary, by a required traffic plan. Construction vehicles would use existing airport roadways and service roads, and/or adjacent airfield area for access regardless of the construction staging area used. Therefore, project impacts related to programs, plans, ordinances and polices related to transportation facilities will be less than significant.

B) CONFLICT OR BE INCONSISTENT WITH CEQA GUIDELINES § 15064.3, SUBDIVISION (B)?

Less than Significant Impact. The proposed project would not change aviation activity levels and thereby does not increase surface traffic. Any surface traffic changes associated with construction of the proposed project would be minor and mitigated, if necessary, by a required traffic plan. Construction vehicles would use existing airport roadways and service roads, and/or adjacent airfield area for access regardless of the construction staging area used. Options to place a temporary batch plant on-site would be explored during final design to minimize construction material delivery vehicles on adjacent roadways. However, a ready-mix batch plant is currently located approximately 1.5 miles west of the airport along Mission Blvd., which could easily accommodate project needs while not causing surface traffic congestion. Therefore, project impacts related to CEQA Guidelines § 15064.3, Subdivision (B) will be less than significant.

C) SUBSTANTIALLY INCREASE HAZARDS DUE TO A GEOMETRIC DESIGN FEATURE (E.G., SHARP CURVES OR DANGEROUS INTERSECTIONS) OR INCOMPATIBLE USES (E.G., FARM EQUIPMENT)?

Less Than Significant Impact. The proposed project would include the realignment of an on-airport vehicle service road beyond the end of Runway 26L. The on-airport road is located within the ROFA and would be realigned to remain clear of the ROFA. The realignment is minor and would be consistent with airport design standards. Therefore, design-related hazard impacts are less than significant.

D) RESULT IN INADEQUATE EMERGENCY ACCESS?

No impact. The project will provide emergency access per City Fire and Police Department standards. Therefore, the impacts to emergency access will be no impact.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. TRIBAL CULTURAL RESOURCES. Would the project:				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section5020.1(k), or	☐	☐	☒	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code §5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

A) WOULD THE PROJECT CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A TRIBAL CULTURAL RESOURCE, DEFINED IN PUBLIC RESOURCES CODE § 21074 AS EITHER A SITE, FEATURE, PLACE, CULTURAL LANDSCAPE THAT IS GEOGRAPHICALLY DEFINED IN TERMS OF THE SIZE AND SCOPE OF THE LANDSCAPE, SACRED PLACE, OR OBJECT WITH CULTURAL VALUE TO A CALIFORNIA NATIVE AMERICAN TRIBE, AND THAT IS:

I) LISTED OR ELIGIBLE FOR LISTING IN THE CALIFORNIA REGISTER OF HISTORICAL RESOURCES, OR IN A LOCAL REGISTER OF HISTORICAL RESOURCES AS DEFINED IN PUBLIC RESOURCES CODE SECTION 5020.1(K), OR

Less than significant impact. There are no historic or cultural resources within the Area of Potential Effect (APE), as illustrated on Figure 4. Therefore, impacts to tribal cultural resources listed or eligible for listing in any historic registers are expected to be less than significant.

II) A RESOURCE DETERMINED BY THE LEAD AGENCY, IN ITS DISCRETION AND SUPPORTED BY SUBSTANTIAL EVIDENCE, TO BE SIGNIFICANT PURSUANT TO CRITERIA SET FORTH IN SUBDIVISION (C) OF PUBLIC RESOURCES CODE § 5024.1. IN APPLYING THE CRITERIA SET FORTH IN SUBDIVISION (C) OF PUBLIC RESOURCE CODE §5024.1, THE LEAD AGENCY SHALL CONSIDER THE SIGNIFICANCE OF THE RESOURCE TO A CALIFORNIA NATIVE AMERICAN TRIBE.

Less than significant impact. The proposed project would take place on existing pavement and areas that have been previously disturbed for development of the airfield. As explained previously, the South Electrical Vault proposed location and associated utility connection of the project area is previously disturbed to depths of 8-12 feet. Thus, the project area is not expected to be considered significant to a California Native American tribe and impacts are expected to be less than significant. Refer to *Appendix A, Native American Heritage Commission f*or correspondence from the NAHC that the Sacred Lands File Search returned negative. Additional coordination with Native American tribes will be conducted as part of a Supplemental EIR process.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

A) REQUIRE OR RESULT IN THE RELOCATION OR CONSTRUCTION OF NEW OR EXPANDED WATER, WASTEWATER TREATMENT OR STORM WATER DRAINAGE, ELECTRIC POWER, NATURAL GAS, OR TELECOMMUNICATIONS FACILITIES, THE CONSTRUCTION OR RELOCATION OF WHICH COULD CAUSE SIGNIFICANT ENVIRONMENTAL EFFECTS?

Less Than Significant Impact. Operations-related energy demands would include temporary additional energy needs for a short period during the relocation of the electrical vault and taxiway lighting, however once implemented the lights will be more energy efficient. The project would not require or result in the relocation or construction of new or expanded wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities as the improvements would not require additional utilities than what is already needed for airport operations. Therefore, the impacts on these utilities and service systems will be less than significant.

B) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less Than Significant Impact. The project would not require additional water supplies than what is already needed for airport operations and current water supply is sufficient during normal, dry and

multiple dry years. Therefore impacts due to sufficient water supply availability will be less than significant.

C) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less Than Significant Impact. Wastewater treatment is provided by the Inland Empire Utilities Agency, which has adequate capacity at its Regional Water Recycling Plant No. 1 on Philadelphia Avenue. Therefore, the impacts of the project on wastewater capacity will be less than significant.

D) GENERATE SOLID WASTE IN EXCESS OF STATE OR LOCAL STANDARDS, OR IN EXCESS OF THE CAPACITY OF LOCAL INFRASTRUCTURE, OR OTHERWISE IMPAIR THE ATTAINMENT OF SOLID WASTE REDUCTION GOALS?

Less Than Significant Impact. The project improvements include demolition of existing runway and taxiway pavements which would generate solid waste. All construction debris created by the proposed projects will be taken from the project area and disposed of consistent with local regulations. Per California Green Building Standards Code (CALGreen) and the City Municipal Ordinance (OMC) Sec. 6-3.602, a Construction & Demolition Recycling Plan and follow-up Summary Report would be required for the proposed project. CALGreen requires diversion of at least 50 percent of the waste produced by a project, and OMC Sec. 6-3.602 requires all construction and qualifying renovation and demolition projects in the City to divert at least 65 percent of all generated waste materials. Materials with recycled value, such as concrete and asphalt, would be crushed and reused as base and fill material. Once operational, the project would not generate additional solid waste. Therefore, the impacts of the project on solid waste reduction goals would be less than significant.

E) COMPLY WITH FEDERAL, STATE, AND LOCAL MANAGEMENT AND REDUCTION STATUTES AND REGULATIONS RELATED TO SOLID WASTE?

Less Than Significant Impact. Construction of the proposed project would produce solid waste. However, all construction debris created by the proposed project would be taken from the project area and disposed of consistent with local regulations, as detailed under (D) above. Therefore, the impacts of the project related to regulations related to solid waste would be less than significant.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

A) SUBSTANTIALLY IMPAIR AN ADOPTED EMERGENCY RESPONSE PLAN OR EMERGENCY EVACUATION PLAN?

No impact. The project would not impair any emergency response plans or emergency evacuation plans. Nor would the project change or limit access to or from the airport or emergency services. Therefore the project would have no impact on adopted emergency response or emergency evacuation plans.

B) DUE TO SLOPE, PREVAILING WINDS, AND OTHER FACTORS, EXACERBATE WILDFIRE RISKS, AND THEREBY EXPOSE PROJECT OCCUPANTS TO POLLUTANT CONCENTRATIONS FROM A WILDFIRE OR THE UNCONTROLLED SPREAD OF A WILDFIRE?

No impact. The project area is located within a developed airport and surrounded by airport uses and urbanized areas. There are no fire hazard areas containing flammable brush or grasses on the project site and the airport has minimal slope. Furthermore, ONT is not located in a California Fire Hazard Severity Zone (FHSZ), which designates zones (based on factors such as fuel, slope, and fire weather) with varying degrees of fire hazard (i.e., moderate, high, and very high). Therefore, the project would no impact on the uncontrolled spread of a wildfire.

C) REQUIRE THE INSTALLATION OR MAINTENANCE OF ASSOCIATED INFRASTRUCTURE (SUCH AS ROADS, FUEL BREAKS, EMERGENCY WATER SOURCES, POWER LINES OR OTHER UTILITIES) THAT MAY EXACERBATE FIRE RISK OR THAT MAY RESULT IN TEMPORARY OR ONGOING IMPACTS TO THE ENVIRONMENT?

No impact. The project includes runway and taxiway rehabilitation and associated airfield improvements such as the relocation of navigational aids. The project includes the relocation of an electrical vault, however this is not a new fire risk. The existing south electrical vault was built in 1980 and does not meet the latest building code (Ventilation) and Air Quality Management District (AQMD) requirements. The new vault will comply with all permit requirements. Therefore, the project would result in no impact on infrastructure that could exacerbate fire risk.

D) EXPOSE PEOPLE OR STRUCTURES TO SIGNIFICANT RISKS, INCLUDING DOWNSLOPE OR DOWNSTREAM FLOODING OR LANDSLIDES, AS A RESULT OF RUNOFF, POST-FIRE SLOPE INSTABILITY, OR DRAINAGE CHANGES?

No impact. The topography of the developed site is generally flat with no slopes in the project area exceeding 15%. The Jurupa mountains are located approximately five miles southeast of the site, with relatively flat land in between. Given this separation, no impact will occur.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XXI. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wild-life population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of rare or endangered plants or animals, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☒	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

A) DOES THE PROJECT HAVE THE POTENTIAL TO DEGRADE THE QUALITY OF THE ENVIRONMENT, SUBSTANTIALLY REDUCE THE HABITAT OF A FISH OR WILDLIFE SPECIES, CAUSE A FISH OR WILDLIFE POPULATION TO DROP BELOW SELF-SUSTAINING LEVELS, THREATEN TO ELIMINATE A PLANT OR ANIMAL COMMUNITY, REDUCE THE NUMBER OR RESTRICT THE RANGE OF A RARE OR ENDANGERED PLANT OR ANIMAL OR ELIMINATE IMPORTANT EXAMPLES OF THE MAJOR PERIODS OF CALIFORNIA HISTORY OR PREHISTORY?

Less than Significant with Mitigation Incorporated. Based upon the above analysis, the project has limited potential to degrade the quality of the environment. Through implementation of mitigation measures BIO-1, impacts to biological resources identified within the project limits will be reduced to below a level of significance. By adhering to City design standards and policies, the project will ensure that the potential to degrade the environment will be minimized.

B) DOES THE PROJECT HAVE IMPACTS THAT ARE INDIVIDUALLY LIMITED, BUT CUMULATIVELY CONSIDERABLE? ("CUMULATIVELY CONSIDERABLE" MEANS THAT THE INCREMENTAL EFFECTS OF A

PROJECT ARE CONSIDERABLE WHEN VIEWED IN CONNECTION WITH THE EFFECTS OF PAST PROJECTS, THE EFFECTS OF OTHER CURRENT PROJECTS, AND THE EFFECTS OF PROBABLE FUTURE PROJECTS.)

Less Than Significant Impact. The analyses of air and noise are inherently cumulative. The balance of environmental topics is addressed in the City of Ontario General Plan, which accommodates the cumulative development of other sites in the City. Impacts are less than significant.

C) DOES THE PROJECT HAVE ENVIRONMENTAL EFFECTS THAT WILL CAUSE SUBSTANTIAL ADVERSE EFFECTS ON HUMAN BEINGS, EITHER DIRECTLY OR INDIRECTLY?

Potentially Significant Impact. Impacts to human beings shall be mitigated after incorporation of the mitigation measures found in the Hydrology section (HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6). However, during runway closure periods in 2023, 2024 and 2025, all operations would need to occur on a single runway which may prevent the use of contra-flow operations at nighttime which is used as a noise mitigation strategy to minimize noise over residential areas at night. As discussed in XIII, Noise (A), if contra-flow cannot be undertaken by ATC when operating on one runway, there is potential for temporary increases in noise exposure that could be substantial to the west of the Airport during nighttime. Noise analysis to determine the level of temporary impacts will be undertaken as part of a Supplemental EIR.

REFERENCES:

California Air Resources Board (CARB), Ambient Air Quality Standards Designation Tool, https://ww2.arb.ca.gov/aaqs-designation-tool, zip code 91761 (accessed 4/6/21).

California Department of Conservation, Mines and Mineral Resources, Department of Conservation Map Server (ca.gov) (accessed 4/5/21).

California Department of Forestry and Fire Protection, Fire and Resource Assessment Program (FRAP), https://frap.fire.ca.gov/ (accessed 4/5/21).

California Department of Conservation, California Geological Survey, Earthquake Zones of Required Investigation, https://maps.conservation.ca.gov/cgs/EQZApp/app/ (accessed 4/3/21).

City of Los Angeles Department of Airports, "Ontario International Airport Final Environmental Impact Report for Terminals, Other Facilities and Operations to Support 12 Million Annual Passengers," November 1991. Available for review at OIAA Offices by appointment.

City of Ontario, Community Climate Action Plan, November 2014, https://www.ontarioca.gov/sites/default/files/Ontario-Files/Planning/Applications/Community%20Climate%20Action%20Plan.pdf (accessed 4/7/21).

City of Ontario, Official Land Use Plan Map, January 27, 2010. https://www.ontarioplan.org/wp-content/uploads/sites/4/2021/02/TOPLUP_Map24x3610_6._20210212.pdf, (accessed 4/2/21).

Inland Empire Utilities Agency, https://ieua-gis.maps.arcgis.com/apps/StorytellingTextLegend/index.html?appid=94ffa569367c4d4eb98f8436f5b53125 (accessed 4/3/21).

Los Angeles World Airports, Pacific Gateway Cargo Center at Ontario International Airport Final Environmental Impact Report, June 2007.

South Coast Air Quality Management District, "Rule 402, Nuisance," 1976, http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-402.pdf (accessed 4/3/21).

Uniform Building Code, Structural Engineering Design Provisions, vol. 2, 1994. https://digitalassets.lib.berkeley.edu/ubc/UBC_1994_v2.pdf, p. 66 (accessed 4/5/21).

U.S. Department of Agriculture National Resource Conservation Service, Web Soil Survey (accessed 4/7/21).

U.S. Environmental Protection Agency, Enforcement and Compliance History Online, https://echo.epa.gov/ (accessed 3/3/21).

U.S. Environmental Protection Agency, Envirofacts, https://enviro.epa.gov/ (accessed 3/3/21).

U.S. Environmental Protection Agency, MyEnvironment, https://www3.epa.gov/myem/envmap/find.html (accessed 3/3/21).

U.S. Environmental Protection Agency, Superfund Site Information, https://cumulis.epa.gov/supercpad/cursites/srchsites.cfm (accessed 3/3/21).

APPENDICES:

A Native American Tribal Coordination, March-April 2021.

B Farmlands, U.S. Department of Agriculture Web Soil Survey, April 7, 2021.

c Biological Resources, U.S. Fish and Wildlife Service IPaC, January 14, 2021 and *2019/2020 Non-breeding Burrowing Owl Survey Report for Potential Development of Ontario International Airport's Parcel Study*, Helix Environmental Planning, February 11, 2020.

D Water Resources*, Jurisdictional Delineation Letter Report for the Proposed Taxiway Improvements and South Electrical Vault Relocation Project at Ontario International Airport,* Helix Environmental Planning, February 16, 2021 and FEMA Floodplain Maps.

Appendix B

NOP Comments

STATE OF CALIFORNIA Gavin Newsom, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
Russell Attebery
Karuk

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[Vacant]

COMMISSIONER
[Vacant]

COMMISSIONER
[Vacant]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

June 30, 2021

Nicole Walker
Ontario International Airport Authority
1923 East Avion Street
Ontario, CA 91761

Re: 2021060531, Rehabilitation of Runway 8R-26L and Associated Airfield Improvements Project, San Bernardino County

Dear Ms. Walker:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.

b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

cc: State Clearinghouse

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA E-MAIL: July 13, 2021

nwalker@flyontario.com
Nicole Walker, Environmental Planning Manager
Ontario International Airport Authority
1923 East Avion Street
Ontario, California 91761

Notice of Preparation of a Draft Focused Supplemental Environmental Impact Report for the Rehabilitation of Runway 8R-26L and Associated Airfield Improvements (Proposed Project)

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to comment on the above-mentioned document. Our comments are recommendations on the analysis of potential air quality impacts from the Proposed Project that should be included in the Draft Focused Supplemental Environmental Impact Report (EIR). Please send a copy of the Draft Focused Supplemental EIR upon its completion and public release directly to South Coast AQMD as copies of the Draft Focused Supplemental EIR submitted to the State Clearinghouse are not forwarded. **In addition, please send all appendices and technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all emission calculation spreadsheets, and air quality modeling and health risk assessment input and output files (not PDF files). Any delays in providing all supporting documentation for our review will require additional review time beyond the end of the comment period.**

CEQA Air Quality Analysis

Staff recommends that the Lead Agency use South Coast AQMD's CEQA Air Quality Handbook and website[1] as guidance when preparing the air quality and greenhouse gas analyses. It is also recommended that the Lead Agency use the CalEEMod[2] land use emissions software, which can estimate pollutant emissions from typical land use development and is the only software model maintained by the California Air Pollution Control Officers Association.

South Coast AQMD has developed both regional and localized significance thresholds. South Coast AQMD staff recommends that the Lead Agency quantify criteria pollutant emissions and compare the emissions to South Coast AQMD's CEQA regional pollutant emissions significance thresholds[3] and localized significance thresholds (LSTs)[4] to determine the Proposed Project's air quality impacts. The localized analysis can be conducted by either using the LST screening tables or performing dispersion modeling.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the Proposed Project and all air pollutant sources related to the Proposed Project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated.

[1] South Coast AQMD's CEQA Handbook and other resources for preparing air quality analyses can be found at: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook.
[2] CalEEMod is available free of charge at: www.caleemod.com.
[3] South Coast AQMD's CEQA regional pollutant emissions significance thresholds can be found at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.
[4] South Coast AQMD's guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips, and hauling trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers and air pollution control devices), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis. Furthermore, emissions from the overlapping construction and operational activities should be combined and compared to South Coast AQMD's regional air quality CEQA ***operational*** thresholds to determine the level of significance.

If the Proposed Project generates diesel emissions from long-term construction or attracts diesel-fueled vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment[5].

In the event that implementation of the Proposed Project requires a permit from South Coast AQMD, South Coast AQMD should be identified as a Responsible Agency for the Proposed Project in the Draft Focused Supplemental EIR. The assumptions in the air quality analysis in the Focused Supplemental EIR will be the basis for evaluating the permit under CEQA and imposing permit conditions and limits. Questions on permits should be directed to South Coast AQMD's Engineering and Permitting staff at (909) 396-3385.

Mitigation Measures

In the event that the Proposed Project results in significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized to minimize these impacts. Any impacts resulting from mitigation measures must also be analyzed. Several resources to assist the Lead Agency with identifying potential mitigation measures for the Proposed Project include South Coast AQMD's CEQA Air Quality Handbook[1], South Coast AQMD's Mitigation Monitoring and Reporting Plan for the 2016 Air Quality Management Plan[6], and Southern California Association of Government's Mitigation Monitoring and Reporting Plan for the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy[7].

South Coast AQMD staff is available to work with the Lead Agency to ensure that air quality, greenhouse gas, and health risk impacts from the Proposed Project are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at lsun@aqmd.gov.

Sincerely,

Lijin Sun

Lijin Sun, J.D.
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

LS
SBC210617-09
Control Number

[5] South Coast AQMD's guidance for performing a mobile source health risk assessment can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis.
[6] South Coast AQMD's 2016 Air Quality Management Plan can be found at: http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-mar3-035.pdf (starting on page 86).
[7] Southern California Association of Governments' 2020-2045 RTP/SCS can be found at: https://www.connectsocal.org/Documents/PEIR/certified/Exhibit-A_ConnectSoCal_PEIR.pdf.

Main Office - 825 East Third Street, San Bernardino, CA 92415-0835 | Phone: 909.387.7910 Fax: 909.387.7911
www.SBCounty.gov

SAN BERNARDINO COUNTY

Department of Public Works
- Flood Control
- Operations
- Solid Waste Management
- Special Districts
- Surveyor
- Transportation

Brendon Biggs, M.S., P.E.
Director

David Doublet, M.S., P.E.
Assistant Director

July 13, 2021 File: 10(ENV)-4.01

Ontario International Airport Authority
Attn: Nicole Walker, Environmental Planning Manager
1923 East Avion Street
Ontario, CA 91761
nwalker@flyontario.com

Transmitted Via Email

RE: CEQA –NOTICE OF PREPARATION OF A SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT FOR THE REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED AIRFIELD IMPROVEMENTS PROJECT

Dear Ms. Walker:

Thank you for allowing the San Bernardino County Department of Public Works the opportunity to comment on the above-referenced project. **We received this request on June 21, 2021** and pursuant to our review, we have the following comments:

Flood Control Planning & Water Resources Division (Michael Fam, Chief, 909-387-8120):

1. We are aware there may be storm drains in and around the site that may be affected by the proposed Project. When planning for or altering existing or future storm drains, be advised that the Project is subject to the City of Ontario MPD, dated March 2012. It is to be used as a guideline for drainage in the area and is available through the City of Ontario. Any revision to the drainage should be reviewed and approved by the City or Jurisdictional Agency. Should construction of new, or alterations to existing storm drains be necessary as part of the Proposed Project, their impacts and any required mitigation should be discussed within the Supplemental EIR before the document is adopted by the Lead Agency.

2. According to the most recent FEMA Flood Insurance Rate Map (FIRM), Panels 06071C8617J & 8636J (dated February 18, 2015); and 8637J (dated September 2, 2016), the Project lies within Zones A, X-shaded (500-yr. floodplain), and X-unshaded. Impacts associated with the project's occurrence in the Zone A area and mitigation, should be discussed within the Supplemental EIR prior to adoption by the Lead Agency.

BOARD OF SUPERVISORS
Col. Paul Cook (Ret.) First District | Janice Rutherford Second District | Dawn Rowe Vice Chair, Third District | Curt Hagman Chairman, Fourth District | Joe Baca, Jr. Fifth District
Leonard X. Hernandez Chief Executive Officer

Permits/Operations Support Division (Sameh Basta, Chief, 909-387-7995):

1. The proposed Project area incorporates two San Bernardino County Flood Control District (SBCFCD} facilities and right-of way, Cucamonga Channel, CE (1-301-lF) and West Cucamonga Channel (1-201-lG). Any encroachments including, but not limited to access for grading, fence removal and installation, side drain connections on the District's right-of-way or facilities will require a permit from the SBCFCD prior to start of construction. Also, SBCFCD facilities built by the Army Corps of Engineers (ACOE) will require the SBCFCD to obtain approval (408- Permit) from the ACOE. The necessity for any, or all of these permits, and any impacts associated with them, should be addressed in the Supplemental EIR prior to adoption and certification.

We respectfully request to be included on the circulation list for all project notices, public reviews, or public hearings. In closing, I would like to thank you again for allowing the San Bernardino County Department of Public Works the opportunity to comment on the above-referenced project. Should you have any questions or need additional clarification, please contact the individuals who provided the specific comment, as listed above.

Sincerely,

Michael Perry

MICHAEL R. PERRY
Supervising Planner
Environmental Management

MP:AJ:nl

Carol A. Coy
P.O. Box 672
Walnut, CA 91788-0672
carolcoy.egret@gmail.com

July 17, 2021

Nicole Walker, Environmental Planning Manager
Ontario International Airport Authority
1923 East Avion Street
Ontario, CA 91761

By Email to: nwalker@flyontario.com

Subject: Notice of Preparation Comments
Rehabilitation of Runway 8R-26L and Associated Airfield Improvements
Ontario International Airport

Dear Ms. Walker:

I concur with the Ontario International Airport Authority's (OIAA) conclusion noted in the referenced Notice of Preparation (NOP) and Initial Study that the proposed project as described may have significant impacts in the Biological Resource category, notably on the Burrowing Owl, a California State Species of Special Concern, thus requiring, at the least, preparation of a Supplemental Environmental Impact Report. Minimizing and mitigating the impacts on both Burrowing Owl habitat modification and disturbance of burrows, as well as disruption to the activities of individual birds, constitute important issues that need thorough study and consideration in the Environmental Impact Report materials to be prepared. I urge careful attention to the onsite conservation and protection of this important species.

As Burrowing Owl activity is dynamic in time, conduct of current surveys/population inventories should be undertaken both as part of EIR development, as well as becoming an important preconstruction requirement. Ongoing observation and documentation of Burrowing Owl activity during construction (by a qualified expert) that triggers protective actions as owls are encountered, and scheduling the timing of construction activities outside of breeding season, should be considered as part of developing an onsite mitigation and management plan that embodies good stewardship of this special species.

Please add me to the interest list for any further CEQA-related notices on this project. As a Biologist, I have devoted my thirty-five year career in environmental regulation and protection and have been personally observing and interested in the Airport's offsite Burrowing Owls the past five years. In fact, as part of the Pomona Valley Audubon Society, Burrowing Owl Conservation Committee, I first wrote Mark Thorpe, OIAA CEO, on March 8, 2019, noting my concern regarding "Airport Project Impact on Burrowing Owls" and pointed out "The ambitious Pacific Gateway Cargo Center construction project documentation does not seem to contemplate any biological impacts. We could not locate any construction or rehabilitation project documents that included any anticipated environmental impacts. One would expect from their offsite breeding presence… that Burrowing Owls are present in airport field areas…". Consequently, I am pleased to see OIAA now recognize that major construction projects and the rehabilitation and realignment of runways and taxiways can have a significant impact on this Species of Special Concern. I urge OIA to develop a protective onsite management plan for this species as several other airports have already done.

Thank you for the opportunity to comment on this NOP.

Sincerely,

Carol Coy

cc: California Department of Fish and Wildlife
Pomona Valley Audubon Society

ROBIN IKEDA

625 East I Street, Ontario, CA 91764l (909) 773-2541 l robin.ikeda@gmail.com

15 July 2021

Nicole Walker
Environmental Planning Manager
Ontario International Airport Authority
1923 East Avion Street
Ontario, CA 91761

Dear Nicole Walker:

I am writing to comment on the Ontario International Airport Authority's (OIAA's) 17 June 2021 Notice of Preparation of a Draft Focused Supplemental Environmental Impact Report (DFSEIR) on the Ontario International Airport Rehabilitation of Runway 8R-26 Land and Associated Airfield Improvements (Runway Project).

By way of introduction, I am a recently retired professor of biology; having served for twenty-one years at Chaffey College, and seventeen years at Ontario and Damien High Schools. I hold a master's degree in biology and have extensive experience in field biology, including in surveying and monitoring vegetation and animals. Eight years of service on the North Etiwanda Preserve (NEP) Advisory Board acquainted me more fully with regulatory frameworks around land use, and I have found the intersections of these experiences to be richly productive. For example, field work performed by my Chaffey College students was routinely shared with NEP managers over the years; and Chaffey College students have been highly involved in monitoring burrowing owls in the area. I began working with burrowing owls in 2017; and have more recently worked with the Pomona Valley Audubon Society's (PVAS's) burrowing owl monitoring and conservation project. It is in the aforementioned spirit of community advocacy that I write to you with the following recommendations concerning protection of the burrowing owls on the OIAA property.

Burrowing owls are listed as a California Species of Special Concern; and are protected under the U.S. Migratory Bird Species Treaty Act. Their numbers locally are in sharp decline, due largely to loss of habitat by development. Burrowing owls are present in the Runway Project area.[1] In short, I recommend that the OIAA engage in comprehensive planning to explore the viability of responsible management of burrowing owls and other sensitive species on its properties, both

[1] Ontario International Airport Authority. May 2021. Initial Study of the Ontario International Airport Rehabilitation of Runway 8R-26 Land and Associated Airfield Improvements [4.0 Environmental Impacts; pp. 24-26, Biological Resources. Appendix C, Cooley and Singleton report of 11 Feb 2020]

within and beyond the Runway Project area (e.g., the "Boot Property")[2]. Planning tools, such as an OIAA Management Plan (if not already in place) and a full EIR for the Runway Project, (rather than a DFSEIR) are recommended to provide the scientific, planning, and policy framework required to identify and avoid (or meaningfully mitigate for) potential impacts to sensitive species from development; ideally preserving sensitive species in situ.

In the non-breeding surveys conducted for their 2021 Biological Report for the Initial Study of the Runway Project, Cooley and Singleton identify three active burrows in a study area including the runways and immediately adjacent fields.[3] The OIAA's Initial Study for the ranks the environmental impact of the Runway Project—through direct damage to sensitive species and impairment of wildlife movement—as "less than significant impact with mitigation incorporated." The mitigation outlined is strikingly general. First, breeding surveys are needed to assess the actual value of this site to the burrowing owls. Second, the site needs to be viewed relative to a larger area; both on the airport property and in the area within reasonable dispersal distance for the owls.[4] Without this information, it isn't possible to determine the best mitigation strategy for maintaining a healthy owl population on the site and in the region. Third, potential mitigation measures—and the conditions that would trigger them—need to be specified in detail. Because the details make the difference between success and failure of mitigation, the lack of detail here is particularly troublesome. For example:

- It is likely to be best to protect the owls in place during the project. Will that option be explored?
    - Experts agree that conservation of owls in place—especially when supported with comprehensive planning—is dramatically more successful.[5,6]
    - If so, how will they be protected and monitored?
- If not, how will owls be captured and removed? Where will they be relocated? How will they be protected and monitored? These are long and detailed processes if done correctly.[7]

---

[2] Carstens D. 7 July 2021. Letter to Mr. Mark Thorpe: Objection to Pursuit of Development Requiring Removal of Burrowing Owls. Chatten-Brown, Carstens & Minteer LLP. Figure 2, page 8

[3] Cooley E and L Singleton. 11 February 2020. Letter to Mr. Keith Owens: 2019\2020 non-breeding Burrowing Owl Survey Report for Potential Development of Ontario International Airport's Parcel Study. Helix Environmental Planning, Inc.

[4] Rosenberg DK, LA Trulio, D Catlin, D Chromczack, JA Gervais, N Ronan, KA Haley. 2007. The ecology of the Burrowing Owl in California. Unpubl. report to Bureau of Land Management.

[5] "In summary, burrowing owl populations within southwestern San Bernardino County and southwestern California as a whole are in steep decline and on the verge of extirpation…, because owls are rarely, if ever, preserved on site." Kidd J. undated. The Burrowing Owls at Ontario International Airport (OIA) Biology, Status, Regulatory Setting, and Mitigation Options report (Biological Report). Helix Environmental Inc. [in Appendix C of OIAA, 2021 Initial Study]

[6] "The primary desirability of in situ preservation is underscored by Colleen Wisinski, Conservation Program Specialist in Recovery Ecology at the San Diego Zoo Wildlife Alliance and field team leader for their burrowing owl program. In an email communication with PVAS, she stated:"

> …setting aside the land the owls already occupy is more efficacious (and probably cheaper in the long run)… I point this out only to be clear that using active translocation should be planned in the context of several years of planning, funding, and commitment in order to be successful. The way that mitigation translocations have routinely been carried out was with a much shorter time horizon (e.g., 1 month of monitoring after release—essentially getting the animals out of immediate danger). The value of this approach as a long-term conservation tool is dubious. Carstens D, 7 July 2021

[7] Kidd J, undated, pp 8-10

- If owls must be removed, the goal of preserving remaining burrowing owls in place will likely necessitate their return to the site. Is that option being explored?

How will the public know that the best science and policy around protecting burrowing owls from local extinction is being brought to bear in this project? Indeed, the aforementioned questions and concerns about adequate, appropriate, and effective mitigation for impacts on burrowing owls and their habitat on the OIAA property beg the larger question about whether OIAA's comprehensive planning processes are current. If, as Doug Carstens suggested in a recent letter to OIAA, there is no Master Plan in place,[8] there is a terrific opportunity to create the kind of comprehensive planning that could make meaningful on-site conservation of burrowing owls (and possibly other sensitive species) possible. Carstens says it well:

> Master Plans require review under applicable environmental laws which provides a perfect context for OIA to address the significant biological resources present on its properties, identify potential impacts to them from future development, and devise current, robust, evidence-based strategies (e.g., prioritization of in situ preservation) to avoid and/or mitigate those impacts.[9]

Additionally, the NOP proposes preparation of a DFSEIR in support of the existing EIR from the 1991 Final EIR for Terminals, Other Facilities and Operations to Support 12 Million Annual Passengers. To my eye, the Runway Project calls for a full Environmental Impact Report (EIR), rather than a narrow and limited Focused Supplemental EIR (FSEIR). The Inland Empire has changed dramatically in the twenty years since the last study of the airport and its impacts was made. Burrowing owls, for example, have undergone precipitous decline due to habitat loss during that period.[10] I strongly recommend that the OIAA undertake a full EIR. The effort is likely to dovetail nicely with the development of a Management Plan, the support of which also requires environmental review to identify potential impacts, and plan comprehensively for the avoidance or reduction of impacts of future development.

Indeed, the need for further analysis of the best science and policy guiding the feasibility of in situ preservation of burrowing owls near airports is evidenced by Kidd's recommendation in his undated report[11] that owls should not be preserved on-site. Two key pillars of Kidd's rationale are: 1) FAA and other regulations contraindicating the preservation of owls near airports; 2) the low numbers of owls in the area, and the high fragmentation of their habitat. Kidd's assertions about the inadvisability of preserving burrowing owls within 10,000 feet of a runway don't comport with practices at other California airports (e.g., Norman Y. Mineta San José International Airport and Lemoore Naval Air Station), per their management plans. It is evidently possible to manage sensitive species while complying with FAA

[8] "… we are unaware of any final airport Master Plan approved for Ontario International Airport, or necessary approvals by an airport land use commission." Carstens D, 7 July 2021

[9] Carstens D, 7 July 2021

[10] Kidd J, undated

[11] Ibid

standards and protecting safe air travel.[12] Carstens summarized: “Like other airports, OIA can achieve its safety and air traffic needs while sustaining regionally significant wildlife populations.”

Further, while burrowing owls have suffered steep declines and habitat fragmentation, they are more abundant in the area than Kidd has reported,[13] and evidently disperse further (between habitat fragments) than he has projected.[14] As central as they are to decision-making about conservation strategies for a species already in precipitous decline in the region, due to habitat loss, I assert that these questions around the viability and safety of preserving burrowing owls in situ on the airport property should be resolved before the OIAA moves forward with the Runway Project in the apparent absence of an adequately-informed plan for managing impacts to burrowing owls.

In summary, I recommend that the OIAA engage in comprehensive planning to explore the viability of responsible management of burrowing owls and other sensitive species on its properties, both within and beyond the Runway Project area. Planning tools, such as an OIAA Management Plan and a full EIR for the Runway Project, are recommended to provide the scientific, planning and policy framework required to identify, avoid, or meaningfully mitigate for, potential impacts to sensitive species from development; and ideally preserve burrowing owls in situ.

Sincerely,



Robin Ikeda
Retired Biology Professor, Chaffey College

[12] Carstens D, 7 July 2021

[13] The PVAS has been observing owls at several sites not shown on Kidd’s map. I have observed burrowing owls in the 80 acres of undeveloped fields of the Chino campus of Chaffey College (on College Park Ave.) since 2017. I have counted as many as 38 owls in a single visit. Observations from 2017-2019 have been submitted to the CNDDB.

[14] Rosenberg et al., 2007

DOCUMENTS CITED

Carstens D. 7 July 2021. Letter to Mr. Mark Thorpe: Objection to Pursuit of Development Requiring Removal of Burrowing Owls. Chatten-Brown, Carstens & Minteer LLP

Cooley E and L Singleton. 11 February 2020. Letter to Mr. Keith Owens: 2019\2020 non-breeding Burrowing Owl Survey Report for Potential Development of Ontario International Airport's Parcel Study. Helix Environmental Planning, Inc.

Kidd J. undated. The Burrowing Owls at Ontario International Airport (OIA) Biology, Status, Regulatory Setting, and Mitigation Options report (Biological Report). Helix Environmental Inc. [in Appendix C of OIAA, 2021 Initial Study]

Ontario International Airport Authority. May 2021. Initial Study of the Ontario International Airport Rehabilitation of Runway 8R-26 Land and Associated Airfield Improvements [4.0 Environmental Impacts; pp. 24-26, Biological Resources. Appendix C, Cooley and Singleton report of 11 Feb 2020]

Ontario International Airport Authority. 17 June 2021. Notice of Preparation of a Draft Focused Supplemental Environmental Impact Report on the Ontario International Airport Rehabilitation of Runway 8R-26 Land and Associated Airfield Improvements

Rosenberg DK, LA Trulio, D Catlin, D Chromczack, JA Gervais, N Ronan, KA Haley. 2007. The ecology of the Burrowing Owl in California. Unpubl. report to Bureau of Land Management.

APPENDIX

Carstens D. 7 July 2021. Letter to Mr. Mark Thorpe: Objection to Pursuit of Development Requiring Removal of Burrowing Owls. Chatten-Brown, Carstens & Minteer LLP

CBCM

Chatten-Brown, Carstens & Minteer LLP

Hermosa Beach Office
Phone: (310) 798-2400

San Diego Office
Phone: (858) 999-0070
Phone: (619) 940-4522

2200 Pacific Coast Highway, Suite 318
Hermosa Beach, CA 90254
www.cbcearthlaw.com

Douglas P. Carstens
Email Address:
dpc@cbcearthlaw.com
Direct Dial:
310-798-2400 Ext. 1

July 7, 2021

Mr. Mark Thorpe,
CEO, Ontario International Airport Authority
1923 East Avion Street
Ontario, CA 91761

Re: Objection to Pursuit of Development Requiring Removal of Burrowing Owls

Dear Mr. Thorpe,

On behalf of Pomona Valley Audubon Society, we write to object to further consideration of development, sale, or lease of property by the Ontario International Airport Authority (OIAA or Authority) that might require removal of Burrowing Owls without undertaking adequate compliance with the California Environmental Quality Act (CEQA). CEQA compliance requires the Authority to analyze alternatives to Burrowing Owl removal. The Authority should not encourage businesses to invest in leases and development without developing a framework that allows the owls to continue to nest and thrive on the site. An adequate framework requires the Authority to finally prepare a proper Master Plan for the airport and address issues including biological resource issues as part of that planning process.

A. The Burrowing Owl is a Protected Species, Which May Not be Removed Without Adequate Environmental Review Under CEQA.

Burrowing Owls (*Athene cunicularia*) are a State Species of Special Concern. The species has undergone substantial decline in the vicinity of the Ontario International Airport (OIA), across southwestern California, and statewide. The species is sufficiently rare, and its range had collapsed to such a degree by 2003, that several local Audubon Society chapters and others petitioned the State of California to list it as an endangered species. In the intervening 18 years since the Fish and Game Commission turned down the petition, the status of Burrowing Owl populations has only worsened, hastened by the rapid loss of habitat development. More protection of Burrowing Owls is warranted, not less.

Development of the area of OIA known as the "boot" ("Boot Property") would trigger the preparation of an environmental impact report (EIR) based on CEQA's standard Initial Study screening questions. Specifically, an EIR is required if the Authority can conceivably answer affirmatively:

> Would the project: a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?[1]

As Burrowing Owls are present on the CDFW sensitive species list, loss of the remaining population on the Boot Property would constitute a potentially significant impact under CEQA, triggering the requirement to prepare an EIR.

The Burrowing Owl population on the Boot Property is the largest remaining in the region, to the extent that the Authority's own consultants argue that no other population in this portion of San Bernardino County is viable (Kidd Biological, undated).[2] The loss of this population, which would be inevitable if the site is developed, would reduce the range of the species significantly and represent a significant adverse impact under CEQA.

The Burrowing Owls at Ontario International Airport (OIA) Biology, Status, Regulatory Setting, and Mitigation Options report (Biological Report) prepared for Helix Environmental by Kidd Biological Inc. falsely states, "With the failed listing attempt…. Little to no mitigation is required for destruction/development of occupied habitat." The Biological Report is completely wrong on this point of law.

---

[1] https://resources.ca.gov/CNRALegacyFiles/ceqa/docs/ab52/final-approved-appendix-G.pdf

[2] The Kidd Biological Report wrongly stated that there were no concentrations of owls nearby. To the contrary, a Pomona Valley Audubon Society project monitors four other Burrowing Owl nesting sites within 5 to 7 miles of the Ontario Airport. Together with the Ontario owls, these five sites are within dispersal range of each other, using the maximum dispersal range of 12.5 miles (for male adults) to 13.8 miles (for female adults) found in the Rosenberg et al. (2007) study. The presence of owl populations within dispersal range of the Airport indicates that there is a source of genetic diversity for the Ontario owls and they, in turn, serve the important role of increasing the viability of the other sites within their range.

On the contrary, CEQA protects California Species of Special Concern. (*Mejia v. City of Los Angeles* (2005) 130 Cal.App.4th 322, 337 [requiring preparation of an environmental impact report where substantial evidence existed to support a fair argument that Species of Special Concern would be adversely impacted by a proposed development project.]) As stated by the Court in *Mejia,* the Department of Fish and Game maintains lists of species of special concern on its website, stating, " 'Species of Special Concern' (SSC) status applies to animals not listed under the federal Endangered Species Act or the California Endangered Species Act, but which nonetheless 1) are declining at a rate that could result in listing, or 2) historically occurred in low numbers and known threats to their persistence currently exist." (<http://www.dfg.ca.gov/hcpb/species/ssc/ssc.shtml>.) (*Mejia, supra,* 130 Cal.App.4th 322, 337.) CEQA thus requires that a project that could have significant and adverse impacts to Species of Special Concern avoid or mitigate those impacts.

The Boot Property east of the airport is prime Burrowing Owl nesting habitat that supported six active burrows and at least 15 owl fledglings in the 2020 nesting season. Burrowing Owl are disappearing fast from the Ontario area and may be listed as an endangered species in the future.

The Biological Report recognizes that "conserving owls on site (in situ)" is "the most important mitigation option" (Biological Report, p. 6.) However, the report then asserts it is "rarely ever conducted since this is not required by the resource agencies." (Biological Report, p. 6.) Whether resource agencies require on site preservation or not, impacts and alternatives to burrowing owl removal must be fully analyzed in an environmental impact report. The primary desirability of in situ preservation is underscored by Colleen Wisinski, Conservation Program Specialist in Recovery Ecology at the San Diego Zoo Wildlife Alliance and field team leader for their burrowing owl program. In an email communication with PVAS, she stated:

> …setting aside the land the owls already occupy is more efficacious (and probably cheaper in the long run)….I point this out only to be clear that using active translocation should be planned in the context of several years of planning, funding, and commitment in order to be successful. The way that mitigation translocations have routinely been carried out was with a much shorter time horizon (e.g., 1 month of monitoring after release—essentially getting the animals out of immediate danger). The value of this approach as a long-term conservation tool is dubious….

The Biological Report falsely asserts, "The best approach for owl mitigation at and adjacent to OIAA property should involve active relocation." (Biological Report, p. 10.) Contrary to this statement, the best approach would be in situ preservation. If such in situ preservation is infeasible for identifiable reasons, the Authority must make a finding of

overriding considerations pursuant to Public Resources Code section 21081 before it approves any owl relocation or development of owl habitat.

B. The Airport Authority Must Conduct an Initial Study Before It Impermissibly Pre-Commits to Removal of Burrowing Owl, Including Leasing the "Boot Property," Before Conducting CEQA Review

Ontario International Airport (OIA) is preparing to lease the "Boot Property," located to the east of the runways and bounded by Airport Drive to the north, Jurupa Street to the south, Haven Avenue to the west, and Doubleday Avenue to the east. The Boot Property contains 24 parcels that amount to 240 acres within the boundary of the airport. We understand OIA has secured a real estate agent broker to locate a lessee. In doing so, OIA staff asserted that any future lease would be exempt from environmental review pursuant to CEQA Guidelines Section 15312. However, this exemption applies to *sales* of surplus properties, while the anticipated action is a *lease* and the property is not surplus[3]. The exemption is therefore inapplicable. Entering into a lease to develop OIA land is a discretionary action and would therefore be subject to CEQA review because the subsequent development is the inevitable and inseparable outcome of the agreement.

A lead agency may not commit to a definite course of action prior to conducting adequate environmental review pursuant to CEQA. CEQA further requires that environmental review occur before momentum becomes unstoppable and alternatives to a project become foreclosed. (*Save Tara v. City of West Hollywood* (2008) 45 Cal.4th 116.) Approval of the displacement of Burrowing Owls would be improper precommitment to a specific action prior to review or approval of an environmental impact report that analyzes future airport development patterns.

Here, OIAA has impermissibly set itself on a path of approving projects that require the removal of the Burrowing Owl. While it does not yet appear that the Authority has actually approved removal of any burrowing owls, the Authority has accepted the Biology Report that improperly incorporates the assumption that removal will be the best option (Biology Report, p. 10) and may be required for subsequent development.

Prior to approval of any further steps toward the development of areas occupied by the burrowing owl, the Authority must conduct an initial study to determine the potential impacts that will occur and consult with the California Department of Fish and Wildlife

[3] Disposal of surplus government property requires compliance with the Surplus Lands Act, which the Authority apparently has not contemplated. The Surplus Land Act includes requirements to first offer surplus land to relevant agencies for various purposes including open space preservation.

(CDFW) about those impacts before it prepares that study. As stated by the Court of Appeal:

> Our conclusion that a fair argument can be made that the project may have a significant impact on animal wildlife also compels the conclusion that the city was required to consult with the Department of Fish and Game, a trustee agency (Guidelines, § 15386), before conducting an initial study, and subsequently was required to notify the department of the city's intention to adopt a mitigated negative declaration. (Pub. Resources Code, § 21080.3, subd. (a); Guidelines, §§ 15063, subd. (g), 15072, subd. (a); *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1386–1388, 43 Cal.Rptr.2d 170.)

(*Mejia v. City of Los Angeles* (2005) 130 Cal.App.4th 322, 340.)

C. The Authority Must Undertake Proper Airport Planning to Identify and Avoid or Reduce Impacts of Potential Future Development.

Although there may have been initial attempts to start airport master planning in 2002 and 2007, we are unaware of any final airport master plan approved for Ontario International Airport, or necessary approvals by an airport land use commission. The Ontario Airport was transferred to local control under the Authority from the City of Los Angeles on November 1, 2016. Neither the Los Angeles World Airports (LAWA) nor the Authority has ever developed a Master Plan for the Ontario International Airport.

Proper airport planning requires that the Authority prepare a master plan approved by an airport land use commission or similar body. (Pub. Util. Code, § 21670.1.) We are aware of no such Master Plan nor any such approval by an airport land use commission. A Master Plan must be developed prior to any Authority authorization of development on airport property, and any Master Plan prepared must address biological resource impacts, including foreseeable impacts to Burrowing Owls. Rather than deferring proper analysis of this Species of Special Concern to a future point, we urge you to undertake a thorough analysis of potential impacts to Burrowing Owls immediately.

The Authority's approval of Boot Property sales or leases will be legally vulnerable in the absence of a properly prepared and adopted airport master plan and CEQA-compliant environmental review of the potential removal of Burrowing Owl.

The Authority's environmental consultants have advised that it is somehow impermissible for the airport to conserve and manage Burrowing Owls on its property or within 10,000 feet of the runway (Kidd Biological, undated). This histrionic claim is inconsistent with precedent at other airports in California.

The Authority should familiarize itself with the Burrowing Owl management program at the Norman Y. Mineta San José International Airport. San José International Airport is much larger with nearly double the number of annual passengers. Since 1997, the San José International Airport has implemented a Burrowing Owl Management Plan, under which 84 acres of the infield of the airport are managed for Burrowing Owls. As stated on the airport's website:

> The Burrowing Owl is one of the smallest and unique species of owls, growing to a height of approximately 9 inches, weighing about 4 oz., and living in underground burrows. We have a wildlife management program that actively manages the Western Burrowing Owls within the infield areas to ensure the ongoing safety of both the burrowing owls and aviation operations. The owls are banded at a young age, with a specific code that allows biologists to observe owls into adulthood.[4]

San José International Airport also constructs artificial burrows for Burrowing Owls, including in areas far closer to the airfield than the Boot Property is to the airfield at OIA. In fact, as approved mitigation for loss of burrows within the airfield, San José International Airport has constructed artificial burrows at a 2:1 ratio within its VOR area, *immediately adjacent to the airfield* (VHF Omnidirectional Radio; marked with a star on Figure 1). Conservation of Burrowing Owls in this location and these active measures to encourage nesting have been approved by California Department of Fish and Wildlife (2020).

In over 20 years of implementation, and nine years at the VOR site, active management of Burrowing Owls adjacent to the San José International Airport airfield has not resulted in the dire consequences from the Federal Aviation Administration (FAA) that OIA's environmental consults imagine (Kidd Biological Report, undated).

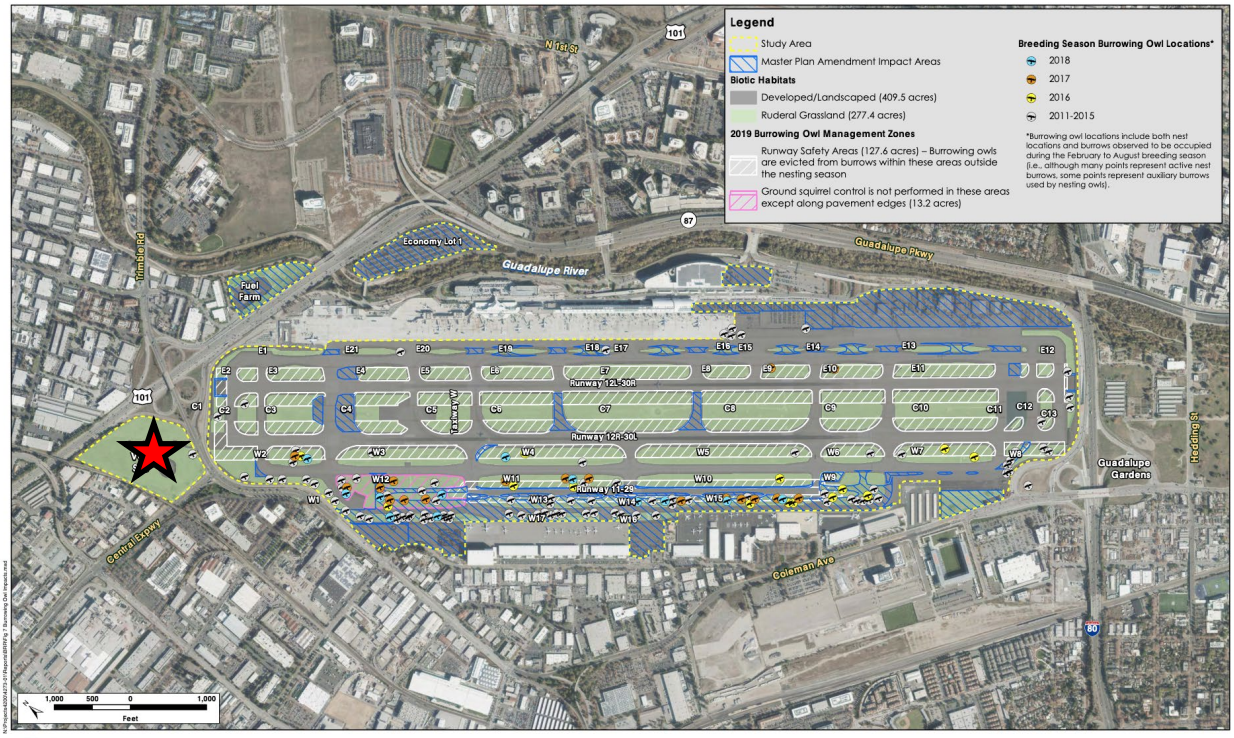
Management of rare and endangered species on airport property is simply part of being a responsible public agency. Many airports can and do balance the risks of the presence of sensitive species with FAA regulations ensuring air traffic safety. The San José International Airport management plan for Burrowing Owls is only one example. In the Central Valley, Lemoore Naval Air Station has a Burrowing Owl management plan that includes active management to promote the species adjacent to runways.[5] Silicon

[4] https://www.flysanjose.com/node/501

[5] https://www.birdpop.org/docs/pubs/Rosenberg_and_Gervais_2009_An_Updated_Management_Plan_For_BUOW _Population_Lemoore.pdf

Valley's Moffett Field discourages nesting on the airfield itself, but constructs artificial burrows on non-airfield areas at the facility.[6]

OIA needs a Master Plan that addresses all of its property and plans for future development. Preparation of such a plan is "strongly recommended" by FAA.[7] Master Plans require review under applicable environmental laws which provides a perfect context for OIA to address the significant biological resources present on its properties, identify potential impacts to them from future development, and devise current, robust, evidence-based strategies (e.g., prioritization of in situ preservation) to avoid and/or mitigate those impacts. Like other airports, OIA can achieve its safety and air traffic needs while sustaining regionally significant wildlife populations. At the very least, given that OIA has Burrowing Owls within airfield operations areas that may be impacted by future activities, it would be well advised to maintain the Boot Property as a potential mitigation area to offset airfield-related impacts, following the lead of San José International Airport's use of its VOR area for the same purpose. Such mitigation actions, and management to encourage Burrowing Owls has been a key environmental planning and mitigation element that has allowed San José International Airport's Master Plan iterations to withstand legal challenges.



[6] https://www.nasa.gov/sites/default/files/8_exhibit_b_1_2c_.pdf
[7] https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_150_5070-6B_with_chg_1&2.pdf

Figure 1. Norman Y. Mineta San José International Airport, showing location of Burrowing Owls (small circular icons) and area where artificial burrows are constructed (red star).

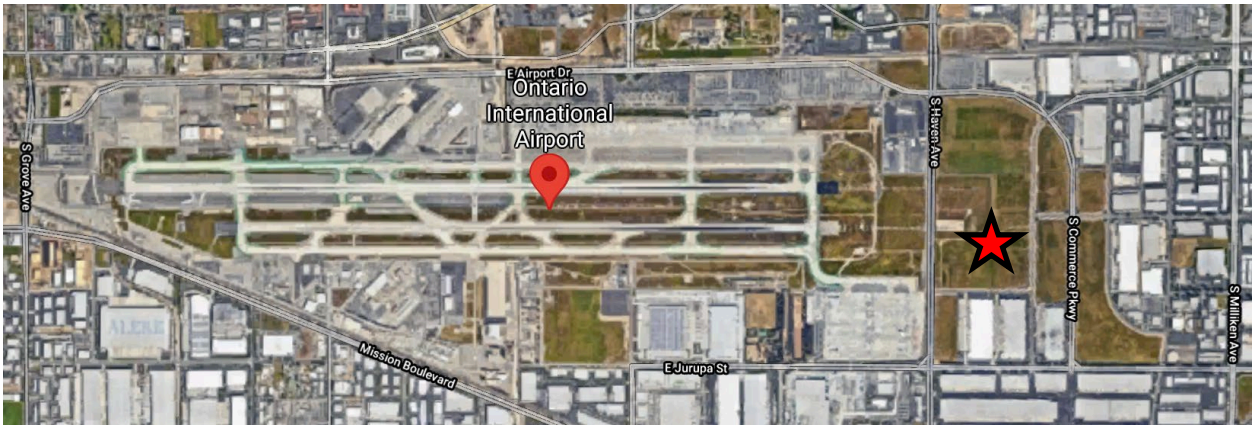


Figure 2. Ontario International Airport, showing location of Boot Property with population of nesting Burrowing Owls.

Conclusion.

We ask that the Authority not issue any approvals for plans, contracts, or leases, or lend any further momentum to developments of Ontario International Airport property without first preparing a proper Airport Master Plan and adequate environmental review to support it. Such a plan should provide for onsite preservation of Burrowing Owl and full mitigation of any impacts to them.

Please notify us of any hearings or the issuance of any findings or permits related to this matter. We also ask that you preserve all records and communications related to development of airport property in accordance with the requirements of *Golden Door Properties, LLC v. County of San Diego*, (2020) 50 Cal.App.5th 467.

Sincerely,

Douglas P. Carstens

Douglas Carstens

From: kimberlyfour
To: Walker, Nicole
Subject: Rehabilitation of Runway 8R-26L
Date: Friday, July 16, 2021 4:47:31 PM

Hello Nicole,

The following comments are in regards to the planed construction to rehabilitate runway 8R-26L. I am involved in the effort to protect the last remaining Burrowing Owls that we have in San Bernardino County. The population is tenuous at best, but we do have active breeding populations at the Ontario Airport as well in three areas in Chino. These small populations are close enough that they can interbreed which will help to insure that they remain genetically healthy. There are active breeding owls in the areas slated for construction. These owls need to have consideration and to be protected during construction. That information definitely needs to be included and addressed in any plans going forward.

Since the 1980"s we have basically killed off most of our owls in San Bernardino County by destroying and developing their habitat. Mitigation to address this has been virtually non-existent. This is unfortunately happening all over this planet.

Populations of wild animals have more than halved since 1970, while the human population has doubled.
Only five times before in our planet's history have so many species and so much biodiversity been lost so quickly. The fifth was when the dinosaurs were wiped out. That is why scientists and conservationists call what is happening now the *'sixth mass extinction'*. Some have even described the loss of biodiversity today as 'biological annihilation'.
It is my hope that the Ontario Airport and the city of Ontario becomes a friend of the Burrowing Owls and that they act before it is too late to save these beautiful birds.

Sincerely yours,

Kimberly Dillbeck

From: Suzanne C. Thompson
To: Walker, Nicole
Subject: Public comment: Rehabilitation of Runway 8R-26L and Associated Airfield Improvements
Date: Friday, July 16, 2021 9:23:06 AM

July 16, 2021

Nicole Walker, Environmental Planning Manager

Dear Ms. Walker,

I am writing to register my concern about the effect of the proposed runway work on the resident Burrowing Owls in the area surrounding the OIA runways.

Burrowing Owls are a California Species of Special Concern and, given their decline throughout their traditional range, could be a candidate for an "endangered" listing in the near future. The owls and their burrows need strong protection throughout the construction period and, if necessary, in the new runway configuration when the project is completed.

A detailed plan for protecting the Burrowing Owls needs to be included in the Environmental Impact Report.

Sincerely,

Suzanne Thompson
Chair, Pomona Valley Audubon Burrowing Owl Committee
sthompson@pomona.edu

APPENDIX A

NATIVE AMERICAN HERITAGE COMMISSION

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
Russell Attebery
Karuk

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

April 13, 2021

Caroline Pinegar
Ontario International Airport Authority

Via Email to: cpinegar@hntb.com

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Rehabilitation of Runway 8R-26L and Associated Taxiway Improvements Project, San Bernardino County

Dear Ms. Pinegar:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

    - Any report that may contain site forms, site significance, and suggested mitigation measures.

      All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
San Bernardino County
4/13/2021

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6800
Fax: (760) 699-6919

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
admin@gabrielenoindians.org

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Morongo Band of Mission Indians
Ann Brierty, THPO
12700 Pumarra Road — Cahuilla, Serrano
Banning, CA, 92220
Phone: (951) 755 - 5259
Fax: (951) 572-6004
abrierty@morongo-nsn.gov

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Road — Cahuilla, Serrano
Banning, CA, 92220
Phone: (951) 755 - 5110
Fax: (951) 755-5177
abrierty@morongo-nsn.gov

Quechan Tribe of the Fort Yuma Reservation
Jill McCormick, Historic Preservation Officer
P.O. Box 1899 — Quechan
Yuma, AZ, 85366
Phone: (760) 572 - 2423
historicpreservation@quechantribe.com

San Manuel Band of Mission Indians
Jessica Mauck, Director of Cultural Resources
26569 Community Center Drive — Serrano
Highland, CA, 92346
Phone: (909) 864 - 8933
jmauck@sanmanuel-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Rehabilitation of Runway 8R-26L and Associated Taxiway Improvements Project, San Bernardino County.

Santa Rosa Band of Cahuilla Indians
Lovina Redner, Tribal Chair
P.O. Box 391820 Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
lsaul@santarosa-nsn.gov

Serrano Nation of Mission Indians
Wayne Walker, Co-Chairperson
P. O. Box 343 Serrano
Patton, CA, 92369
Phone: (253) 370 - 0167
serranonation1@gmail.com

Serrano Nation of Mission Indians
Mark Cochrane, Co-Chairperson
P. O. Box 343 Serrano
Patton, CA, 92369
Phone: (909) 528 - 9032
serranonation1@gmail.com

Soboba Band of Luiseno Indians
Isaiah Vivanco, Chairperson
P. O. Box 487 Cahuilla
San Jacinto, CA, 92581 Luiseno
Phone: (951) 654 - 5544
Fax: (951) 654-4198
ivivanco@soboba-nsn.gov

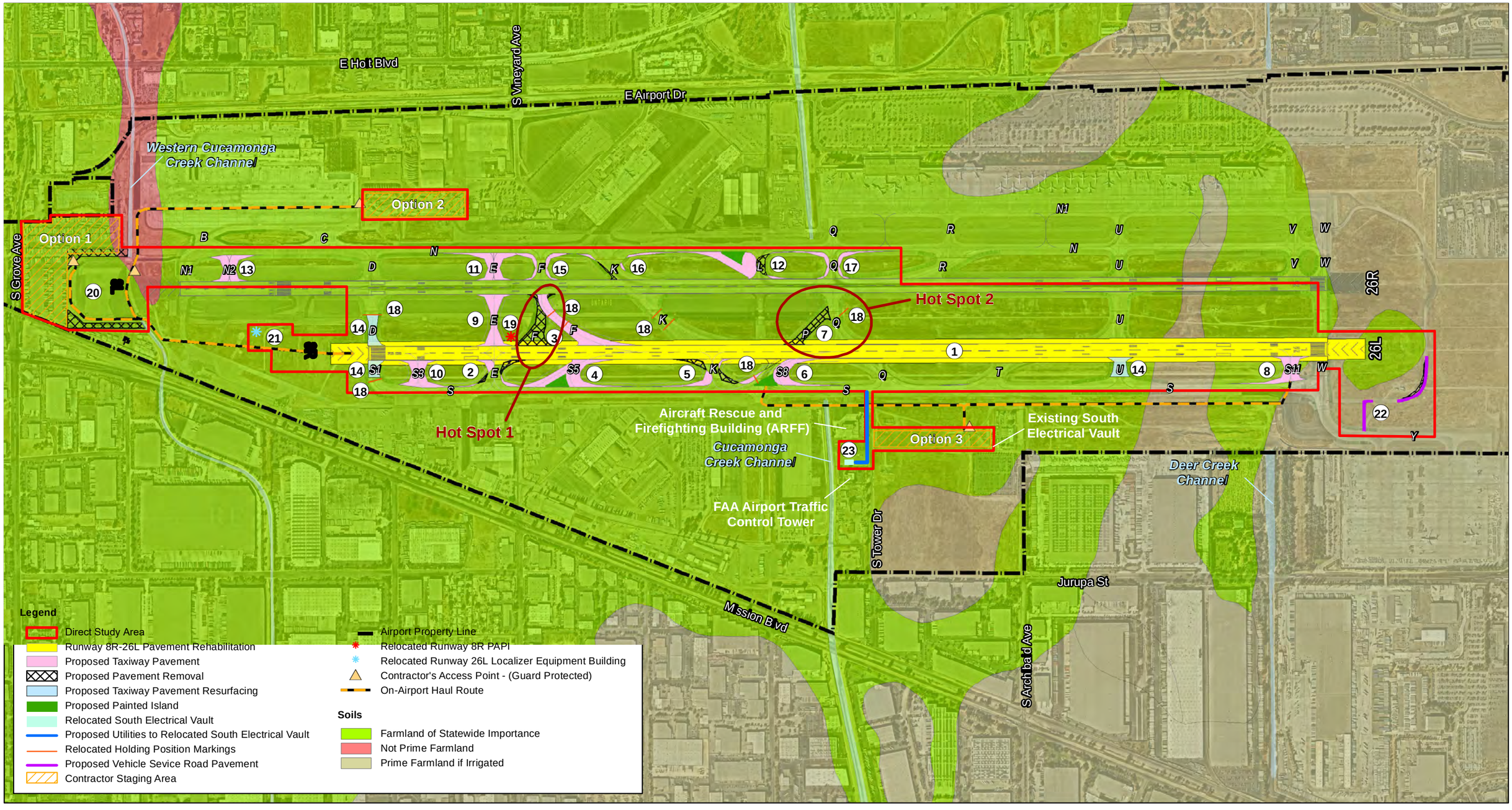
This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Rehabilitation of Runway 8R-26L and Associated Taxiway Improvements Project, San Bernardino County.

APPENDIX B

FARMLANDS

California Environmental Quality Act (CEQA) Initial Study at Ontario International Airport



PROPOSED ACTION PROJECTS

(1) REHABILITATE RUNWAY 8R-26L
(2) MODIFY EXISTING CONNECTOR TAXIWAY F AND REDESIGNATE AS TAXIWAY E
(3) REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F
(4) CONSTRUCT EXIT TAXIWAY S5
(5) RECONSTRUCT EXISTING EXIT TAXIWAY K
(6) RECONSTRUCT EXISTING EXIT TAXIWAY P TO A HIGH-SPEED EXIT AND REDESIGNATE AS TAXIWAY S8
(7) REMOVE EXISTING TAXIWAY P BETWEEN RUNWAYS 8L-26R AND 8R-26L
(8) CONSTRUCT BYPASS TAXIWAY S11
(9) CONSTRUCT CROSSING TAXIWAY E
(10) CONSTRUCT BYPASS TAXIWAY S3
(11) CONSTRUCT CROSSING TAXIWAY E
(12) RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED EXIT TAXIWAY
(13) CONSTRUCT BYPASS TAXIWAY N2
(14) RESURFACE TAXIWAY D, TAXIWAY S1 AND TAXIWAY U PAVEMENT
(15) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(16) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(17) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(18) RELOCATE HOLDING POSITION MARKINGS*
(19) RELOCATE RUNWAY 8R PAPI
(20) RELOCATE PERIMETER FENCE AND REMOVE OBJECTS WITHIN ROFA
(21) RELOCATE RUNWAY 26L (8R END) LOCALIZER EQUIPMENT BUILDING
(22) MODIFY EXISTING VEHICLE SERVICE ROAD
(23) RELOCATE SOUTH ELECTRICAL VAULT

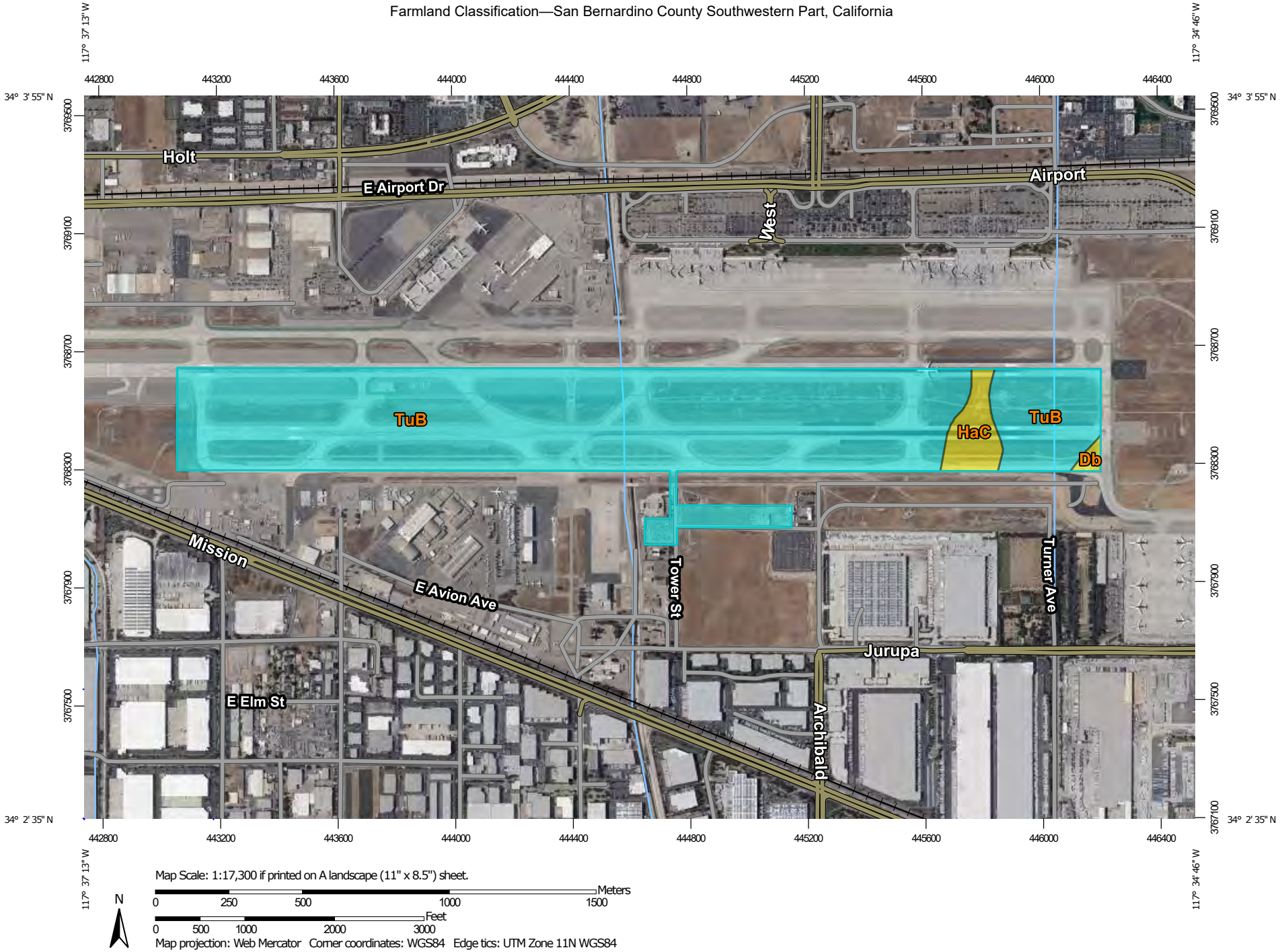
* DEPICTED IN MULTIPLE LOCATIONS

Figure 1
Farmland Classifications

N

0 250 500 1,000 Feet

Sources: OIAA, Nearmap, USDA, HNTB Analysis


117° 37' 13" W
117° 34' 46" W
442800
443200
443600
444000
444400
444800
445200
445600
446000
446400
34° 3' 55" N
34° 2' 35" N
3769500
3769100
3768700
3768300
3767900
3767500
3767100
Holt
E Airport Dr
Airport
West
TuB
HaC
TuB
Db
Mission
E Avion Ave
Tower St
Turner Ave
Jurupa
E Elm St
Archibald
Map Scale: 1:17,300 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 250 500 1000 1500
Feet
0 500 1000 2000 3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

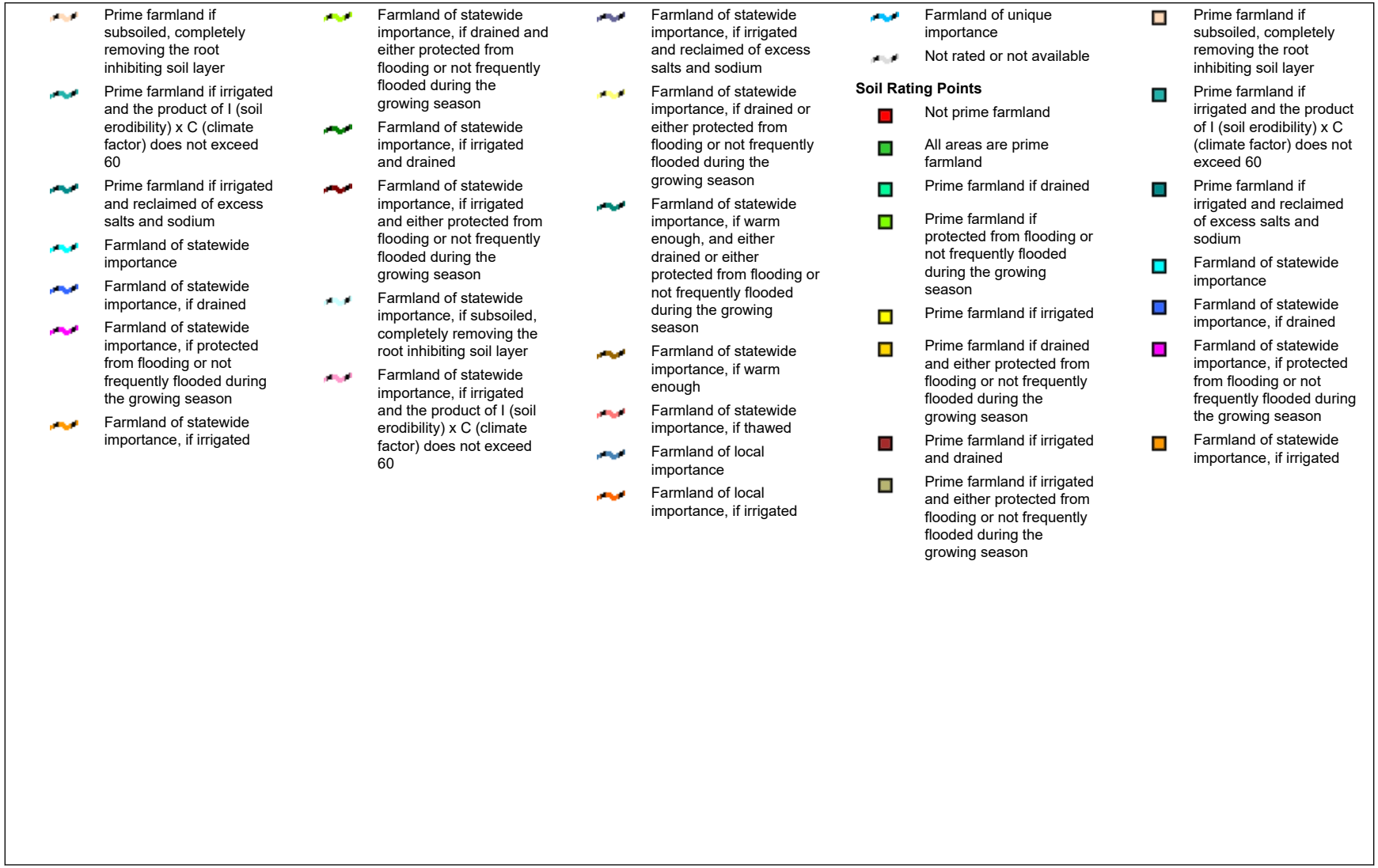
Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 12, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 10, 2018—Jun 5, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Db	Delhi fine sand	Prime farmland if irrigated	1.6	0.6%
HaC	Hanford coarse sandy loam, 2 to 9 percent slopes	Prime farmland if irrigated	11.4	4.0%
TuB	Tujunga loamy sand, 0 to 5 percent slopes	Farmland of statewide importance	268.5	95.4%
Totals for Area of Interest			**281.5**	**100.0%**

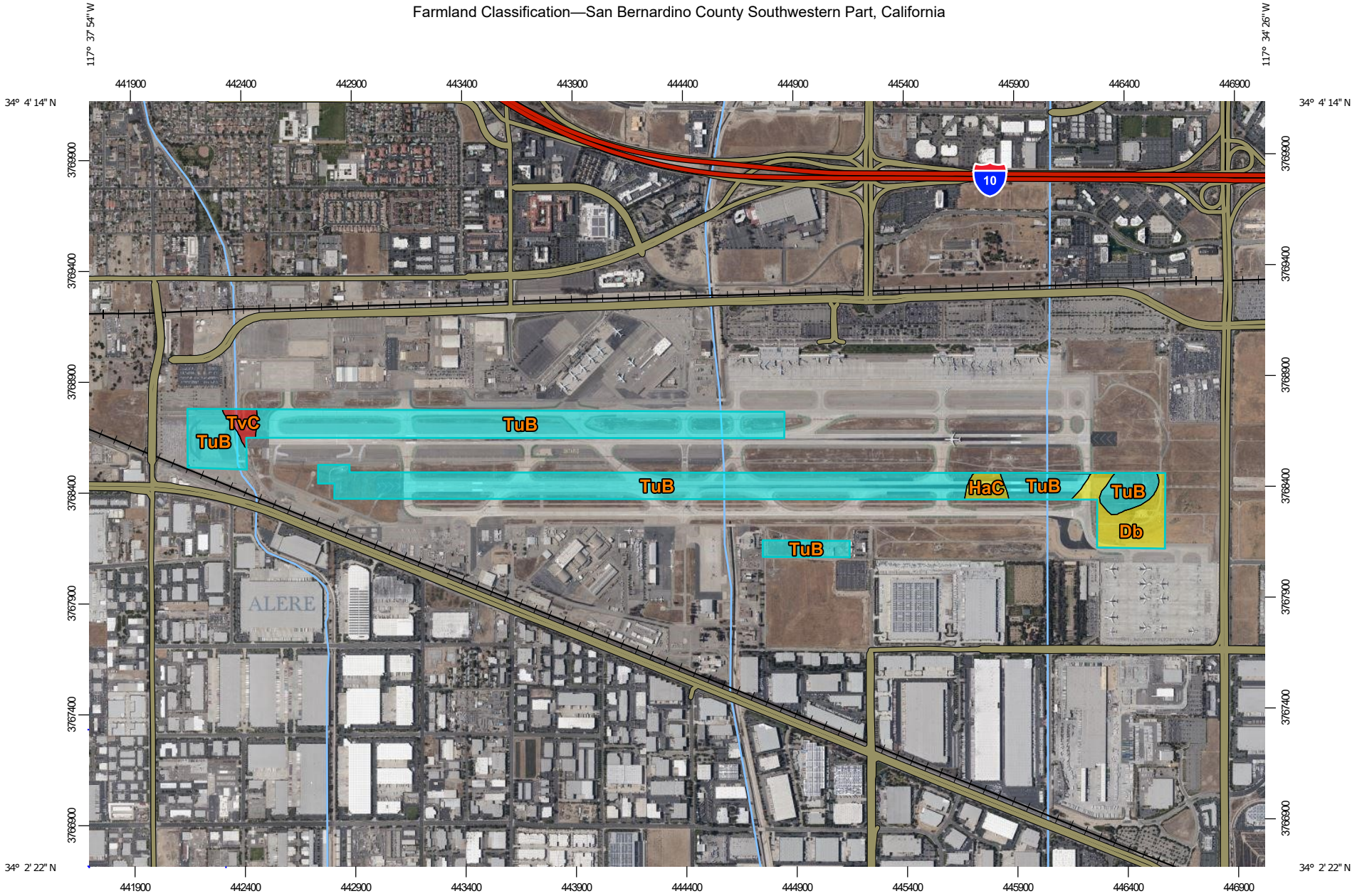
Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower



Map Scale: 1:24,400 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 350 700 1400 2100

Feet: 0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

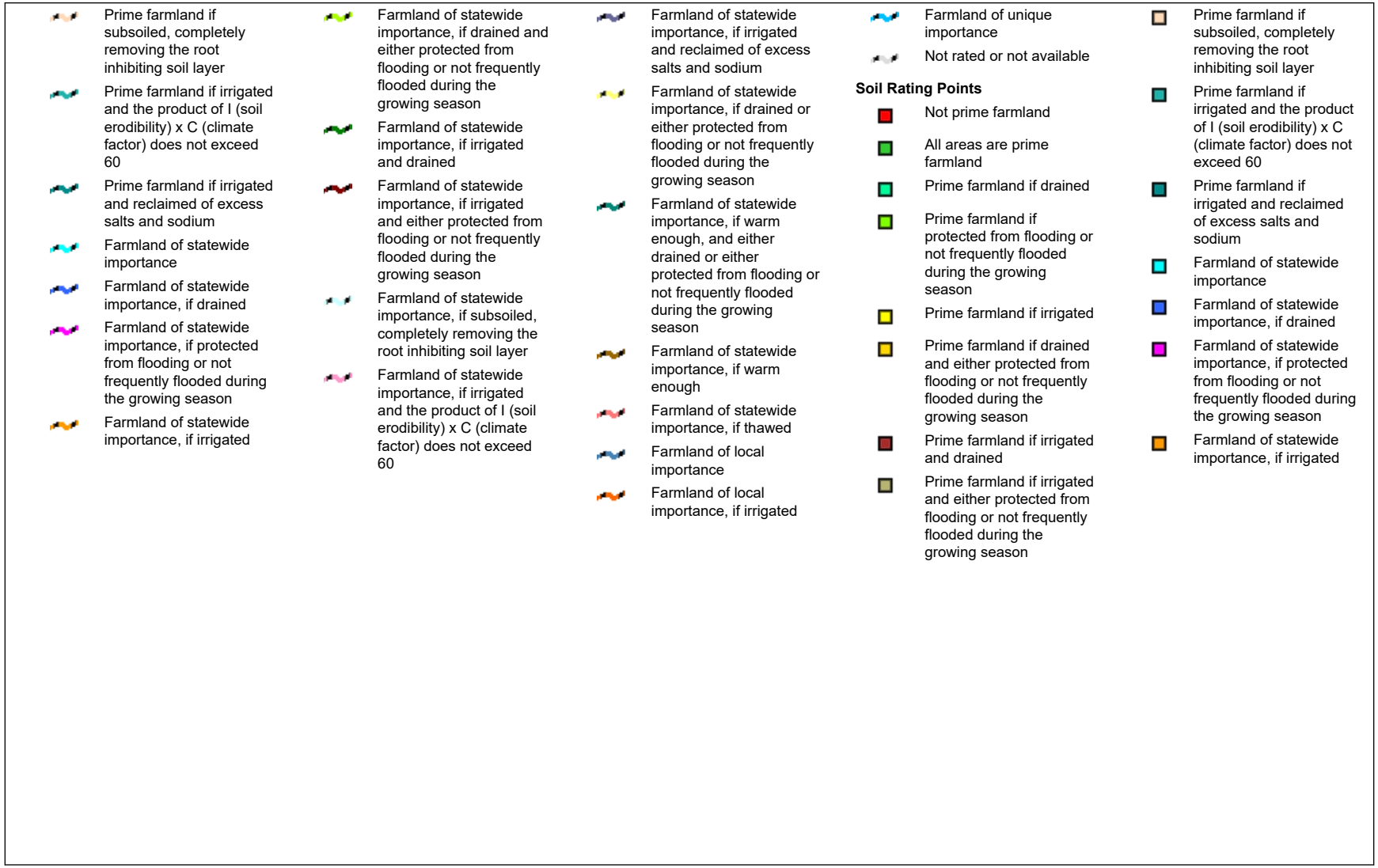
Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 12, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 10, 2018—Jun 5, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Db	Delhi fine sand	Prime farmland if irrigated	18.9	8.2%
HaC	Hanford coarse sandy loam, 2 to 9 percent slopes	Prime farmland if irrigated	5.0	2.2%
TuB	Tujunga loamy sand, 0 to 5 percent slopes	Farmland of statewide importance	203.0	88.0%
TvC	Tujunga gravelly loamy sand, 0 to 9 percent slopes	Not prime farmland	3.9	1.7%
Totals for Area of Interest			**230.7**	**100.0%**

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

APPENDIX C

BIOLOGICAL RESOURCES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901
http://www.fws.gov/carlsbad/

In Reply Refer To: January 14, 2021
Consultation Code: 08ECAR00-2021-SLI-0490
Event Code: 08ECAR00-2021-E-01086
Project Name: ONT Taxiway Improvements and South Electrical Vault Relocation

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Project Summary

Consultation Code: 08ECAR00-2021-SLI-0490
Event Code: 08ECAR00-2021-E-01086
Project Name: ONT Taxiway Improvements and South Electrical Vault Relocation
Project Type: TRANSPORTATION
Project Description: Taxiway improvements and electrical vault relocation proposed in 2023.
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@34.05424275,-117.59993624618033,14z



Counties: San Bernardino County, California

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
San Bernardino Merriam's Kangaroo Rat *Dipodomys merriami parvus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2060	Endangered

Birds

NAME	STATUS
Coastal California Gnatcatcher *Polioptila californica californica* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8178	Threatened

Insects

NAME	STATUS
Delhi Sands Flower-loving Fly *Rhaphiomidas terminatus abdominalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1540	Endangered

Flowering Plants

NAME	STATUS
San Diego Ambrosia *Ambrosia pumila* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8287	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

HELIX Environmental Planning, Inc.
16485 Laguna Canyon Road
Suite 150
Irvine, CA 2618
949.234.8770 **tel**
619.462.1515 **fax**
www.**helixepi**.com

February 11, 2020 OIA-01

Mr. Keith Owens
Ontario International Airport Authority
1923 E Avion Avenue
Ontario, CA 91761

Subject: 2019\2020 non-breeding Burrowing Owl Survey Report for Potential Development of Ontario International Airport's Parcel Study

Dear Mr. Owens:

This letter report presents the results of the 2019 non-breeding season burrowing owl (*Athene cunicularia*; BUOW) survey conducted by HELIX Environmental Planning, Inc. (HELIX) for the Ontario International Airport (study area) located in the City of Ontario, San Bernardino County, California. The survey was conducted in accordance with the California Department of Fish and Wildlife (CDFW; previously California Department of Fish and Game [CDFG]) Staff Report on BUOW Mitigation (CDFG 2012). This letter report describes the methods used to perform the survey and the survey results.

STUDY AREA LOCATION

The 322-acre study area is generally located south of the Interstate (I-) 10 and west of I-15 (Figure 1, *Regional Location*). The study area is located within Section 25 of Township 1 South, Range 7 West of the Guasti, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2, *Vicinity Map*). Specifically, the study area is located to the northwest of the intersection of S Haven Avenue and Jurupa Street; to the northwest and southwest of the intersection of E Airport Drive and S Haven Avenue; and to the southwest and southeast of the intersection of S Grove Avenue and E Airport Drive (Figure 3, *Aerial Photograph*). The study area comprises approximately 320 acres of suitable burrowing owl habitat.

STUDY AREA DESCRIPTION

The study area is located directly on and surrounding the tarmac of the Ontario International Airport. The study area is dominated by non-native grass species, such as common ripgut grass (*Bromus diandrus*), puncture vine (*Tribulus terestris*), *red* brome (*Bromus madritensis* ssp. *rubens*), and slender oat (*Avena barbata*), which are maintained as required for weed abatement. The topography of the study area is mostly flat with elevations ranging from 902 feet above mean sea level (AMSL) near the southeast corner to 967 feet AMSL near the northeast corner. Immediate surrounding land uses include the commercial buildings to the north, east, south, and west.

METHODS

The focused BUOW survey was conducted according to the CDFW BUOW survey guidelines (CDFG 2012), which includes Part I Habitat Assessment and Focused Burrow Survey and Part II Focused BUOW Surveys. The CDFW BUOW survey guidelines are described in further detail below.

Part I: Habitat Assessment and Focused Burrow Survey

Prior to conducting the habitat assessment, HELIX consulted the California Natural Diversity Database (CNDDB) to determine the nearest BUOW occurrence(s). A habitat assessment was conducted by HELIX biologists Ezekiel Cooley and Lauren Singleton on November 1, 2018 to determine whether the study area supports suitable BUOW habitat. A focused burrow survey was conducted concurrently with the habitat assessment. All suitable burrows (i.e., greater than 11 centimeters [cm] in height and width and greater than 150 cm in depth) and burrow surrogates were recorded using a handheld Global Positioning System (GPS) unit (Figure 4, *Suitable Burrow and Transect Locations*). The habitat assessment and focused burrow survey were conducted prior to commencement of the BUOW focused surveys. The assessment was conducted on the study area and within a 150-meter (approximately 500-foot) buffer zone around the periphery of the study area (survey area). The survey area was slowly walked and assessed for suitable BUOW habitat, including:

- disturbed low-growing vegetation within grassland and shrublands (less than 30 percent canopy cover);
- gently rolling or level terrain;
- areas with abundant small mammal burrows, especially California ground squirrel (*Otospermophilus beecheyi*) burrows;
- fence posts, rocks, or other low perching locations; and
- man-made structures, such as earthen berms, debris piles, and cement culverts.

All potential burrows were checked for signs of recent owl occupation. Signs of occupation include:

- pellets/casting (regurgitate fur, bones, and/or insect parts);
- white wash (excrement); and/or
- feathers.

Part II: Locating Burrowing Owls

Since suitable habitat and burrows were observed within the survey area during the habitat assessment, non-breeding focused BUOW surveys were conducted to determine whether the survey area supports BUOW. The focused surveys consisted of four (4) non-breeding season surveys, spread evenly, throughout the nonbreeding season, that were performed by Mr. Cooley and Ms. Singleton and HELIX biologists Matthew Dimson, Amy Lee, and Daniel Torres between October 8, 2019 and January 14, 2020. (Table 1 *Survey Information*)

The biologists walked transects spaced no greater than 20 meters apart (approximately 65 feet) to allow for 100 percent visual coverage of all suitable habitat within the survey area (Figure 4). The biologists walked slowly and methodically, closely checking suitable habitat within the survey area for BUOW diagnostic sign (e.g., molted feathers, pellets/castings, or whitewash at or near a burrow entrance) and individual BUOW. If observed, BUOW sign and BUOW observations were recorded with a GPS unit. Inaccessible areas of the survey area were visually assessed using binoculars.

Table 1
Survey Information

	Biologist	Start/Stop Time	Start/Stop Weather Conditions	Survey Results
10/08/19	Ezekiel Cooley Lauren Singleton	0715-0900	62°F, wind 0-1 mph, 0% clouds 69°F, wind 1-2 mph, 0% clouds	• Active Burrow #1: One adult was observed next to a grated drain with a burrow located to the west of the drain.
10/11/19	Ezekiel Cooley Lauren Singleton	0710-0900	67°F, wind 4-5 mph, 0% clouds 71°F, wind 4-5 mph, 0% clouds	• Active Burrow #2: One adult was in a cement culvert.
10/15/19	Lauren Singleton Daniel Torres	0710-1000	56°F, wind 3-4 mph, 0% clouds 73°F, wind 1-2 mph, 0% clouds	• No BUOW detected.
11/05/19	Matthew Dimson Lauren Singleton	0715-0945	61°F, wind 0-1 mph, 0% clouds 73°F, wind 0-1 mph, 0% clouds	• No BUOW detected.
11/08/19	Matthew Dimson Lauren Singleton	0730-0915	61°F, wind 2-3 mph, 0% clouds 77°F, wind 2-3 mph, 0% clouds	• Active Burrow #2: One adult was in a cement culvert.
11/12/19	Amy Lee Lauren Singleton	0715-0945	55°F, wind 0-1 mph, 5% clouds 77°F, wind 0-1 mph, 0% clouds	• No BUOW detected.
12/03/19	Matthew Dimson Lauren Singleton	0800-1000	56°F, wind 0-1 mph, 100% clouds 63°F, wind 0-1 mph, 100% clouds	• No BUOW detected.
12/06/19	Matthew Dimson Lauren Singleton	0730-0930	50°F, wind 0-1 mph, 30% clouds 63°F, wind 2-3 mph, 50% clouds	• No BUOW detected.
12/10/19	Matthew Dimson Lauren Singleton	0710-0930	46°F, wind 1-2 mph, 20% clouds 55°F, wind 0-1 mph, 80% clouds	• No BUOW detected.
01/07/20	Ezekiel Cooley Matthew Dimson	0715-0900	46°F, wind 0-1 mph, 15% clouds 55°F, wind 0-1 mph, 20% clouds	• Active Burrow #3: One adult was observed below a grated drain with a burrow located on the south side of the drain.
1/10/20	Ezekiel Cooley Matthew Dimson	0710-0850	43°F, wind 2-3 mph, 100% clouds 50°F, wind 1-2 mph, 100% clouds	• No BUOW detected.
01/14/20	Ezekiel Cooley Matthew Dimson	0700-0900	43°F, wind 0-1 mph, 100% clouds 47°F, wind 0-1 mph, 100% clouds	• No BUOW detected.

RESULTS

Suitable BUOW habitat was observed within the survey area during the habitat assessment, including low-growing vegetation within the non-native grassland. Several burrows and burrow surrogates, such as vertical corrugated metal pipe storm drain risers, that could potentially be used by BUOWs were observed within the survey area (Figure 4). Suitable foraging habitat was observed within and adjacent to the survey area. There are CNDDB records of BUOWs within the survey area from 2007 and 2013 (CDFW 2019).

A total of three active burrows were detected within the survey area (Figure 4). One active burrow was located on the western end of the tarmac (Active Burrow [AB]-1) and two active burrows were located on the northeastern end of the tarmac (Active Burrow [AB]-2 and AB-3). A summary of observations is provided below.

AB-1 was on the study are in the middle of the tarmac between the two runways, approximately 2,100 feet to the northwest of South Vineyard Avenue and Avion Drive intersection. One adult BUOW was observed next to a grated drain with a burrow located to the west of the drain. This adult was only observed once on October 5, 2019 and was not present on subsequent surveys.

AB-2 was located on the eastern portion of the study area, approximately 2,200 feet to the southwest of South Haven Avenue and East Airport Drive. One adult BUOW was observed in a cement culvert on October 11 and November 8, 2019. The BUOW was not present on subsequent surveys.

AB-3 was located on the eastern portion of the study area, approximately 3,000 feet to the southwest of South Haven Avenue and East Airport Drive. One adult was observed below a grated drain with a burrow located on the south side of the drain. This adult was observed only once on January 7, 2020.

The locations of all suitable burrows, BUOW sign, and occupied burrows observed within and adjacent to the study area are shown on Figure 4.

CONCLUSION

A total of three active burrows were detected within the survey area. One adult BUOW was observed at each active burrow: AB-1, AB-2, and AB-3. AB-1 and AB-2 had no adult BUOW present during the final series of surveys.

These surveys are intended to document the non-breeding season activity on the survey area and may not be considered conclusive findings by CDFW even if BUOW are observed. A breeding season focused survey may be required to determine the full extent of use on the survey area.

In addition to breeding season protocol surveys, a take avoidance (pre-construction) survey would also be required and shall be conducted within 14 days prior to ground disturbance in accordance with CDFW Staff Report on BUOW Mitigation (2012). If ground-disturbing activities are delayed more than 14 days after the pre-construction survey has been completed, the study area must be resurveyed.

If you have any questions regarding the information presented in this letter report, please contact Ezekiel Cooley (EzekielC@helixepi.com) or Lauren Singleton (LaurenS@helixepi.com) at (949) 234-8770.

Sincerely,





Ezekiel Cooley
Biologist

Lauren Singleton
Biologist

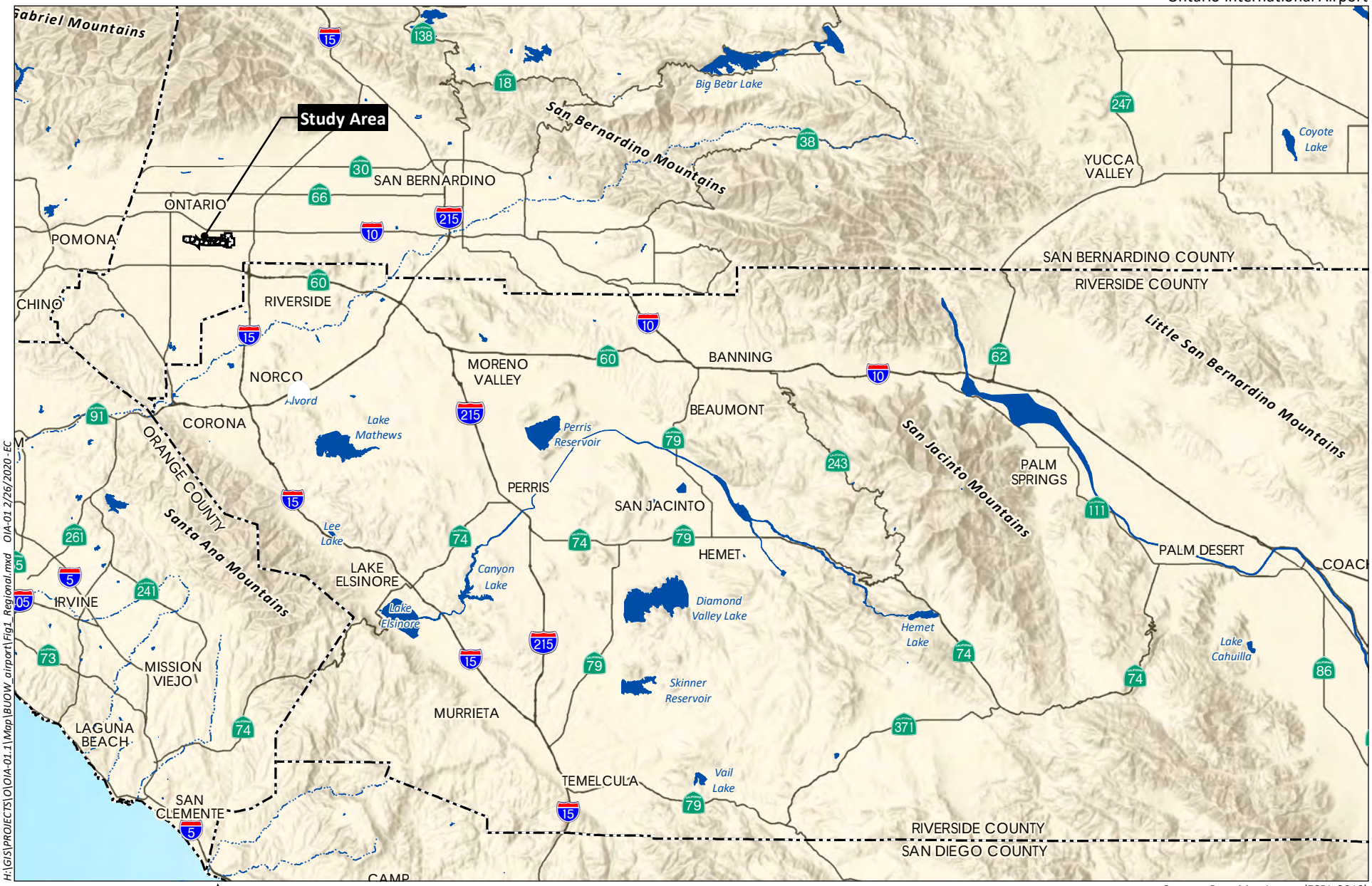
Attachments:

Figure 1: Regional Location
Figure 2: USGS Topography
Figure 3: Aerial Photograph
Figure 4: BUOW Observations and Burrow Locations

REFERENCES

California Department of Fish and Game. 2012. Staff report on burrowing owl mitigation. State of California Natural Resources Agency. March 7, 2012.

California Department of Fish and Wildlife (CDFW). 2019. California Natural Diversity Database and Rarefind. California Department of Fish and Wildlife: Sacramento, California. Retrieved from: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed July 31, 2019.



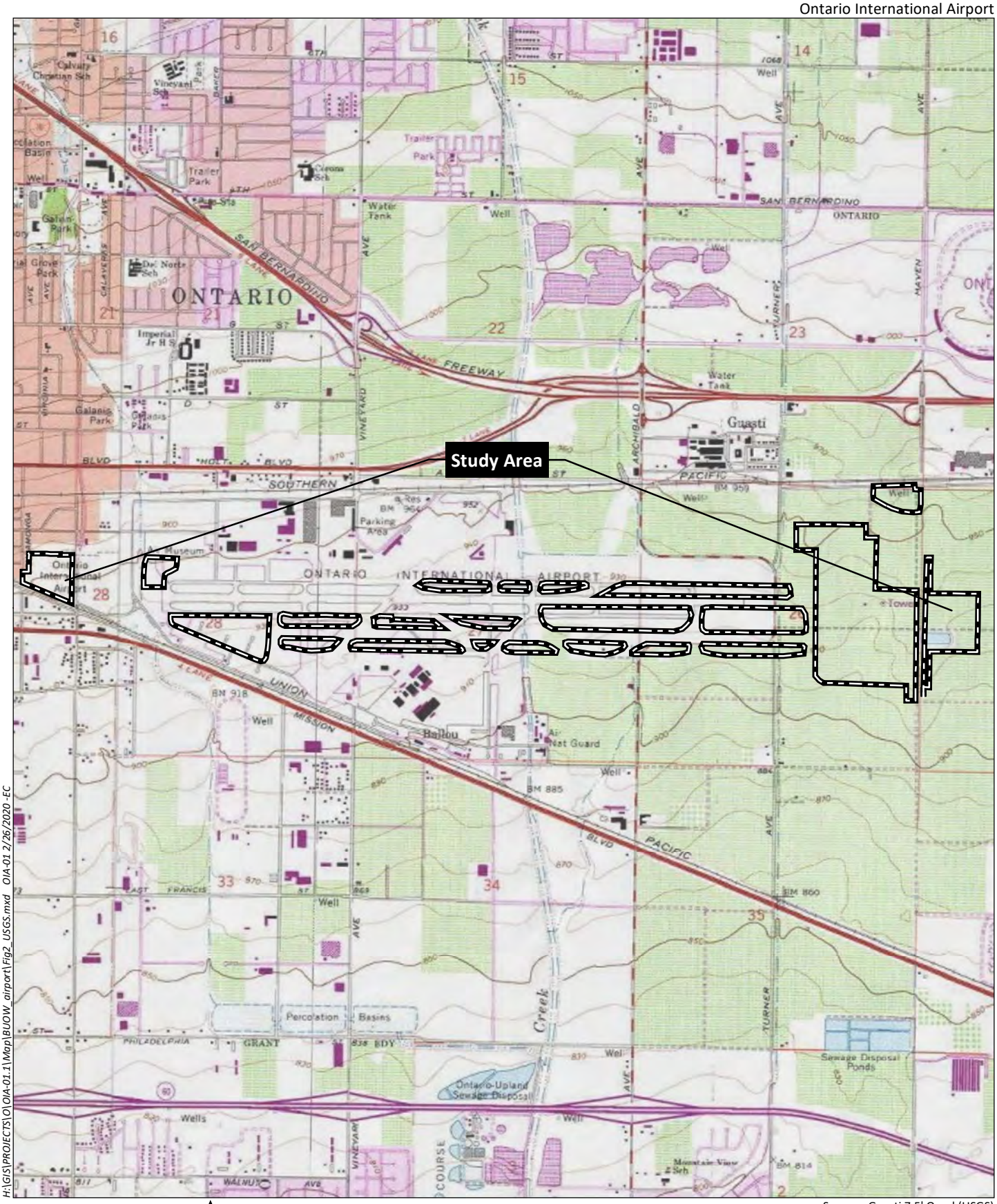
H:\GIS\PROJECTS\O\OIA-01.1\Map\BUOW_airport\Fig1_Regional.mxd OIA-01 2/26/2020 - EC

Source: Base Map Layers (ESRI, 2013)

HELIX Environmental Planning

Regional Location

Figure 1



H:\GIS\PROJECTS\O\OIA-01.1\Map\BUOW_airport\Fig2_USGS.mxd OIA-01 2/26/2020 -EC

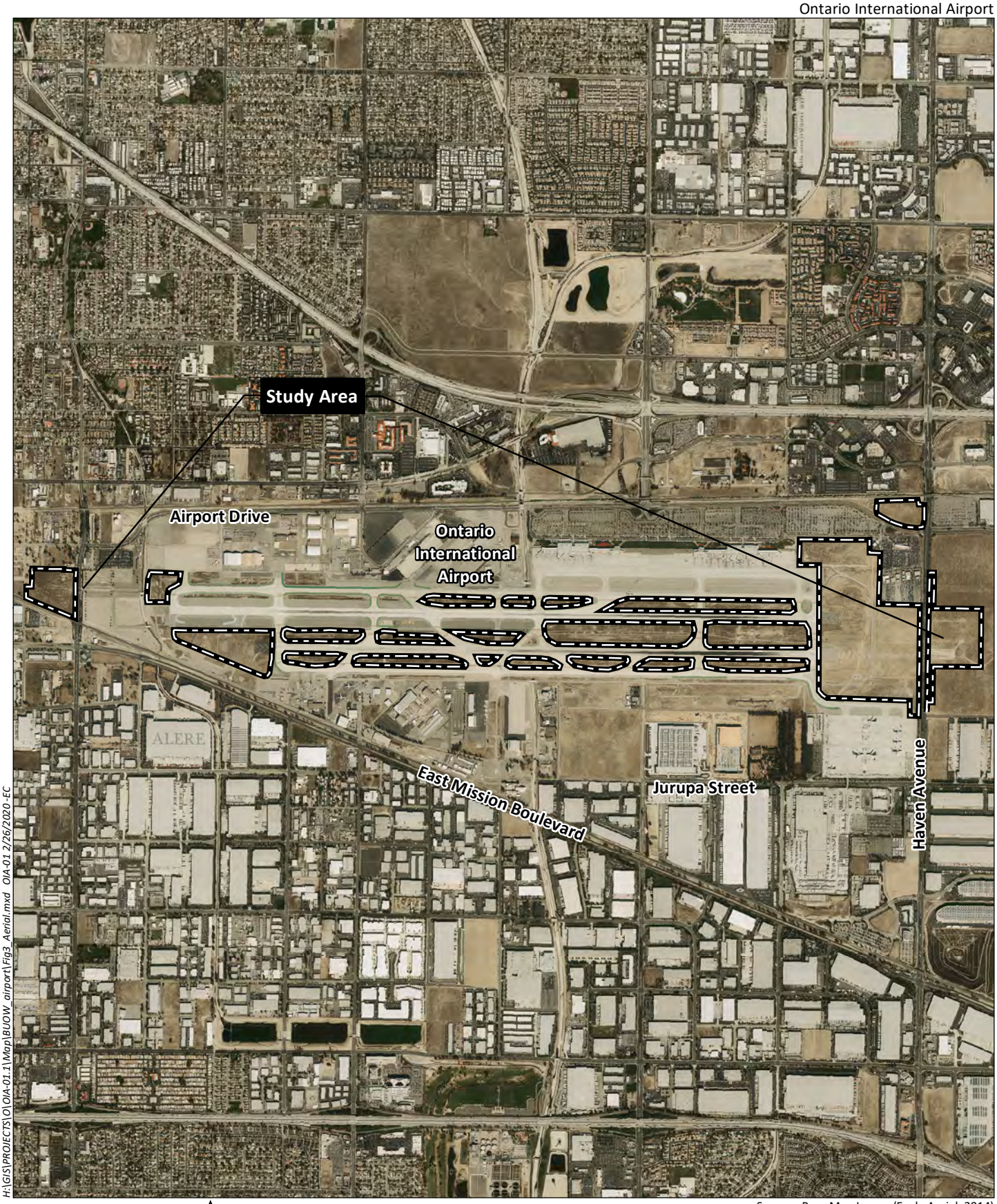
0 2,000 Feet

Source: Guasti 7.5' Quad (USGS)

HELIX Environmental Planning

USGS Topography

Figure 2



H:\GIS\PROJECTS\O\OIA-01.1\Map\BUOW airport\Fig3 Aerial.mxd OIA-01 2/26/2020 EC

0 2,500 Feet

Source: Base Map Layers (Eagle Aerial, 2014)

Aerial Photograph

Figure 3

Ontario International Airport

500-foot Survey Buffer
Survey Areas
2019/2020 Non-Breeding Season BUOW Observations
Suitable Burrows
Transects

AB-1
AB-3
AB-2

ALERE

Inset Map
0 200 Feet
AB-1
AB-3

Inset Map
0 200 Feet
AB-2

0 1,300 Feet

H:\GIS\PROJECTS\OIA\OIA-01.1\Mxd\BUOW_airport\Fig4_BUOW_obs.mxd OIA-01 2/26/2020 EC

Source: Aerial (Eagle Aerial, 2014)

HELIX Environmental Planning

2019/**2020** Non-Breeding Season BUOW Survey Areas

Figure 4

APPENDIX D

WATER RESOURCES

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 tel
619.462.0552 fax
www.helixepi.com

February 16, 2021 HNT-13.01

Kim Hughes
HNTB Corporation
2900 South Quincy St. Suite 600
Arlington, VA 22206

Subject: Jurisdictional Delineation Letter Report for the Proposed Taxiway Improvements and South Electrical Vault Relocation Project at Ontario International Airport

Dear Ms. Hughes:

This letter presents the results of a jurisdictional delineation conducted by HELIX Environmental Planning, Inc. (HELIX) for the proposed Taxiway Improvements and South Electrical Vault Relocation Project (project) located at Ontario International Airport (ONT). The delineation was conducted to identify and map existing areas within the project area that are "waters of the U.S." under U.S. Army Corps of Engineers (USACE) jurisdiction pursuant to Section 404 of the Clean Water Act (CWA); waters of the State under Regional Water Quality Control Board (RWQCB) jurisdiction pursuant to Section 401 of the CWA; and streambed habitats under California Department of Fish and Wildlife (CDFW) jurisdiction pursuant to Section 1600 of the California Fish and Game Code. This report presents HELIX's best efforts to quantify jurisdiction within the project site using the current regulations, written policies, and guidance from USACE, RWQCB, and CDFW (collectively, the "regulatory agencies").

PROJECT LOCATION

The approximately 282-acre project site is in the City of Ontario, San Bernardino County, California. generally located south of the Interstate (I-) 10 and west of I-15 (Figure 1, *Regional Location*). The project site is located within Section 25 of Township 1 South, Range 7 West of the Guasti, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2, *Vicinity Map*). Specifically, the project site is located to the northwest of the intersection of S Haven Avenue and Jurupa Street; to the southwest of the intersection of E Airport Drive and S Haven Avenue; to the southwest of the intersection of S Grove Avenue and E Airport Drive; and to the northeast of the intersection of S Grove Avenue and E Mission Boulevard (Figure 3, *Aerial Photograph*).

PROJECT DESCRIPTION

The proposed project consists of the construction, modification, removal and/or relocation of taxiways, relocation of navigational aids (NAVAIDS); relocation of an electrical vault; and other minor airfield improvements (Figure 4, *Proposed Action*).

METHODS

Prior to beginning fieldwork, aerial photographs (1 inch = 150 feet), topographic maps (1 inch = 150 feet), USGS quadrangle maps, and National Wetland Inventory maps (U.S. Fish and Wildlife Service 2019) were reviewed. HELIX Regulatory Specialist Ezekiel Cooley conducted the jurisdictional delineation field work on January 12, 2021. Delineation methods used to determine each agency's jurisdictional limits are discussed below.

U.S. Army Corps of Engineers

The USACE waters of the U.S. are determined using current USACE guidelines (Environmental Laboratory 1987, U.S. Army Corps of Engineers [USACE] 2008a). Areas are determined to be waters of the U.S. if there is evidence of regular surface flow (e.g., bed and bank). Jurisdictional limits for these areas are measured according to the presence of a discernible Ordinary High Water Mark (OHWM), which is defined in 33 Code of Federal Regulations (CFR) Section 329.11 as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas." The USACE has issued further guidance on the OHWM (Riley 2005; USACE 2008b), which also was considered in this jurisdictional assessment.

The jurisdictional delineation was conducted in accordance with court decisions (i.e., Rapanos v. United States, Carabell v. United States, and Solid Waste Agency of Northern Cook County v. USACE), as outlined and applied by the USACE (USACE 2007; Grumbles and Woodley 2007); and USACE and U.S. Environmental Protection Agency (EPA; 2007). These publications explain that the EPA and USACE will assert jurisdiction over traditional navigable waters (TNW) and tributaries to TNWs that are a relatively permanent water body (RPW), which has year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation is used to determine if the non-RPW is jurisdictional. As an alternative to the significant nexus evaluation process, a preliminary jurisdictional delineation may be submitted to the USACE. The preliminary jurisdictional delineation treats all waters and wetlands on a site as if they are jurisdictional waters of the U.S. (USACE 2008a). A significant nexus evaluation or preliminary jurisdictional delineation are typically only required for projects that propose impacts to potentially jurisdictional features and, therefore, require a Section 404 permit from the USACE.

Regional Water Quality Control Board

The RWQCB asserts regulatory jurisdiction over activities affecting wetland and non-wetland waters of the State pursuant to Section 401 of the CWA and the State Porter-Cologne Water Quality Control Act. Potential RWQCB jurisdiction would follow the boundaries of USACE jurisdiction for waters of the U.S.

California Department of Fish and Wildlife

The CDFW jurisdictional boundaries are determined based on the presence of riparian vegetation or regular surface flow, if present. Streambeds within CDFW jurisdiction are delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses with surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). This definition for CDFW jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., oak woodland and alluvial fan sage scrub). Jurisdictional limits for CDFW streambeds are defined by the top of bank. Vegetated CDFW habitats are mapped at the limits of streambed-associated vegetation, if present.

RESULTS

The project site supports two drainages that flow beneath the work area through covered concrete channels and storm drainpipes. The drainages include Cucamonga Creek Channel in the center of the project site and Deer Creek Channel in the eastern portion of the project site, which are both USGS-mapped blueline streams. Additionally, the project site includes multiple storm drain inlets that convey flows into the two channels.

Based on the results of the jurisdictional delineation, Cucamonga Creek Channel and Deer Creek Channel are considered USACE/RWQCB non-wetland waters of the U.S. and CDFW jurisdiction (Figure 5, *Jurisdictional Features*). These jurisdictional features are underground through the extent of the project site. The channel features are described in detail below.

Cucamonga Creek Channel

Cucamonga Creek Channel is a concrete rectangular channel that runs north to south through the center of the project site and is considered a USACE public works facility. Based on the USGS Guasti quadrangle map, the headwaters of Cucamonga Creek originate approximately seven miles to the north of the project site at the base of Cucamonga Peak in San Gabriel Mountains where it occurs as a natural soft-bottomed creek. Cucamonga Creek generally flows south through Cucamonga Canyon and becomes channelized once it exits the San Gabriel Mountains. Cucamonga Creek Channel flows enter the project site near the northern boundary to the south of Airport Drive. The channel continues for approximately 0.4 mile through the center of the site, flowing underneath the airport taxiway and resurfacing to the south of the taxiway. The channel exits the project site near the southern boundary, just north of Avion Street. After exiting the project site, Cucamonga Creek Channel flows south for 11 miles to the south of the project site and becomes soft-bottomed just prior to meeting the Santa Ana River at the Prado Flood Control Basin in Riverside County. The Santa Ana River ultimately drains into the Pacific Ocean approximately 35 miles to the southwest of the project site. Soils within Cucamonga Creek Channel on the project site are mapped as Tujunga loamy sand (0 to 5 percent slopes; NRCS 2021; Figure 6, *Soils*). However, native soils are no longer present in Cucamonga Creek Channel due to the full concrete channelization of the creek.

Deer Creek Channel

Deer Creek Channel is a concrete rectangular channel that runs north to south along the eastern project site boundary. Based on the USGS Guasti quadrangle map, the headwaters of Deer Creek originate approximately seven miles to the northeast of the project site at the base of Cucamonga Peak in San Gabriel Mountains where it occurs as a natural soft-bottomed creek. Deer Creek generally flows south through Deer Canyon and becomes channelized once it exits the San Gabriel Mountains. The channel likely collects sheet flow from impervious surfaces in the surrounding area and storm drains that empty into the channel. The majority of flows within Deer Creek Channel empty into Cucamonga Creek Channel near Turner Basin, approximately one mile to the north of project site. Some water is diverted into the channel within the historic flow path of Deer Creek, which flows south from Turner Basin as a mostly natural streambed until it reaches Airport Drive. Deer Creek flows underneath the airport and enters and exits the project site as an underground channel. Deer Creek continues south as an underground channel and surfaces as a concrete trapezoidal channel just north of State Route 60, approximately 1.6 miles to the south of the project site. The channel continues southwest as Lower Deer Creek Channel for approximately 2.1 miles, ultimately draining into Cucamonga Creek Channel. Soils within Deer Creek Channel on the project site are mapped as Tujunga loamy sand (0 to 5 percent slopes; NRCS 2021; Figure 6). However, native soils are no longer present in Deer Creek Channel due to the concrete channelization of the creek.

IMPACTS

The project will not result in any impacts to Cucamonga Creek Channel or Deer Creek Channel. The project will require removal and installation of storm drain inlets. The removal and installation of storm drain inlets will be performed in such a way that no incidental fall back to the storm drain system will occur. Since the storm drain inlet removal and installation activities will not result in direct or indirect impacts to downstream jurisdictional waters, the project would not impact USACE, RWQCB, or CDFW, jurisdictional waters. In the absence of impacts to jurisdictional waters, the project would not require regulatory permits from the regulatory agencies.

AVOIDANCE AND MINIMIZATION MEASURES

The project will result in the removal and replacement of several storm drain inlets, which will not require work within USACE, RWQCB, or CDFW jurisdictional waters. No discharge of fill will occur within USACE and/or RWQCB jurisdictional waters and no streambed alterations will occur within CDFW jurisdictional resources, as a result of the proposed project.

The following minimization measures shall be implemented during construction to avoid indirect impacts to downstream jurisdictional waters:

1. General Stormwater Construction Permit compliance.

2. Municipal Storm Drain Permit (MS4) compliance.

3. Source control and treatment control BMPs shall be implemented to minimize the potential contaminants that are generated during and after construction. Source control BMPs and

Treatment control BMPs will follow the ONT Storm Water Pollution Prevention Plan (SWPPP) and standard construction BMPs.

4. A project-specific Construction SWPPP would address construction-related surface water quality impacts and delineate water quality control measures to address those impacts.

5. Construction BMPs would include those outlined in FAA AC 150/5371-10, *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water pollution, Soil Erosion and Siltation Control*.

6. Employees shall strictly limit their activities, vehicles, equipment, and construction material to the proposed project footprint, staging areas, and designated routes of travel.

CONCLUSION

Based on HELIX's assessment, the project will not result in direct or indirect impacts to jurisdictional resources regulated by the USACE, RWQCB, or CDFW, provided that the jurisdictional avoidance and minimization measures outlined above are adequately implemented during construction of the project. Given the absence of jurisdictional impacts, HELIX does not anticipate that regulatory permits will be required to implement the project.

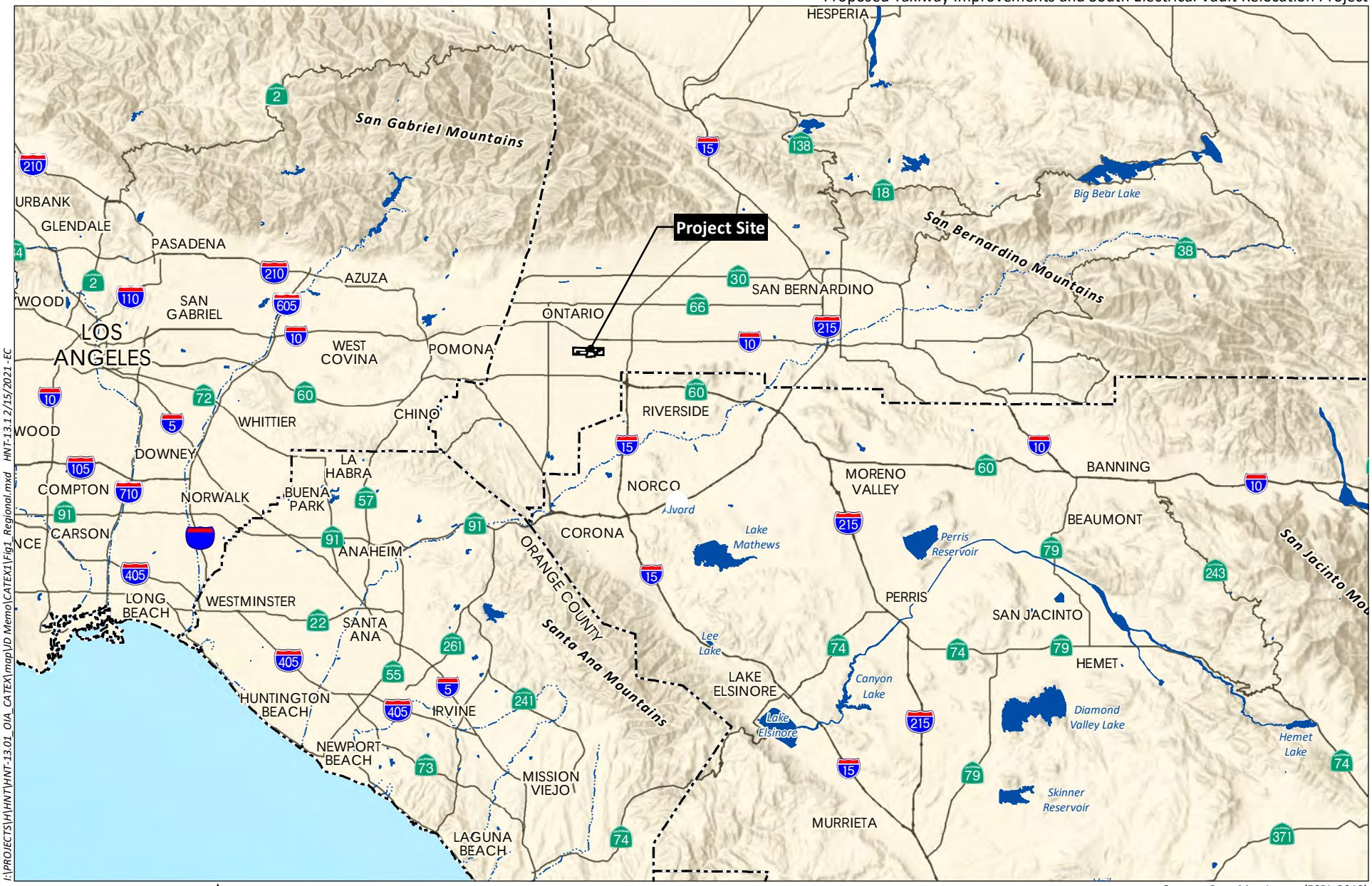
If you have any questions regarding the information presented in this letter report, please contact me at EzekielC@helixepi.com or (949) 234-8770.

Sincerely,

Ezekiel Cooley
Senior Biology Project Manager/Regulatory Specialist

Attachments:

Figure 1: Regional Location
Figure 2: Vicinity Map
Figure 3: Aerial Photograph
Figure 4: Proposed Action
Figure 5: Jurisdictional Features
Figure 6: Soils



I:\PROJECTS\H\HNT\HNT-13.01_OIA_CATEX\map\DD Memo\CATEX1\Fig1_Regional.mxd HNT-13.1 2/15/2021 -EC

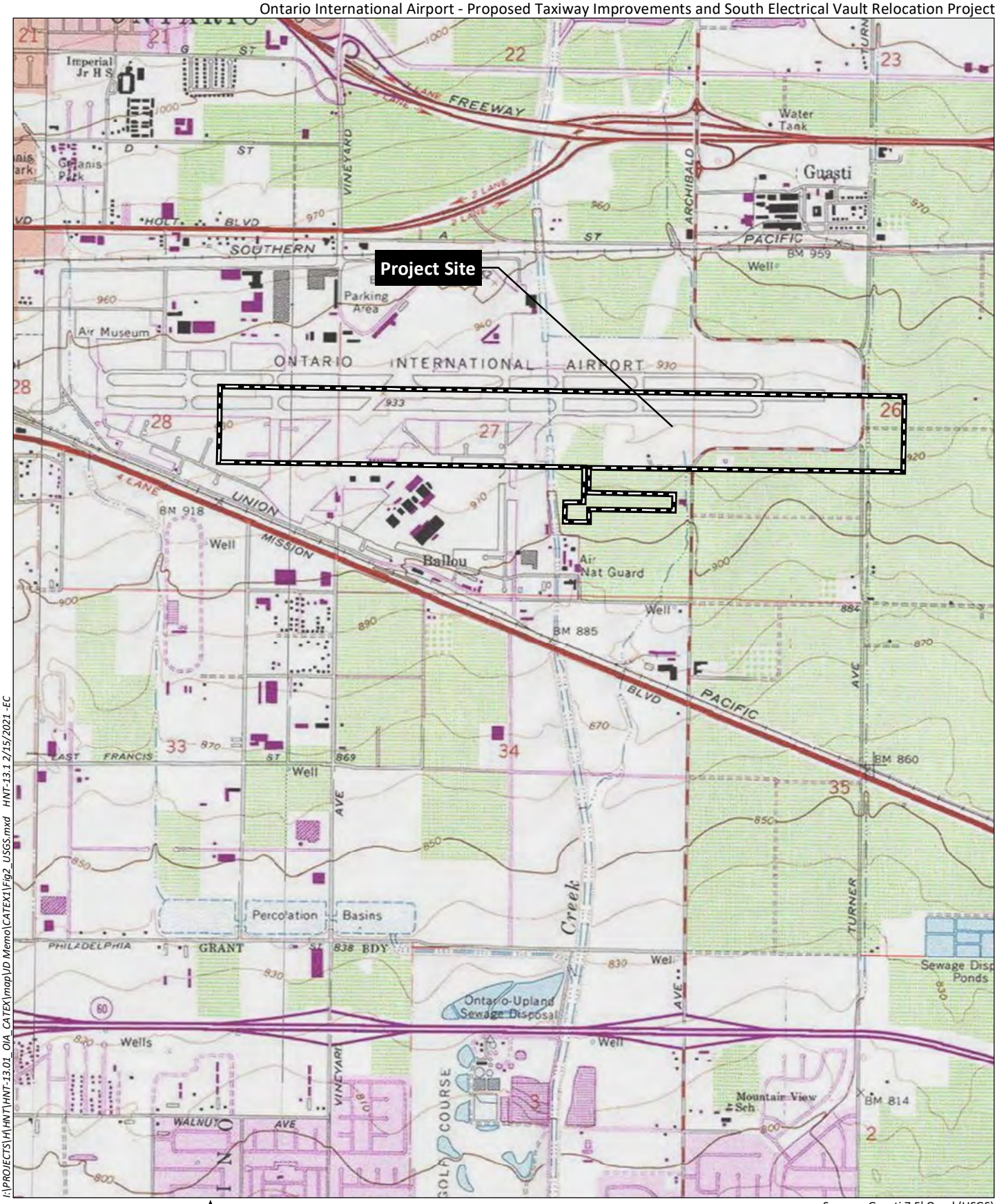
0 10 Miles

Source: Base Map Layers (ESRI, 2013)

HELIX Environmental Planning

Regional Location

Figure 1



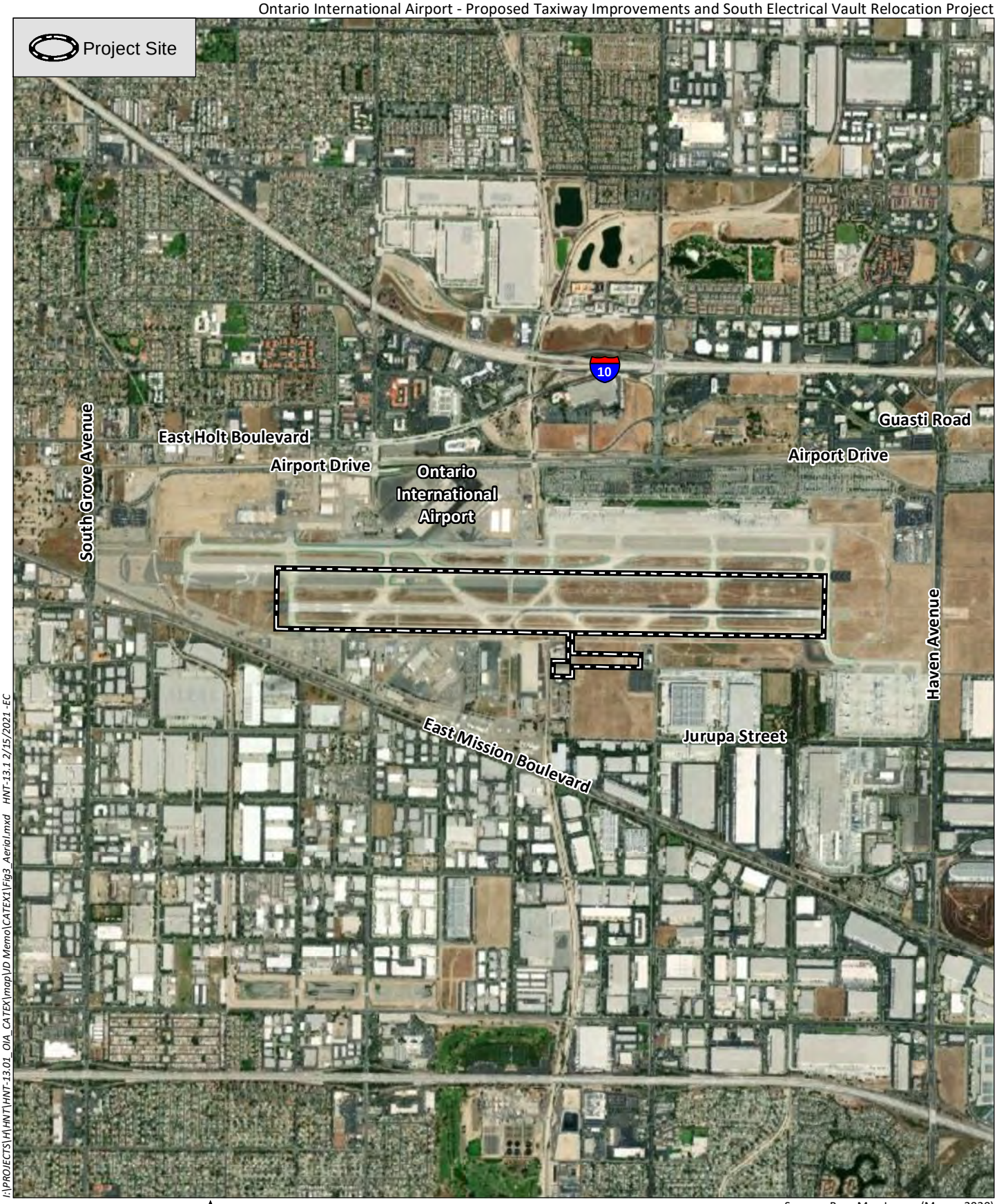
I:\PROJECTS\H\HNT\HNT-13.01_OIA_CATEX\map\JD Memo\CATEX1\Fig2_USGS.mxd HNT-13.1 2/15/2021 -EC

0 2,000 Feet

Source: Guasti 7.5' Quad (USGS)

Vicinity Map

Figure 2



I:\PROJECTS\H\HNT\HNT-13.01_OIA_CATEX\map\JD Memo\CATEX1\Fig3_Aerial.mxd HNT-13.1 2/15/2021 -EC

0 2,500 Feet

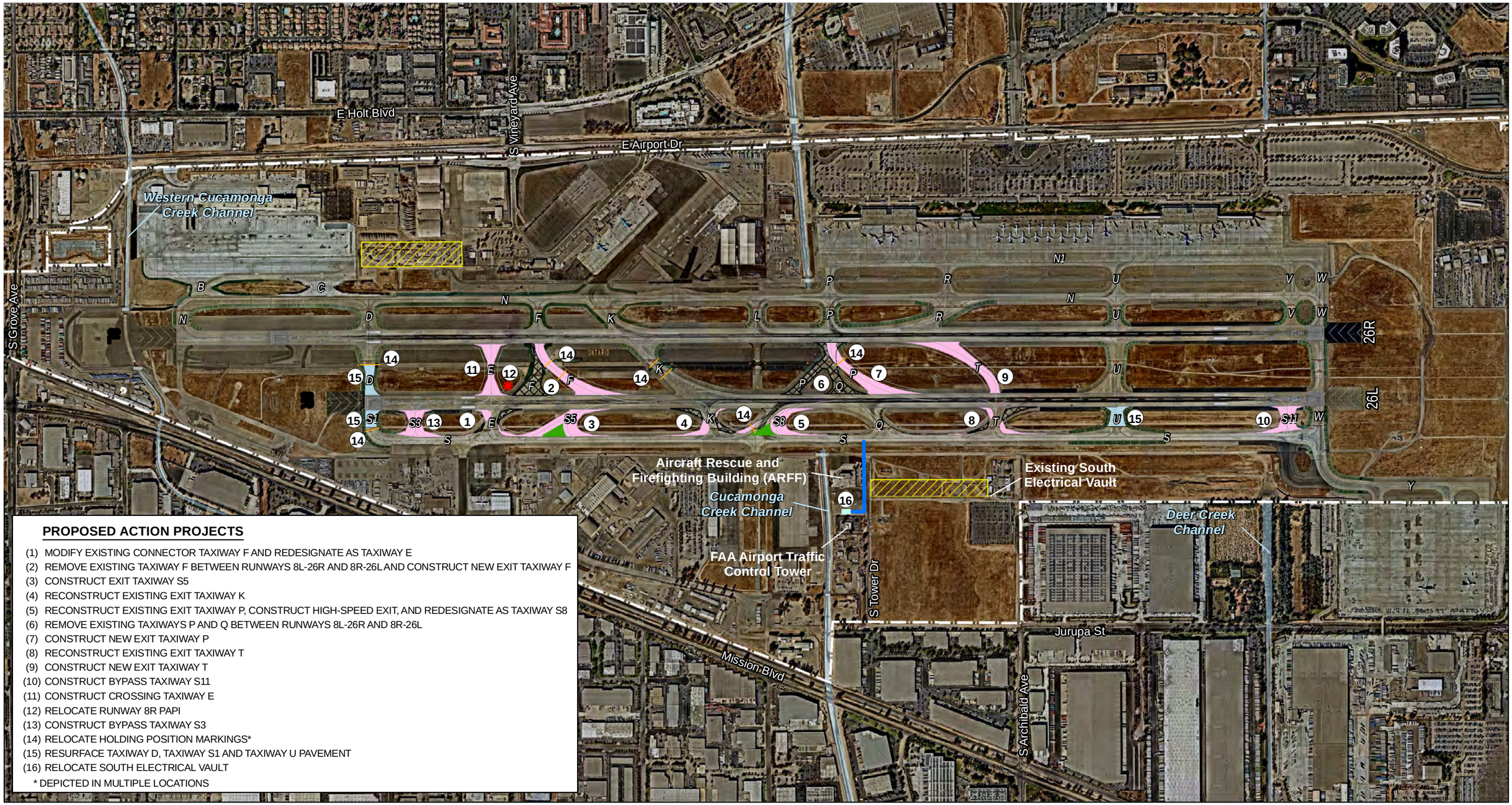
Source: Base Map Layers (Maxar, 2020)

HELIX Environmental Planning

Aerial Photograph

Figure 3

Categorical Exclusion for Taxiway Improvements and South Electrical Vault Relocation at Ontario International Airport



PROPOSED ACTION PROJECTS

(1) MODIFY EXISTING CONNECTOR TAXIWAY F AND REDESIGNATE AS TAXIWAY E
(2) REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F
(3) CONSTRUCT EXIT TAXIWAY S5
(4) RECONSTRUCT EXISTING EXIT TAXIWAY K
(5) RECONSTRUCT EXISTING EXIT TAXIWAY P, CONSTRUCT HIGH-SPEED EXIT, AND REDESIGNATE AS TAXIWAY S8
(6) REMOVE EXISTING TAXIWAYS P AND Q BETWEEN RUNWAYS 8L-26R AND 8R-26L
(7) CONSTRUCT NEW EXIT TAXIWAY P
(8) RECONSTRUCT EXISTING EXIT TAXIWAY T
(9) CONSTRUCT NEW EXIT TAXIWAY T
(10) CONSTRUCT BYPASS TAXIWAY S11
(11) CONSTRUCT CROSSING TAXIWAY E
(12) RELOCATE RUNWAY 8R PAPI
(13) CONSTRUCT BYPASS TAXIWAY S3
(14) RELOCATE HOLDING POSITION MARKINGS*
(15) RESURFACE TAXIWAY D, TAXIWAY S1 AND TAXIWAY U PAVEMENT
(16) RELOCATE SOUTH ELECTRICAL VAULT

* DEPICTED IN MULTIPLE LOCATIONS

Legend

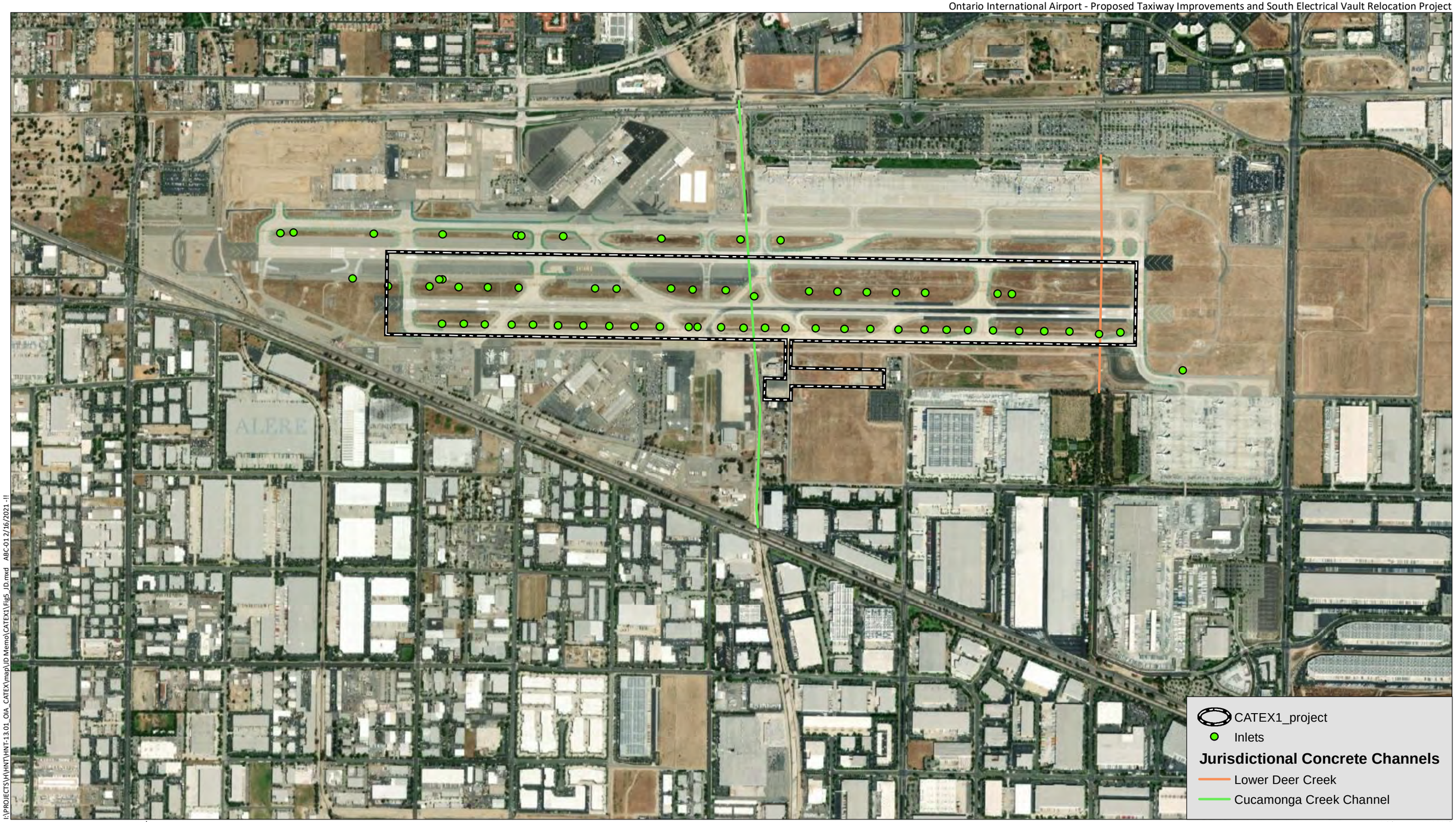
- Proposed Taxiway Pavement
- Proposed Pavement Removal
- Proposed Taxiway Pavement Resurfacing
- Proposed Painted Island
- Relocated South Electrical Vault
- Proposed Utilities to Relocated South Electrical Vault
- Relocated Holding Position Markings
- Contractor Staging Area
- Airport Property Line
- Relocated Runway 8R PAPI

Figure 4
Proposed Action

N

0 250 500 1,000 Feet

Sources: OIAA, Nearmap, HNTB Analysis



I:\PROJECTS\HNT\HNT-13.01_OIA_CATEX\map\JD Memo\CATEX1\Fig5_JD.mxd ABC-01 2/16/2021 -II

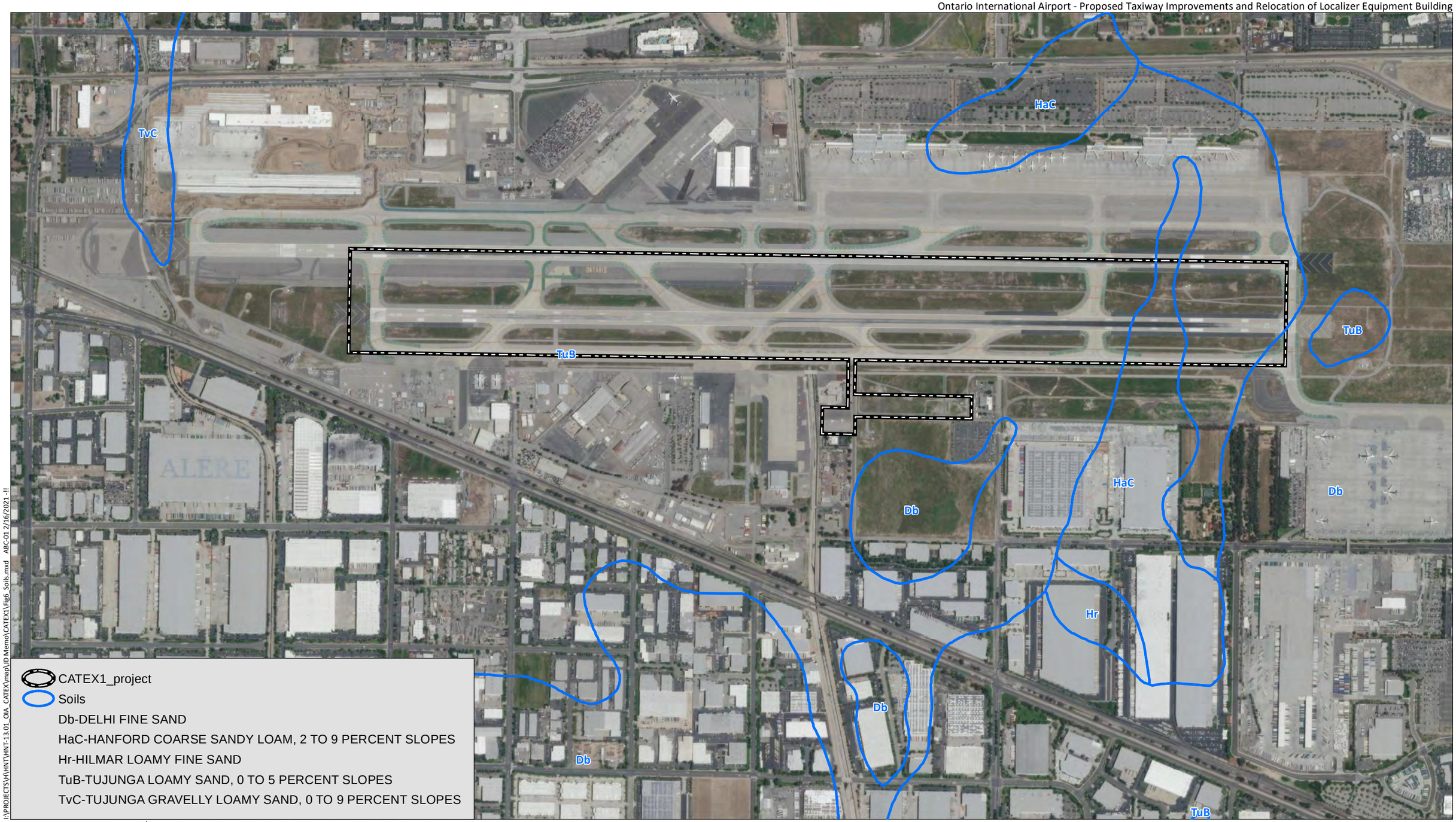
0 1,250 Feet

Source: Aerial (NearMap, 2020)

HELIX Environmental Planning

Jurisdicitonal Features

Figure 5



I:\PROJECTS\HVHNT\HNT-13.01_OIA_CATEX\map\UD Memo\CATEX1\Fig6_Soils.mxd ABC-01 2/16/2021 -!!

Source: Aerial (NearMap, 2020)

HELIX Environmental Planning

Soils

Figure 6

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 tel
619.462.0552 fax
www.helixepi.com

February 16, 2021 HNT-13.01

Kim Hughes
HNTB Corporation
2900 South Quincy St. Suite 600
Arlington, VA 22206

Subject: Jurisdictional Delineation Letter Report for the Proposed Runway 8R-26L Rehabilitation and Additional Airfield Improvements at Ontario International Airport

Dear Ms. Hughes:

This letter presents the results of a jurisdictional delineation conducted by HELIX Environmental Planning, Inc. (HELIX) for the proposed Taxiway Improvements and Relocation of Localizer Equipment Building (project) located at Ontario International Airport (ONT). The delineation was conducted to identify and map existing areas within the project area that are "waters of the U.S." under U.S. Army Corps of Engineers (USACE) jurisdiction pursuant to Section 404 of the Clean Water Act (CWA); waters of the State under Regional Water Quality Control Board (RWQCB) jurisdiction pursuant to Section 401 of the CWA; and streambed habitats under California Department of Fish and Wildlife (CDFW) jurisdiction pursuant to Section 1600 of the California Fish and Game Code. This report presents HELIX's best efforts to quantify jurisdiction within the project site using the current regulations, written policies, and guidance from USACE, RWQCB, and CDFW (collectively, the "regulatory agencies").

PROJECT LOCATION

The approximately 231-acre project site is in the City of Ontario, San Bernardino County, California. generally located south of the Interstate (I-) 10 and west of I-15 (Figure 1, *Regional Location*). The project site is located within Section 25 of Township 1 South, Range 7 West of the Guasti, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2, *Vicinity Map*). Specifically, the project site is located to the northwest of the intersection of S Haven Avenue and Jurupa Street; to the southwest of the intersection of E Airport Drive and S Haven Avenue; to the southwest of the intersection of S Grove Avenue and E Airport Drive; and to the northeast of the intersection of S Grove Avenue and E Mission Boulevard (Figure 3, *Aerial Photograph*).

PROJECT DESCRIPTION

The proposed project consists of the rehabilitation of Runway 8R-26L; relocation or construction of taxiways; construction of a taxiway bypass; relocation of perimeter fencing; relocation of airport

facilities currently within the Runway Object Free Area (ROFA) and/or or Runway Safety Area (RSA); and modification of an existing service road (Figure 4, *Proposed Action*).

METHODS

Prior to beginning fieldwork, aerial photographs (1 inch = 150 feet), topographic maps (1 inch = 150 feet), USGS quadrangle maps, and National Wetland Inventory maps (U.S. Fish and Wildlife Service 2019) were reviewed. HELIX Regulatory Specialist Ezekiel Cooley conducted the jurisdictional delineation field work on January 12, 2021. Delineation methods used to determine each agency's jurisdictional limits are discussed below.

U.S. Army Corps of Engineers

The USACE waters of the U.S. are determined using current USACE guidelines (Environmental Laboratory 1987, U.S. Army Corps of Engineers [USACE] 2008a). Areas are determined to be waters of the U.S. if there is evidence of regular surface flow (e.g., bed and bank). Jurisdictional limits for these areas are measured according to the presence of a discernible OHWM, which is defined in 33 Code of Federal Regulations (CFR) Section 329.11 as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas." The USACE has issued further guidance on the OHWM (Riley 2005; USACE 2008b), which also was considered in this jurisdictional assessment.

The jurisdictional delineation was conducted in accordance with court decisions (i.e., Rapanos v. United States, Carabell v. United States, and Solid Waste Agency of Northern Cook County v. USACE), as outlined and applied by the USACE (USACE 2007; Grumbles and Woodley 2007); and USACE and U.S. Environmental Protection Agency (EPA; 2007). These publications explain that the EPA and USACE will assert jurisdiction over traditional navigable waters (TNW) and tributaries to TNWs that are a relatively permanent water body (RPW), which has year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation is used to determine if the non-RPW is jurisdictional. As an alternative to the significant nexus evaluation process, a preliminary jurisdictional delineation may be submitted to the USACE. The preliminary jurisdictional delineation treats all waters and wetlands on a site as if they are jurisdictional waters of the U.S. (USACE 2008a). A significant nexus evaluation or preliminary jurisdictional delineation are typically only required for projects that propose impacts to potentially jurisdictional features and, therefore, require a Section 404 permit from the USACE.

Regional Water Quality Control Board

The RWQCB asserts regulatory jurisdiction over activities affecting wetland and non-wetland waters of the State pursuant to Section 401 of the CWA and the State Porter-Cologne Water Quality Control Act. Potential RWQCB jurisdiction would follow the boundaries of USACE jurisdiction for waters of the U.S.

California Department of Fish and Wildlife

The CDFW jurisdictional boundaries are determined based on the presence of riparian vegetation or regular surface flow, if present. Streambeds within CDFW jurisdiction are delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses with surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). This definition for CDFW jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., oak woodland and alluvial fan sage scrub). Jurisdictional limits for CDFW streambeds are defined by the top of bank. Vegetated CDFW habitats are mapped at the limits of streambed-associated vegetation, if present.

RESULTS

The project site supports three drainages that flow beneath the work area through covered concrete channels. The drainages include Deer Creek Channel in the eastern portion of the project site, Cucamonga Creek Channel in the center of the project site, and West Cucamonga Creek Channel in the western portion of the project site. Additionally, the project site includes multiple storm drain inlets that convey flows into the three concrete channels.

Based on the results of the jurisdictional delineation, Cucamonga Creek Channel, Deer Creek Channel, and Western Cucamonga Creek Channel are considered USACE/RWQCB non-wetland waters of the U.S. and CDFW jurisdiction (Figure 5, *Jurisdictional Features*). These jurisdictional features are underground through the extent of the project site.

Cucamonga Creek Channel

Cucamonga Creek Channel is a concrete rectangular channel that runs north to south through the center of the project site and is considered a USACE public works facility. Based on the USGS Guasti quadrangle map, the headwaters of Cucamonga Creek originate approximately seven miles to the north of the project site at the base of Cucamonga Peak in San Gabriel Mountains where it occurs as a natural soft-bottomed creek. Cucamonga Creek generally flows south through Cucamonga Canyon and becomes channelized once it exits the San Gabriel Mountains. Cucamonga Creek Channel flows enter the project site near the northern boundary to the south of Airport Drive. The channel continues for approximately 0.4 mile through the center of the site, flowing underneath the airport taxiway and resurfacing to the south of the taxiway. The channel exits the project site near the southern boundary, just north of Avion Street. After exiting the project site, Cucamonga Creek Channel flows south for 11 miles to the south of the project site and becomes soft-bottomed just prior to meeting the Santa Ana River at the Prado Flood Control Basin in Riverside County. The Santa Ana River ultimately drains into the Pacific Ocean approximately 35 miles to the southwest of the project site. Soils within Cucamonga Creek Channel on the project site are mapped as Tujunga loamy sand (0 to 5 percent slopes; NRCS 2021; Figure 6, *Soils*). However, native soils are no longer present in Cucamonga Creek Channel due to the full concrete channelization of the creek.

Deer Creek Channel

Deer Creek Channel is a concrete rectangular channel that runs north to south along the eastern project site boundary. Based on the USGS Guasti quadrangle map, the headwaters of Deer Creek originate approximately seven miles to the northeast of the project site at the base of Cucamonga Peak in San Gabriel Mountains where it occurs as a natural soft-bottomed creek. Deer Creek generally flows south through Deer Canyon and becomes channelized once it exits the San Gabriel Mountains. The channel likely collects sheet flow from impervious surfaces in the surrounding area and storm drains that empty into the channel. The majority of flows within Deer Creek Channel empty into Cucamonga Creek Channel near Turner Basin, approximately one mile to the north of project site. Some water is diverted into the channel within the historic flow path of Deer Creek, which flows south from Turner Basin as a mostly natural streambed until it reaches Airport Drive. Deer Creek flows underneath the airport and enters and exits the project site as an underground channel. Deer Creek continues south as an underground channel and surfaces as a concrete trapezoidal channel just north of State Route 60, approximately 1.6 miles to the south of the project site. The channel continues southwest as Lower Deer Creek Channel for approximately 2.1 miles, ultimately draining into Cucamonga Creek Channel. Soils within Deer Creek Channel on the project site are mapped as Tujunga loamy sand (0 to 5 percent slopes; NRCS 2021; Figure 6). However, native soils are no longer present in Deer Creek Channel due to the concrete channelization of the creek.

Western Cucamonga Creek Channel

Western Cucamonga Channel is a concrete rectangular channel that runs north to south along the western project site boundary. Western Cucamonga Creek Channel originates from the percolating basins as Cucamonga Creek exits Cucamonga Canyon, approximately six miles to the northwest of the project site. The channel likely collects sheet flow from impervious surfaces in the surrounding area as well as water collected in the 8th Street storm drains. Western Cucamonga Creek Channel flows mostly underground until it reaches 8th Street Basins. The channel continues south from the basin as an above-ground rectangular concrete channel. The channel passes through the Princeton Basin, and continues five miles south until it reaches the northwestern boundary of the project site. The channel flows along the western boundary and exits near the southwest corner. After exiting the site, the channel continues south through the Ely Basins and connects with Cucamonga Creek Channel approximately seven miles south of the project site. Soils within Western Cucamonga Creek Channel within the project site are primarily mapped as Tujunga loamy sand (0 to 5 percent slopes; NRCS 2021; Figure 6). However, native soils are no longer present in Western Cucamonga Creek Channel due to the concrete channelization of the creek.

IMPACTS

The project will not result in any impacts to Cucamonga Creek Channel, Deer Creek or Western Cucamonga Creek Channel. The project will require removal and installation of storm drain inlets. The removal and installation of storm drain inlets will be performed in such a way that no incidental fall back to the storm drain system will occur. Since the storm drain inlet activities will not result in direct or indirect impacts to downstream jurisdictional waters, the project would not impact USACE, RWQCB, or CDFW jurisdictional waters. In the absence of impacts to jurisdictional waters, the project would not require regulatory permits from the regulatory agencies.

AVOIDANCE AND MINIMIZATION MEASURES

The project will result in the removal and replacement of several storm drain inlets, which will not require work within USACE, RWQCB, or CDFW jurisdictional waters. No discharge of fill will occur within USACE and/or RWQCB jurisdictional waters and no streambed alterations will occur within CDFW jurisdictional resources, as a result of the proposed project.

The following minimization measures shall be implemented during construction to avoid indirect impacts to downstream jurisdictional waters:

1. General Stormwater Construction Permit compliance.

2. Municipal Storm Drain Permit (MS4) compliance.

3. Source control and treatment control BMPs shall be implemented to minimize the potential contaminants that are generated during and after construction. Source control BMPs and Treatment control BMPs will follow the ONT Storm Water Pollution Prevention Plan (SWPPP) and standard construction BMPs.

4. A project-specific Construction SWPPP would address construction-related surface water quality impacts and delineate water quality control measures to address those impacts.

5. BMPs would include those outlined in FAA AC 150/5371-10, *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water pollution, Soil Erosion and Siltation Control*.

6. Employees shall strictly limit their activities, vehicles, equipment, and construction material to the proposed project footprint, staging areas, and designated routes of travel.

CONCLUSION

Based on HELIX's assessment, the project will not result in direct or indirect impacts to jurisdictional resources regulated by the USACE, RWQCB, or CDFW, provided that the jurisdictional avoidance and minimization measures outlined above are adequately implemented during construction of the project. Given the absence of jurisdictional impacts, HELIX does not anticipate that regulatory permits will be required to implement the project.

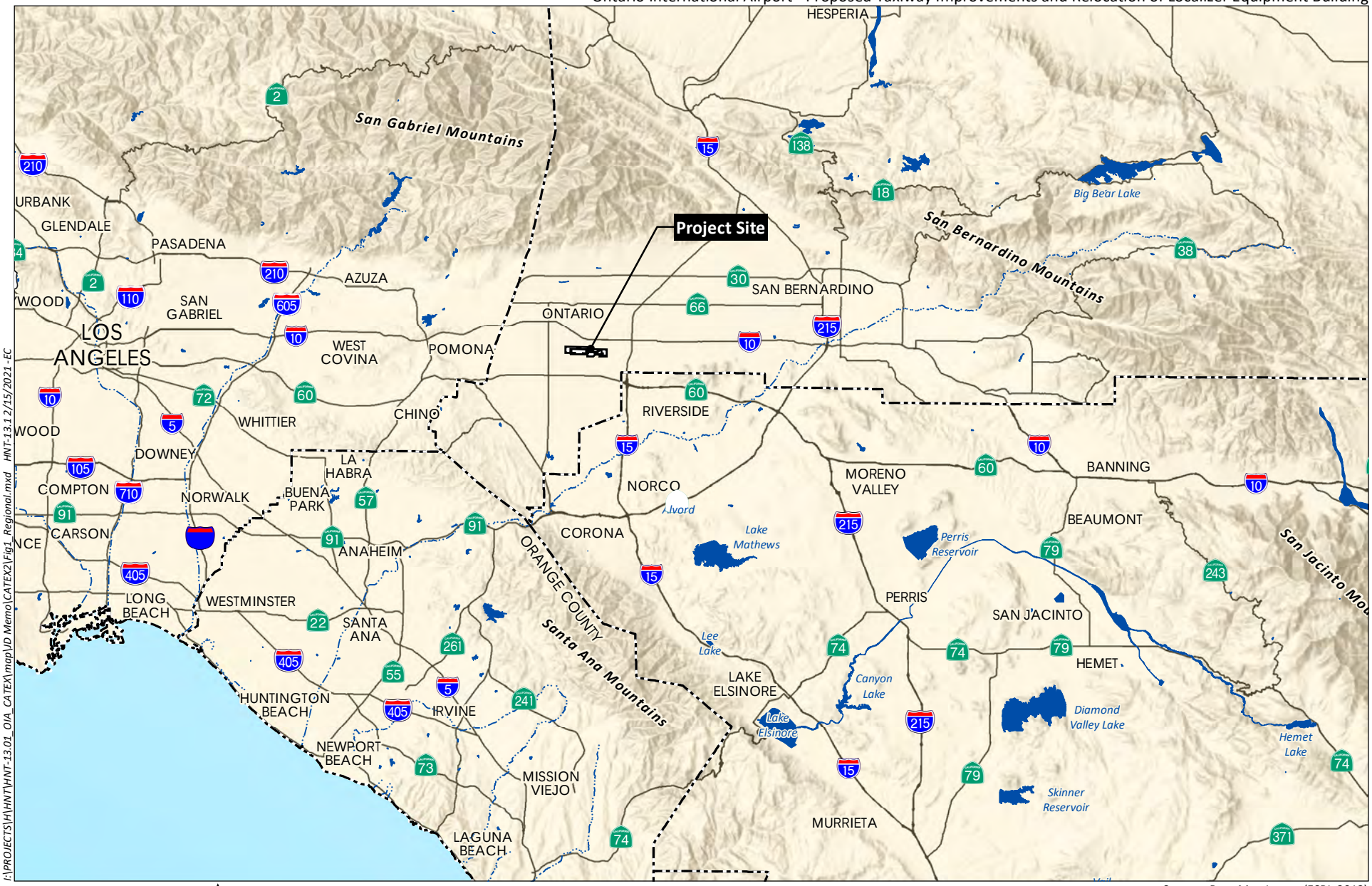
If you have any questions regarding the information presented in this letter report, please contact me at EzekielC@helixepi.com or (949) 234-8770.

Sincerely,

Ezekiel Cooley
Senior Biology Project Manager/Regulatory Specialist

Attachments:

Figure 1: Regional Location
Figure 2: Vicinity Map
Figure 3: Aerial Photograph
Figure 4: Proposed Action
Figure 5: Jurisdictional Features
Figure 6: Soils



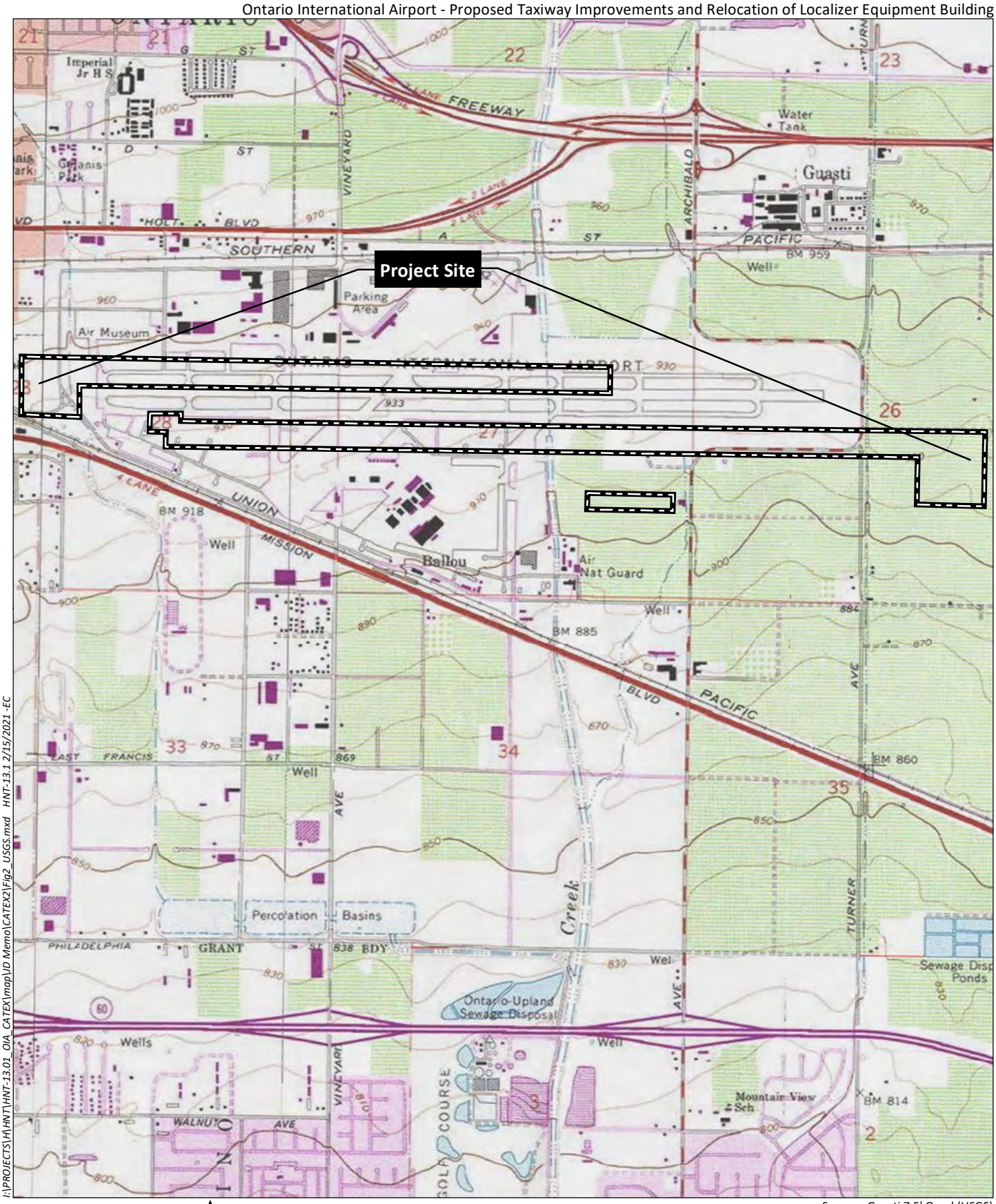
I:\PROJECTS\H\HNT\HNT-13.01_OIA_CATEX\map\DD Memo\CATEX2\Fig1_Regional.mxd HNT-13.1 2/15/2021 -EC

Source: Base Map Layers (ESRI, 2013)

HELIX Environmental Planning

Regional Location

Figure 1



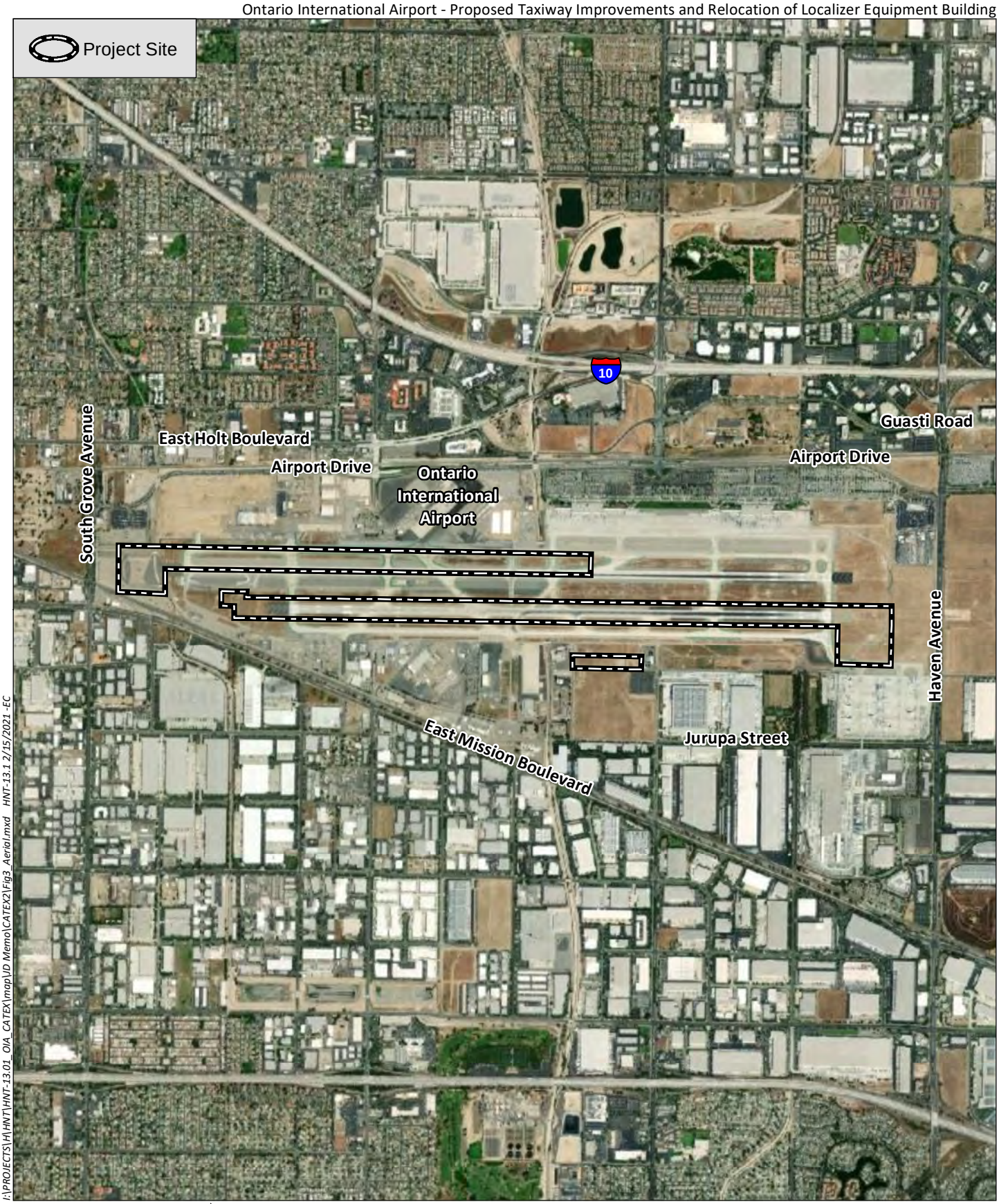
I:\PROJECTS\H\HNT\HNT-13.01_OIA_CATEX\map\JD Memo\CATEX2\Fig2_USGS.mxd HNT-13.1 2/15/2021 -EC

0 2,000 Feet

Source: Guasti 7.5' Quad (USGS)

Vicinity Map

Figure 2



I:\PROJECTS\H\HNT\HNT-13.01_OIA_CATEX\map\JD Memo\CATEX2\Fig3_Aerial.mxd HNT-13.1 2/15/2021 -EC

0 2,500 Feet

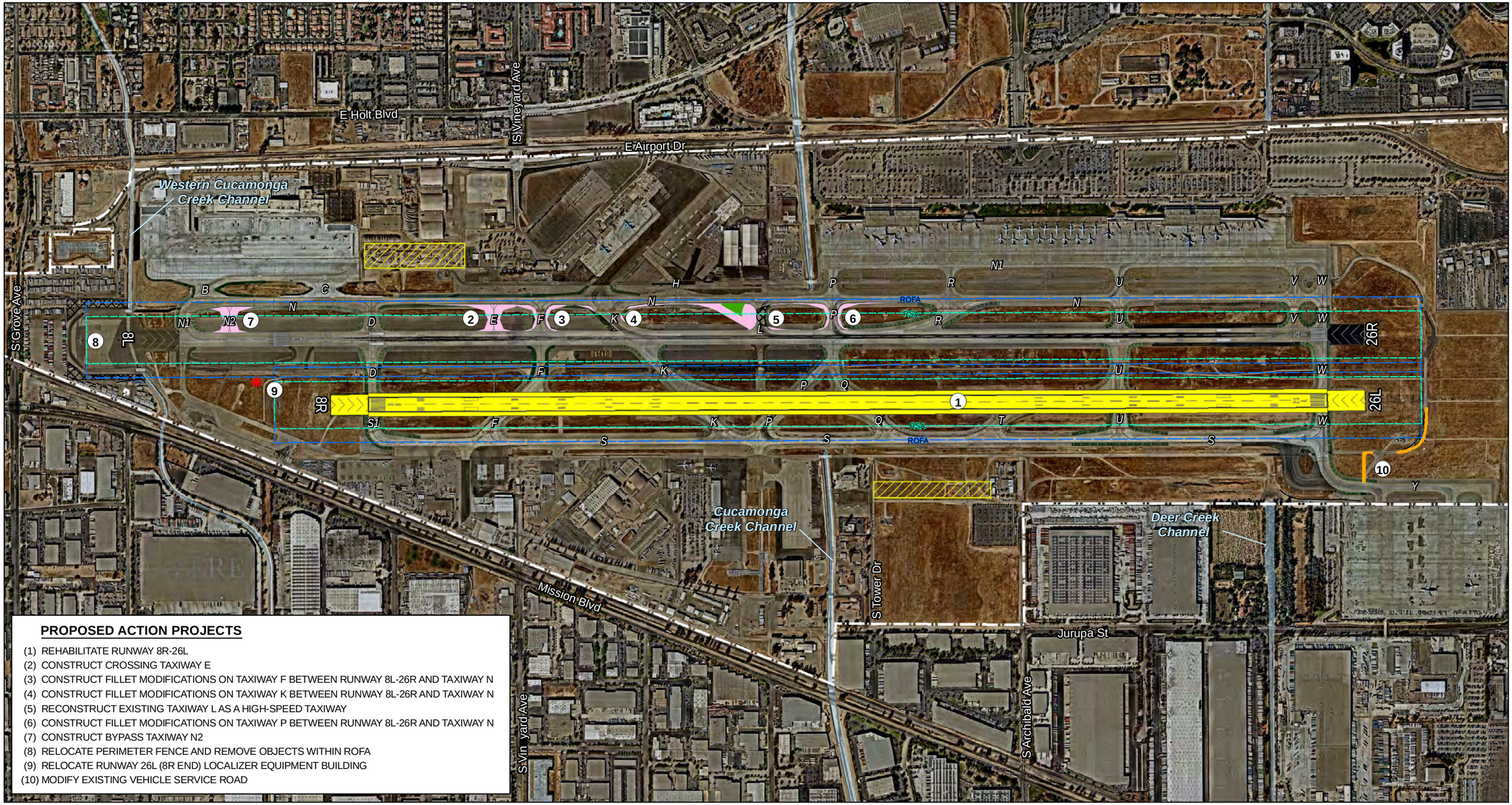
Source: Base Map Layers (Maxar, 2020)

HELIX Environmental Planning

Aerial Photograph

Figure 3

Categorical Exclusion for Runway 8R-26L Rehabilitation and Additional Airfield Improvements at Ontario International Airport



PROPOSED ACTION PROJECTS

(1) REHABILITATE RUNWAY 8R-26L
(2) CONSTRUCT CROSSING TAXIWAY E
(3) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(4) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(5) RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED TAXIWAY
(6) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY P BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(7) CONSTRUCT BYPASS TAXIWAY N2
(8) RELOCATE PERIMETER FENCE AND REMOVE OBJECTS WITHIN ROFA
(9) RELOCATE RUNWAY 26L (8R END) LOCALIZER EQUIPMENT BUILDING
(10) MODIFY EXISTING VEHICLE SERVICE ROAD

Legend

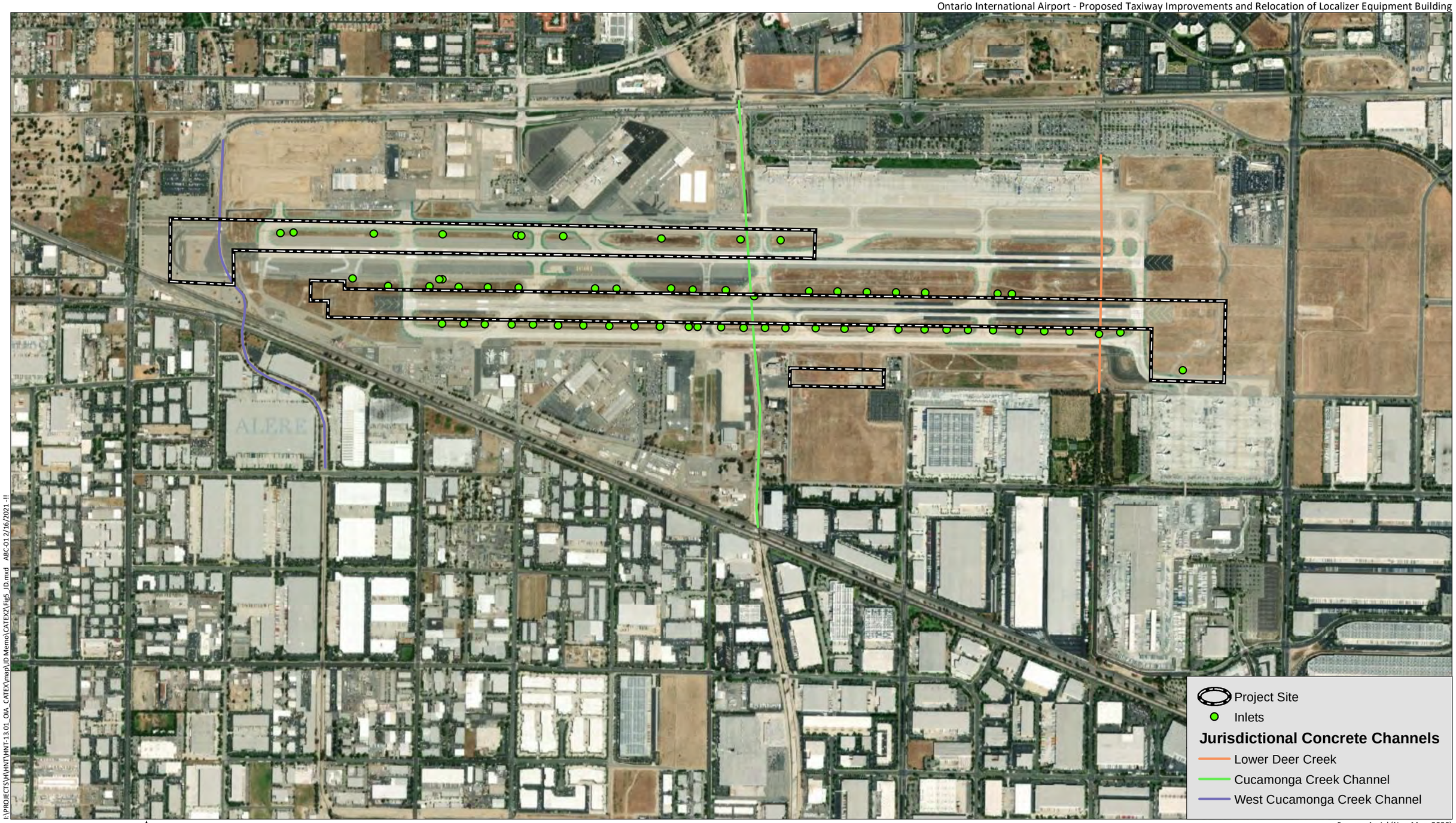
- Runway 8R-26L Pavement Rehabilitation
- Proposed Taxiway Pavement
- Proposed Pavement Removal
- Proposed Painted Island
- Proposed Vehicle Service Road Pavement
- Contractor Staging Area
- Airport Property Line
- (RSA) Runway Safety Area
- (ROFA) Runway Object Free Area
- Relocated Runway 26L Localizer Equipment Building

Figure 4
Proposed Action

N

0 250 500 1,000 Feet

Sources: OIAA, Nearmap, HNTB Analysis



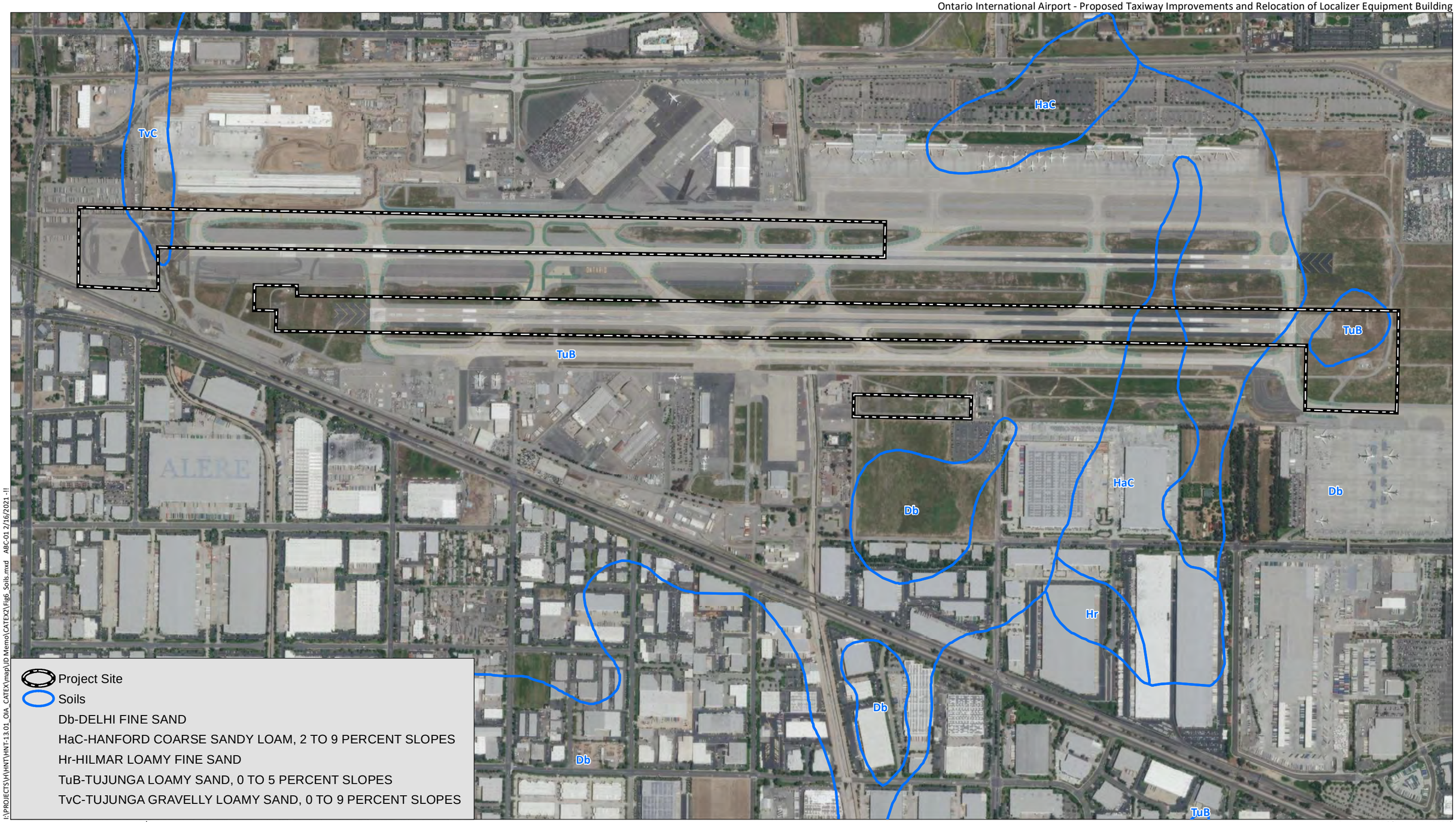
Source: Aerial (NearMap, 2020)

I:\PROJECTS\HNT\HNT-13.01_OIA_CATEX\map\JD Memo\CATEX2\Fig5_JD.mxd ABC-01 2/16/2021 -II

HELIX Environmental Planning

Jurisdictional Features

Figure 5



Project Site
Soils
Db-DELHI FINE SAND
HaC-HANFORD COARSE SANDY LOAM, 2 TO 9 PERCENT SLOPES
Hr-HILMAR LOAMY FINE SAND
TuB-TUJUNGA LOAMY SAND, 0 TO 5 PERCENT SLOPES
TvC-TUJUNGA GRAVELLY LOAMY SAND, 0 TO 9 PERCENT SLOPES

0 1,000 Feet

Source: Aerial (NearMap, 2020)

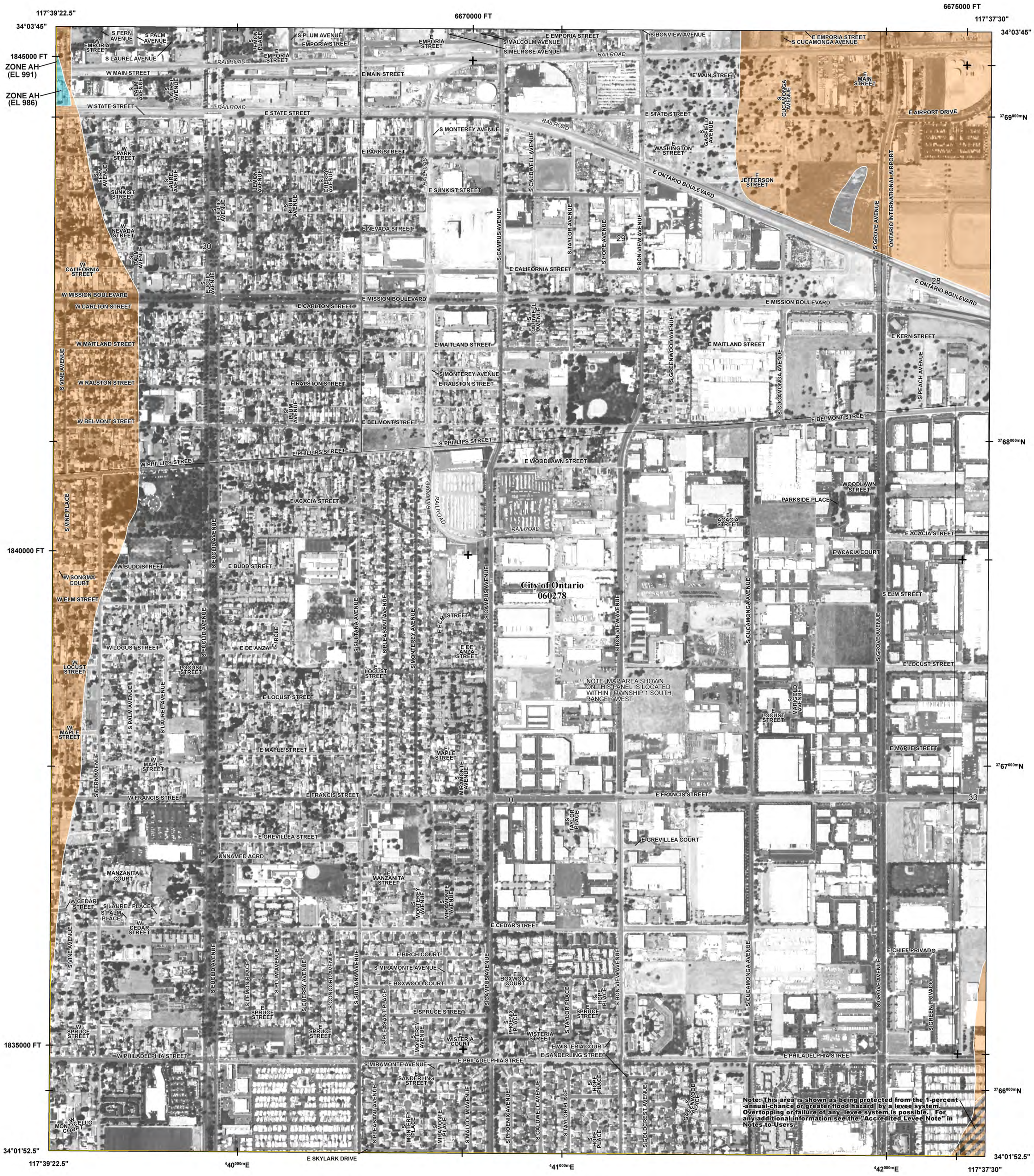
I:\PROJECTS\HVHNT\HNT-13.01_OIA_CATEX\map\UD Memo\CATEX2\Fig6_Soils.mxd ABC-01 2/16/2021 -I!

HELIX Environmental Planning

Soils

Figure 6

Floodplains



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Change Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes *Zone X*

OTHER AREAS
- NO SCREEN Areas of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert or Storm Sewer
- Accredited or Provisionally Accredited Levee, Dike or Floodwall
- Non-accredited Levee, Dike or Floodwall
- (E) 18.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation (BFE)
- (8) Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)

OTHER FEATURES
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2012 and was produced with a 1-meter ground sample distance.

Accredited Levee Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/business/nfip/index.shtm.

SCALE

N

Map Projection:
UTM Zone 11N; North American Datum 1983;
Western Hemisphere; Vertical Datum: North American Vertical Datum of 1988

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA
and Incorporated Areas

Panel **8617** of 9400

FEMA

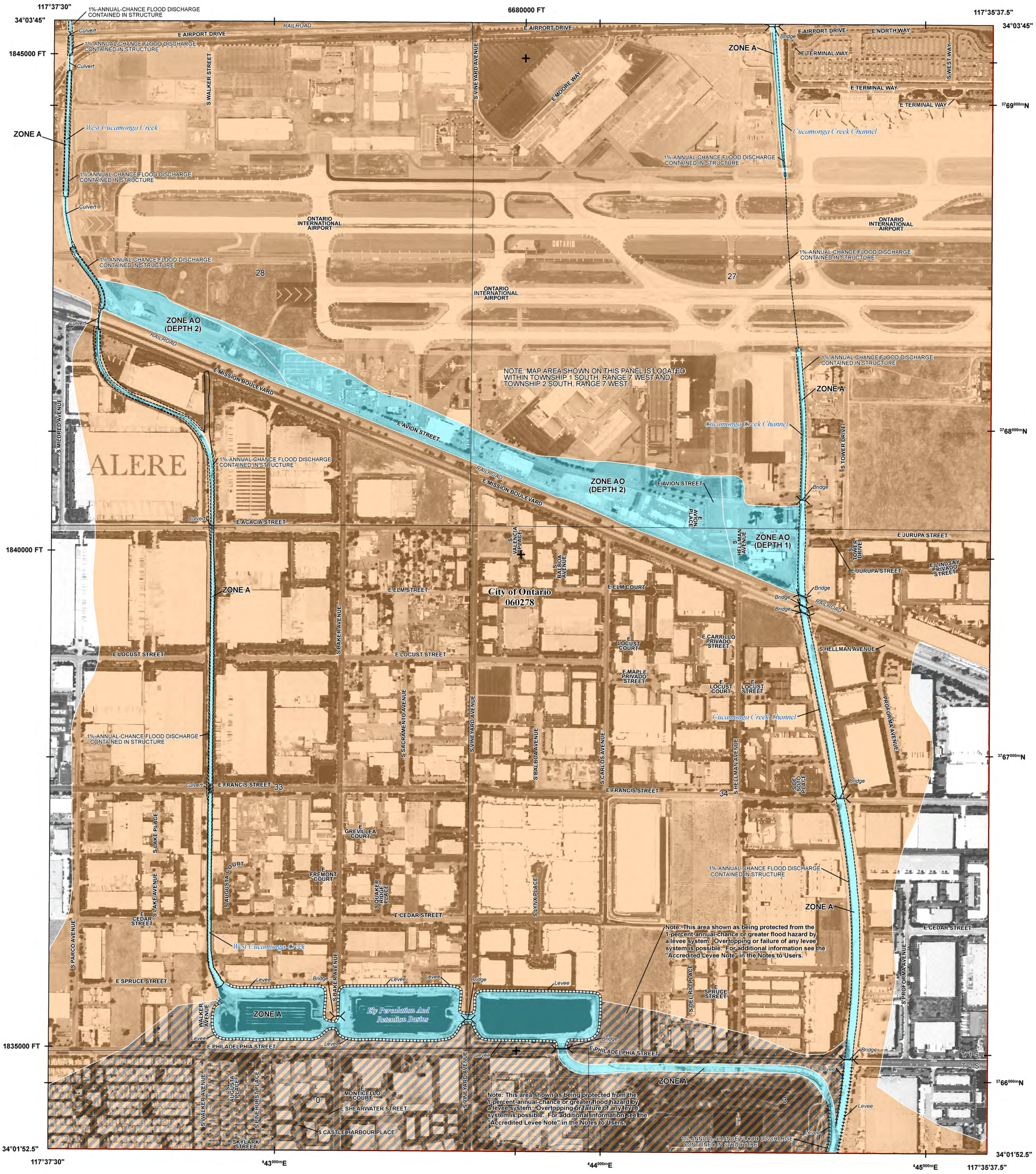
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
ONTARIO, CITY OF	060278	8617	J

VERSION NUMBER
2.3.2.3

MAP NUMBER
06071C8617J

MAP REVISED
FEBRUARY 18, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Change Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes *Zone X*

OTHER AREAS
- NO SCREEN Areas of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert or Storm Sewer
- Accredited or Provisionally Accredited Levee, Dike or Floodwall
- Non-accredited Levee, Dike or Floodwall
- E 18.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation (BFE)
- 8 Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)

OTHER FEATURES
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2012 and was produced with a 1-meter ground sample distance.

Accredited Levee Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/business/nfip/index.shtm.

SCALE

N

Map Projection:
UTM Zone 11N; North American Datum 1983;
Western Hemisphere; Vertical Datum: North American Vertical Datum of 1988

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR





NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA
and Incorporated Areas

Panel 8636 of 9400

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
ONTARIO, CITY OF	060278	8636	J

VERSION NUMBER
2.3.2.3

MAP NUMBER
06071C8636J

MAP REVISED
FEBRUARY 18, 2015

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the San Bernardino County ISD.GIS Department, United States Geological Survey, the Bureau of Land Management, the United States Department of Agriculture, and the National Geodetic Survey. The imagery was flown by U.S. Department of Agriculture Farm Sevice Agency in 2012 and was produced with a 1-meter ground sampling distance.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4275000mE — 1000-meter Universal Transverse Mercator grid values, zone 11
- 6000000 FT — 5000-foot grid ticks: California State Plane coordinate system, Zone V (FIPSZONE = 405), Lambert projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 • — River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 2, 2016 – to change Base Flood Elevations, to add Base Flood Elevations, to change Special Flood Hazard Areas, to add Special Flood Hazard Areas, to change zone designations, to incorporate previously issued Letters of Map Revision, and to reflect updated topographic information.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8637J

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 8637 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ONTARIO, CITY OF	060278	8637	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06071C8637J

MAP REVISED
SEPTEMBER 2, 2016

Federal Emergency Management Agency

Appendix C

Pavement Management Program (2020)

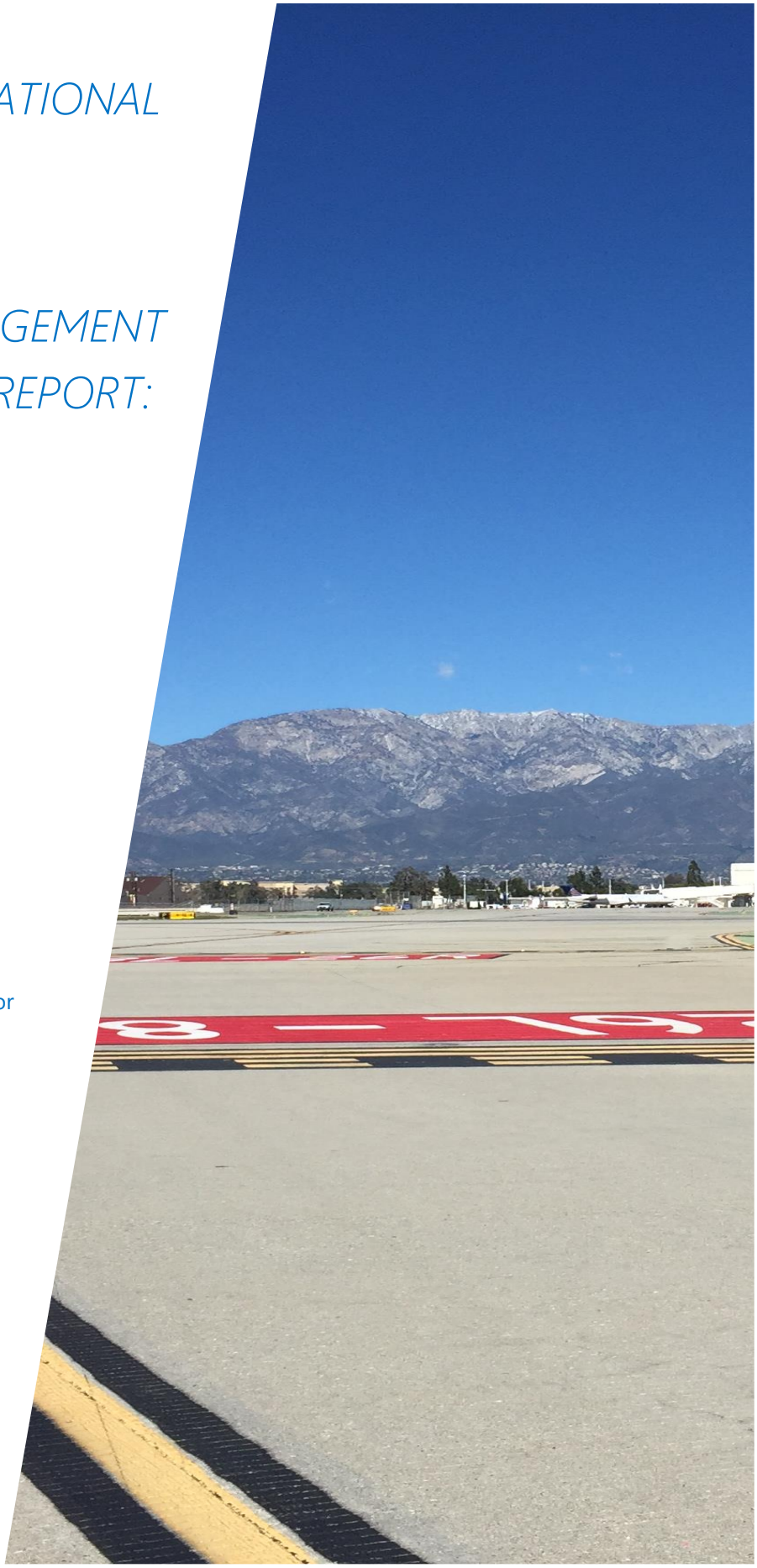
ONTARIO INTERNATIONAL AIRPORT

ONTARIO, CA

PAVEMENT MANAGEMENT PROGRAM (PMP) REPORT: AIRSIDE

MARCH 2020

This document has been released for the purpose of interim review.



RS&H

ONTARIO INTERNATIONAL AIRPORT

PAVEMENT MANAGEMENT PROGRAM (PMP) REPORT: AIRSIDE

DRAFT
March 2020
Ontario, CA

RS&H No.:
226-0047-000

Prepared by RS&H, Inc. at the direction of Ontario International Airport



TABLE OF CONTENTS

Chapter 1 Executive Summary 1
1.1 Executive Summary 2
Chapter 2 Introduction 5
2.1 Airport Background 6
2.1.1 Pavement Environment 6
2.2 Pavement Inspected 7
2.3 Airfield Pavement Overview 7
2.3.1 Pavement Sections Records Review 7
2.4 Project Background 7
Chapter 3 Evaluation Methodology 9
3.1 Introduction 10
3.1.1 PCI Survey Overview 10
3.1.2 PCI Survey Data Preparation 12
3.1.3 Conduct PCI Survey 12
3.1.4 Process PCI Survey Data 14
3.1.5 PCI Analysis 15
3.1.6 SCI Analysis 16
3.2 Nondestructive Testing (NDT) 17
3.2.1 Heavy Weight Deflectometer (HWD) Testing 17
3.3 Geotechnical Investigation 18
Chapter 4 PCI and SCI Results and Analysis 20
4.1 Introduction 21
4.2 Results Overview 21
4.3 Runways Results and Analysis 26
4.4 Taxiways Results and Analysis 29
4.5 Aprons Results and Analysis 33
4.6 Vehicle Service Roads Results and Analysis 34
Chapter 5 Pavement Classification Number (PCN) 36
5.1 Introduction 37
5.2 PCN Overview 37
5.2.1 Fleet Mix 39
5.2.2 Runway Taxiway Configuration 40
5.3 PCN Results and Analysis 40
5.3.1 PCN Results 40

5.3.2 PCN Analysis 42
Chapter 6 Pavement Management Program (PMP) 44
6.1 Introduction 45
6.2 PMP Overview 45
6.3 Repair Cost 46
6.3.1 Reconstruction Pavement Section 46
6.3.2 AC and PCC Pavement Repair Cost 47
6.4 Estimated Repair Cost By Branch 47
6.5 10 Year "No Action" Analysis 48
Chapter 7 Capital Improvement Plan (CIP) 49
7.1 Introduction 50
7.2 CIP Overview 50
7.2.1 Fiscal Year 1 51
7.2.2 Fiscal Year 2 51
7.2.3 Fiscal Year 3 52
7.2.4 Fiscal Year 4 52
7.2.5 Fiscal Year 5 52
7.2.6 Fiscal Year 6 53
7.2.7 Fiscal Year 7 53
7.2.8 Fiscal Year 8 53
7.2.9 Fiscal Year 9 53
7.2.10 Fiscal Year 10 53
Appendix A Pavement Section History A-1
Appendix B Airfield Pavement Distresses B-1
Appendix C Pavement Condition Index By Section C-1
Appendix D Pavement Condition Index By Sample Unit D-1
Appendix E Non-Destructive Testing Results E-1
Appendix F Engineer's Estimate of Maintenance Cost F-1
Appendix G 10 Year "No Action" Analysis G-1
Appendix H CIP Cost Analysis H-1
Appendix I Geotechnical Report I-1

LIST OF TABLES

Table 1-1: CIP Overview 3
Table 3-1: Pavement Distress Overview 13
Table 3-2: PCC Distress Quanitity Reporting Comparison 14
Table 3-3: Pavement Maintenance Classification 16
Table 3-4: SCI Classification 17
Table 3-5: Rigid Pavement Distress Types Used to Calculate the Structural Condition Index 17
Table 4-1: Runway Section PCI and SCI Results 26
Table 4-2: Taxiway Section PCI and SCI Results 29
Table 4-3: Apron Section PCI and SCI Results 33
Table 4-4: Vehicle Service Road Section PCI and SCI Results 34
Table 5-1: Standard Subgrade Condition 38
Table 5-2: Maximum Tire Pressure 38
Table 5-3: Fleet Mix 39
Table 5-4: Runway Section PCN Results 41
Table 5-5: Taxiway Section PCN Results 41
Table 5-6: Apron Section PCN Results 42
Table 6-1: PCC Reconstruction Pavement Section 46
Table 6-2: AC Reconstruction Pavement Section 46
Table 6-3: AC Reconstruction Shoulder/Blast Pad Section 46
Table 6-4: AC Repair Cost 47
Table 6-5: PCC Repair Cost 47
Table 7-1: CIP Overview 50
Table A-1: Flexible Pavement Distresses A-2
Table A-2: Rigid Pavement Distresses A-8
Table C-1: Runway 10 Year "No Action" Results C-2
Table C-2: Taxiway 10 Year "No Action" Results C-6
Table C-3: Apron 10 Year "No Action" Results C-11
Table C-4: VSR 10 Year "No Action" Results C-12

LIST OF FIGURES

Figure 1-1: Airside Pavement PCI 3
Figure 2-1: Airport diagram 6
Figure 2-2: Airside Pavement Inspected 8
Figure 3-1: PCI Legend 11
Figure 3-2: Typical Pavement Condition Life Cycle 16
Figure 3-3: Heavy Weight Deflectometer 18
Figure 3-4: Geotechnical Boring and Coring Locations 19
Figure 4-1: AC/PCC Pavement Areas 22
Figure 4-2: Pavement Condition Index By Section 23
Figure 4-3: Pavement Condition Index By Sample Unit 24

Figure 4-4: Structural Condition Index By Sample Unit 25
Figure 7-1: CIP Overview 55

CHAPTER 1

EXECUTIVE SUMMARY

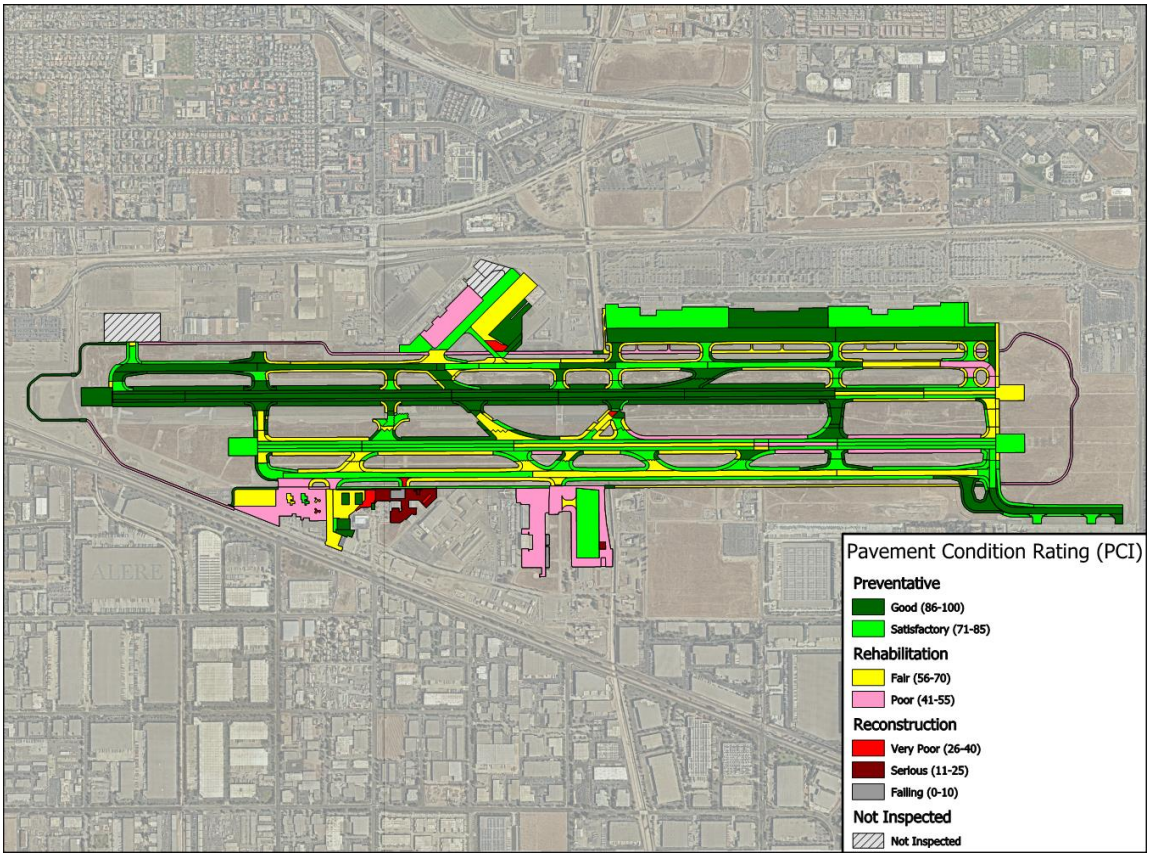
1.1 EXECUTIVE SUMMARY

Ontario International Airport, owned by Ontario International Airport Authority, tasked RS&H, Inc. (RS&H) with assessing all airfield and landside pavements to establish a Pavement Management Plan (PMP) in accordance with current Federal Aviation Administration (FAA) requirements found in FAA Advisory Circular (*AC*) *150/5380-6C - Guidelines and Procedures for Maintenance of Airport Pavements*, and *150/5380-7B - Airport Pavement Management Program (PMP)*. Due to different funding sources, the airside pavement reporting and recommendations will be kept separate from the landside pavement. This report will only include the airside pavements. The results for the landside pavement can be found in a separate document.

There were three major components related to this effort. The first was to perform a visual pavement inspection and establish a Pavement Condition Index (PCI). The second was to determine a technical Pavement Classification Number (PCN) for the airfield pavements based on the current and projected fleet mix at Ontario International Airport. The third was to develop a PMP that identifies and prioritizes future maintenance, rehabilitation, and/or reconstruction projects for the airside pavements based on the PCI and PCN.

The pavement inspection scope was to perform 100% inspection on all airfield pavements except areas that were under construction, in the process of being demolished, closed portions of the airfield, outside of existing shoulders that do not serve any structural use, or that are being maintained by other entities. All pavement distresses were documented and processed, resulting in PCI values assigned to each pavement section as shown on **Figure 1-1.** The maintenance classification (i.e. Preventative, Rehabilitation, Reconstruction) as shown on **Figure 1-1** is a simple way to categorize the maintenance needs of each pavement section based on the PCI value and corresponding pavement condition rating. The figure below is also shown in Chapter 4.

FIGURE 1-1: AIRSIDE PAVEMENT PCI



Each pavement Section was evaluated based on the PCI value of the pavement and the operational importance of the pavement section and the result is the recommended pavement Capital Improvement Plan (CIP) listed in **Table 1-1**. The table below is also shown in Chapter 7.

TABLE 1-1: CIP OVERVIEW

Fiscal Year	Pavement Branch	Main Type of Repairs	Estimated Cost	Fiscal Year Estimated Cost
1	Runway 8R/26L Keel	Full Reconstruction	$ 26,594,000.00	$ 43,421,000.00
	Runway Shoulder 8R, Runway Blast Pads 8R & 26L	Full Reconstruction	$ 16,697,000.00	
	Taxiway F (Sections: 7,8), Taxiway K (7,8), Taxiway P (8,9), Taxiway Q (3,4)	Slab Replacement, Patching	$ 130,000.00	
2	Runway 8L/26R	Patching, Crack Seal	$ 473,000.00	$ 16,576,000.00
	Runway Shoulder 8L	Crack Seal, Seal Coat	$ 536,000.00	
	Taxiway F (Sections: 2,3), Taxiway K (3,4), Taxiway P (3,4)	Slab Replacement, Patching	$ 162,000.00	
	Terminal 1 Apron	Full Reconstruction	$ 15,405,000.00	
3	VSR East	Full Reconstruction	$ 1,443,000.00	$ 6,078,000.00
	VSR South	Mill & Overlay, Full Reconstruction	$ 651,000.00	
	VSR West	Full Reconstruction	$ 2,151,000.00	
	VSR North	Full Reconstruction, Mill & Overlay	$ 1,833,000.00	

Fiscal Year	Pavement Branch	Main Type of Repairs	Estimated Cost	Fiscal Year Estimated Cost
4	Taxiway N (Sections: 12,13), Taxiway V (2,3), Taxiway W (2,3)	Full Reconstruction	$ 10,629,000.00	$ 10,629,000.00
5	Taxiway K, Taxiway P, Taxiway Q, Taxiway F	Slab Replacement, Patching	$ 849,000.00	$ 2,031,000.00
	Taxiway N Shoulder	Crack Seal, Seal Coat	$ 602,000.00	
	Taxiway S Shoulder	Crack Seal, Seal Coat	$ 580,000.00	
6	Cargo South Apron, Atlantic Aviation Apron	Full Reconstruction	$ 29,928,000.00	$ 29,928,000.00
7	Terminal 2 Apron, Terminal 3 Apron, Terminal 4 Apron, Taxilane N1	Slab Replacement, Patching	$ 835,000.00	$ 835,000.00
8	Taxiway S1, Taxiway S2, Taxiway S3	Full Reconstruction	$ 2,559,000.00	$ 2,559,000.00
9	Taxiway S	Full Reconstruction	$ 45,742,000.00	$ 45,742,000.00
10	FedEx Apron (Sections: 2, 5, 6, 10, 13, 17, 18)	Full Reconstruction	$ 13,727,000.00	$ 20,823,000.00
	International Terminal Apron (Sections: 1,3)	Full Reconstruction	$ 7,096,000.00	
			Total	**$178,622,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.
Source: RS&H, 2020

CHAPTER 2

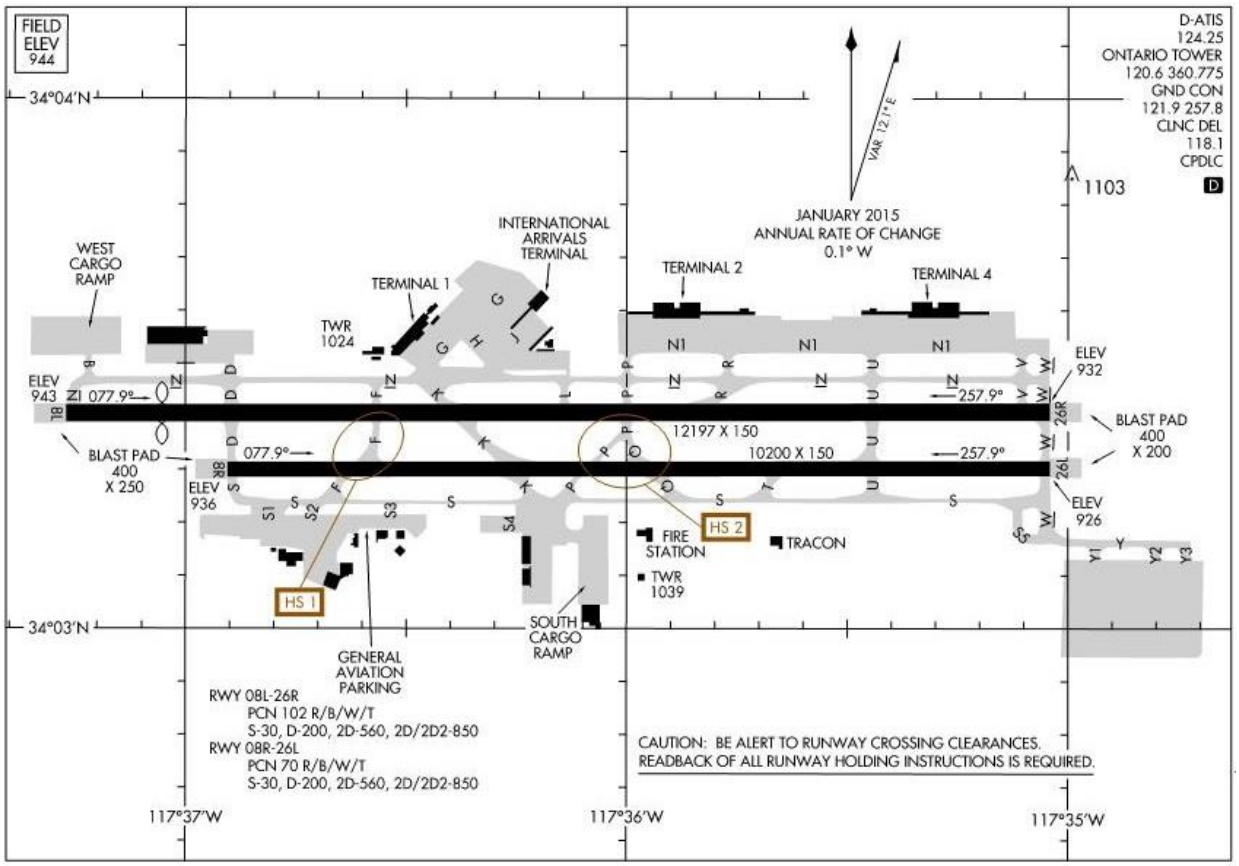
INTRODUCTION

2.1 AIRPORT BACKGROUND

Ontario International Airport is classified by the FAA as a medium hub airport, and is located two miles east of Ontario, California. The airfield consists of two active runways, Runway 8L-26R, and Runway 8R-26L as shown in

Figure 2-1. Runway 8L-26R is 12,197 ft in length and 150 ft in width. Runway 8R-26L is 10,200 ft in length and 150 ft in width. Additionally, there are 27 taxiways/taxilanes on the airfield which make up the taxiway system. There are also two commercial terminal aprons, a general aviation apron and two cargo ramps.

FIGURE 2-1: AIRPORT DIAGRAM



Source: FAA Airport Diagrams, 2018

2.1.1 Pavement Environment

Ontario is in the Western Pacific Region of California. The average summer temperature ranges from 63°F as a low and 95°F as a high. The average winter temperatures range from 44° as low and 68° as a high. The annual precipitation average is 14.77 inches of rainfall. Pavement environment is an important consideration because several pavement distresses such as block cracking, weathering and blowups are directly related to weather and will have a direct impact on the pavement life span.

2.2 PAVEMENT INSPECTED

Figure 2-2 shows areas included in this inspection. The following are areas that were not included due to being under construction, in the process of being demolished, closed portions of the airfield, outside of existing shoulders that do not serve any structural use, or that are being maintained by other entities.

- West Cargo Ramp: Pavement to be demolished in the near future.
- Northern portion of Taxilane G: Currently under construction.
- Northern portion of Terminal 1 Apron: Currently being used by Taxilane G contractor.
- UPS Apron: Pavement maintained by UPS.
- Closed Taxilane A, Taxiway C, Taxiway M and Taxiway E

2.3 AIRFIELD PAVEMENT OVERVIEW

This section contains an overview of the historical records review and the airfield pavement network at Ontario International Airport.

2.3.1 Pavement Sections Records Review

A records review for pavement sections of all airfield pavement areas has been performed to determine the as-built pavement sections. **Appendix A** contains the previous 2010 APMS work history data, data from past and present geotechnical investigations, and work history of jobs completed after the 2010 APMS report was published. **Appendix A** also includes a graphical representation of the pavement sections of the airport. This graphic summarizes the data that was found from records review.

2.4 PROJECT BACKGROUND

The Pavement Condition Index (PCI) report is part of the Ontario International Airport's Pavement Management Program (PMP). As a result of Public Law 103-305, Section 107, which thereby amended Title 49, Section 47105 of the United States Code, Assurance No. 11 has been added to the FAA Sponsor Assurances. This Assurance dictates that airports receiving federal funds for capital improvements projects are required to have an effective airport Pavement Management Program (PMP). As part of the PMP, the airports must inspect their airfield pavement and provide a report detailing the condition to the FAA. In addition to the PCI report, the Airport's PMP also includes a Pavement Condition Number (PCN) report which provides the structural capacity of the Airport's airfield pavement and a Pavement Management Plan which prioritizes pavement maintenance repair needs and plans future rehabilitation projects.

The principle objective of this report is to assess the current airfield pavement conditions and assign PCI values for all runways, taxiways, aprons and vehicle service roads. As part of the assessment of current pavement conditions, a PCI survey has been performed, as set forth in ASTM D5340 *Standard Test Method for Airport Pavement Condition Index Surveys*, thus extending the frequency of the detailed inspection by PCI survey to every three years as dictated by FAA *AC 150/5380-7B Section A-1.2*. This report also serves as a foundation for the Airport's Pavement Management Plan.

The following chapters detail the methodology, technology, field inspection process, resulting PCI, PCN values and analysis.

Ontario International Airport

Airfield Pavement Evaluation

Figure 2-2
Airside Pavements
Inspected

Legend

Pavement Inspected

February 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

RS&H

CHAPTER 3

EVALUATION METHODOLOGY

3.1 INTRODUCTION

This chapter provides an overview of the PCI survey process, including the purpose and methodology, conducting the PCI survey, as well as the processing of the PCI survey data. The subsequent sections also detail the definition of the pavement network and describe airfield-specific pavement distresses.

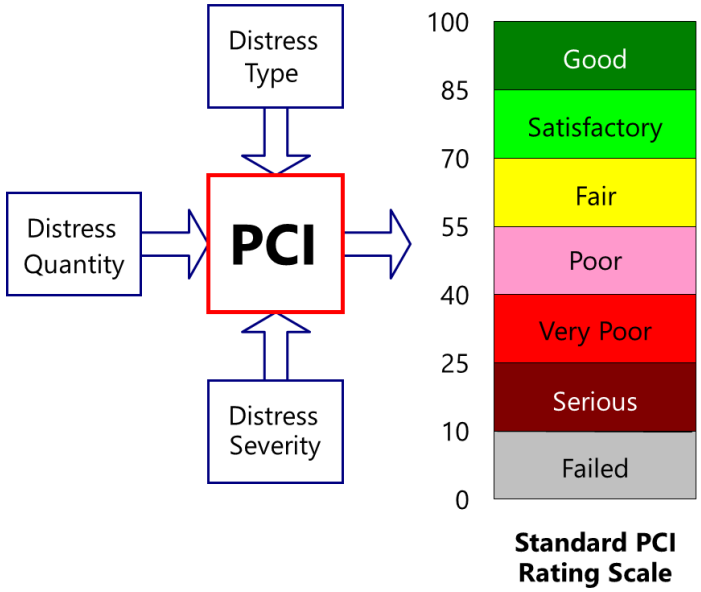
3.1.1 PCI Survey Overview

A PCI survey, as defined in ASTM D5340 *Standard Test Method for Airport Pavement Condition Index Surveys* and approved by the FAA, provides a measure of the current condition of the pavement based on the distresses visually observed on the surface of the pavement. These visual distresses can provide insight to the structural integrity and the surface operational condition. Additionally, a PCI survey provides an objective and rational basis for determining maintenance repair needs and priorities. It is important to note that a PCI survey cannot measure the structural capacity, nor can it provide direct measurement of skid resistance or roughness as it is a visual observation without additional testing required to access the structural capacity or roughness.

The result of a PCI survey is a PCI value for each contiguous pavement area located within a single pavement entity with a distinct function (e.g. runway, taxiway, etc.) and a uniform pavement section based on construction condition and traffic, known as a pavement section. A PCI value is a numerical indicator that rates the surface condition of the pavement and ranges from 0 to 100. The numerical value corresponds to the surface condition of a pavement that is determined through visual inspection of pavement distresses including type, quantity, and severity of each pavement distress, as shown in **Figure 3-1**. A PCI value of 100 represents that the pavement has been recently constructed (or reconstructed) and is in excellent condition with no visible distresses; whereas, a PCI value of 0 represents that the pavement has failed, and complete reconstruction is required.

The PCI value has a corresponding pavement condition rating which is a written description of the pavement condition as a function of the PCI value. For airfield pavements, the standard pavement condition rating, as shown in **Figure 3-1**, is defined in FAA AC 150/5380-7B *Airport Pavement Management Program*.

FIGURE 3-1: PCI LEGEND



Source: ASTM D5340, 2012; FAA AC 150/5380-7B, 2014; RS&H, 2020

Below is a summary of each pavement condition rating:

- Pavement rated as "Good" condition, between 100 to 86 PCI value, has minor or no distresses and will require only routine maintenance.
- Pavement rated as "Satisfactory" condition, between 85 to 71 PCI value, has scattered low-severity distresses and very few, if any, medium-severity distresses that should need only routine maintenance.
- Pavement rated as "Fair" condition, between 70 to 56 PCI value, has a combination of generally low- and medium-severity distresses. Maintenance and repair needs should be routine to major in the near term.
- Pavement rated as "Poor" condition, between 55 and 41 PCI value, has low-, medium-, and high-severity distresses that probably cause some operational problems. Maintenance and repair needs should range from routine to reconstruction in the near term.
- Pavement rated as "Very Poor" condition, between 40 and 26 PCI value, has predominantly medium- and high-severity distresses causing considerable maintenance and operational problems. Near-term maintenance and repair needs will be intensive.
- Pavement rated as "Serious" condition, between 25 and 11 PCI value, has mainly high-severity distresses that cause operational restrictions. Repair needs are immediate and substantial rehabilitation or reconstruction is required.
- Pavement rated as "Failed" condition, between 10 and 0 PCI value, is pavement that deteriorated and progressed to the point that safe aircraft operations are no longer possible. Complete reconstruction is required.

Continuous monitoring of the PCI value and corresponding Pavement Condition Rating is used to establish the rate of pavement deterioration, which permits early identification of pavement rehabilitation needs. The PCI value provides feedback on pavement performance for validation or improvement of current pavement design and maintenance procedures.

3.1.2 PCI Survey Data Preparation

To conduct a PCI survey, the airfield pavement areas are classified using a hierarchical-based pavement network model which contains pavement branches that contain one or more pavement sections. Pavement branches are an identifiable part of the pavement network that are a single entity and have a distinct function. For example, each runway, taxiway, or apron is divided into a separate branch due to their differences in use and designation. A pavement section is a contiguous pavement area within a branch having uniform construction, maintenance, usage history (traffic volume/load intensity), and condition. A branch may contain only one section, or it may be subdivided into multiple sections based on these distinctions.

With the airfield pavement classified, the pavement sections are then further divided into sample units to allow for the determination of a PCI value for each section. For rigid pavement, Portland Cement Concrete (PCC), sample units are 20 slabs +/- 8 slabs and for flexible pavement, Asphalt Concrete (AC), sample units are 5,000 square ft. +/-2,000 square ft as outlined by ASTM D5340.

RS&H reviewed the previously defined airfield pavement network from the most recent PCI survey (2010). The pavement network data, provided in AutoCAD file format, contained pavement sections, sample units, and PCC slabs with labeling for pavement sections and samples. The AutoCAD data was imported into an Esri file geodatabase based on a pavement data model that provides interoperability with PAVER™, a windows-based pavement management software program. The geodatabase includes individual feature classes (e.g. sections, samples, slabs) with one-to-many relationships between the feature classes. Once imported into a geodatabase, required attribute data was added to each feature to allow for the data to be imported into PAVER™. Additionally, unique identifiers were created for each section, sample unit and slab to allow for collected distresses to be associated with either a sample unit or slab.

While importing the previous pavement network data, the information was reviewed for accuracy and compliance with ASTM D5340. During this validation, it was identified that some PCC sample units contained 30 PCC slabs which exceeded the standard number of slabs per sample units as specified in ASTM D5340. However, to provide continuity with previous PCI studies and allow for a comparative analysis of the PCI results, the previously defined sample units, along with branches and sections, were maintained.

3.1.3 Conduct PCI Survey

The PCI survey was completed by visually inspecting each pavement sample unit while recording observed pavement distress as defined in ASTM D5340 and detailed in **Appendix B**. The PCI survey visually inspected every sample unit for a 100% sampling rate. The recorded pavement distresses are external indicators of pavement deterioration caused by loading, environmental (climate) factors, construction deficiencies, or a combination thereof. Distresses can be categorized into three principal

categories that are load-related distresses, climate-related distresses, and other distresses. The following briefly describe the three categories of distresses:

- Load-Related – Distresses caused by aircraft or vehicular traffic and may provide an indication of structural deficiency. Examples include linear cracking and shattered slabs.
- Climate-Related – Distresses that often indicate the presence of aged material and/or environmentally-susceptible material, which includes durability-related issues such as D cracking and alkali-silica reactivity (ASR).
- Other – Man-made distresses such as patches and utility cuts. Patches are often required when a pavement deteriorates to the point in which foreign object debris (FOD) is present and creates hazards to aircraft.

The observed distress quantities were documented based on either: each individual distress, PCC slab, linear feet, or square feet and collected as either GIS point or line feature as defined in **Table 3-1**. In addition to the distress quantity, each distress was classified based on severity (i.e. low, medium, high, or not applicable) in accordance with ASTM D5340 and detailed in **Appendix B**. To document each distress, the PCI survey team used GIS field collection software, Esri *Collector for ArcGIS,* running on windows-based tablet PCs connected to a Trimble R2 GPS receiver to record distress type, quantity, and severity as well as the location within 1 foot of accuracy. The collection software also has the ability to take photographs of distresses and flag distresses for follow-up (e.g. distress type or severity verification). As part of the distress collection process, each distress was automatically associated with either a sample unit for AC pavement or a pavement slab for PCC pavement.

TABLE 3-1: PAVEMENT DISTRESS OVERVIEW

Pavement Type	Distress Code	Distress	Collected Quantity Unit	GIS Feature Type
AC	41	Alligator or Fatigue Cracking	Square Feet	Point
	42	Bleeding	Square Feet	Point
	43	Block Cracking	Square Feet	Point
	44	Corrugation	Square Feet	Point
	45	Depressions	Square Feet	Point
	46	Jet Blast Erosion	Square Feet	Point
	47	Joint Reflective Cracking	Linear Feet	Line
	48	Long. and Trans. Cracking	Linear Feet	Line
	49	Oil Spillage	Square Feet	Point
	50	Patching and Utility Cuts	Square Feet	Point
	51	Polished Aggregate	Square Feet	Point
	52	Raveling	Square Feet	Point
	53	Rutting	Square Feet	Point
	54	Shoving	Square Feet	Point
	55	Slippage Cracking	Square Feet	Point
	56	Swell	Square Feet	Point
	57	Weathering	Square Feet	Point
PCC	61	Blow-Up	Slab	Point
	62	Corner Break	Each	Point

Pavement Type	Distress Code	Distress	Collected Quantity Unit	GIS Feature Type
	63	Cracking (L/T/D)	Linear Feet	Line
	64	Durability "D" Cracking	Each	Point
	65	Joint Seal Damage	Linear Feet	Line
	66	Patching (Small)	Each	Point
	67	Patching (Large)	Each	Point
	68	Popouts	Slab	Point
	69	Pumping	Slab	Point
	70	Scaling	Slab	Point
	71	Settlement or Faulting	Slab	Point
	72	Intersecting Cracks/ Shattered Slab	Slab	Point
	73	Shrinkage Cracking	Slab	Point
	74	Spalling (Joint)	Each	Point
	75	Spalling (Corner)	Each	Point
	76	Alkali-Silica Reaction (ASR)	Slab	Point

Source: RS&H, 2020

3.1.4 Process PCI Survey Data

Throughout the PCI survey, the distress data was validated daily to ensure accuracy of the distress type, severity, quantity, and location for each distress and included a review of all flagged distresses. When the PCI survey was completed, all observed distresses were exported from GIS into a tabular format to be imported into PAVER™ based on quantity units defined in ASTM D5340. For rigid pavement distresses, the quantity of each distress is recorded differently in PAVER™ compared to how they were collected. Each different distress type observed on each slab was reviewed and only counted at the highest severity level. For example, if distresses for a slab included two low-severity small patches and one high-severity small patch, when imported into PAVER™, the distress is recorded as a single slab with a high-severity patch within the sample unit. The exception to this process is the Joint Seal Damage distress which is reported for the entire sample unit based on the highest level of distress severity. **Table 3-2** provides a comparison between the collected quantity units and PAVER™ quantity units.

TABLE 3-2: PCC DISTRESS QUANITITY REPORTING COMPARISON

Distress Code	Distress	Collected Quantity Unit	PAVER™ Quantity Unit
61	Blow-Up	Slab	Slab
62	Corner Break	Each	**Slab**
63	Cracking (L/T/D)	Linear Feet	**Slab**
64	Durability "D" Cracking	Each	**Slab**
65	Joint Seal Damage	Linear Feet	**Sample Unit**
66	Patching (Small)	Each	**Slab**
67	Patching (Large)	Each	**Slab**
68	Popouts	Slab	Slab
69	Pumping	Slab	Slab
70	Scaling	Slab	Slab
71	Settlement or Faulting	Slab	Slab
72	Intersecting Cracks/ Shattered Slab	Slab	Slab
73	Shrinkage Cracking	Slab	Slab

Distress Code	Distress	Collected Quantity Unit	PAVER™ Quantity Unit
74	Spalling (Joint)	Each	**Slab**
75	Spalling (Corner)	Each	**Slab**
76	Alkali-Silica Reaction (ASR)	Slab	Slab

Source: RS&H, 2020

Note: PAVER™ quantity units highlighted in bold represent difference to collected quantity units

The prepared distress data was then imported into PAVER™ at the sample unit level and a deduct value based on the severity and density for each distress related to the overall area of the sample unit was automatically calculated based on the pavement deduct curves defined in ASTM D5340. Then, a PCI value was automatically calculated for each sample unit by PAVER™. The section PCI value was determined by calculating each individual sample unit's PCI value combined with the total area per sample unit in relation to the overall section area. For a PCI Survey with a 100% sampling rate, this is the average sample unit PCI value for the Section. Although a PCI value is calculated for each inspected sample unit, this value is only used for the calculation of the section PCI value and is not used for reporting purposes and should not be considered representative of pavement condition. Additionally, PAVER™ also allows for the prediction of future PCI values by extrapolating pavement history and incorporating degradation over time.

3.1.5 PCI Analysis

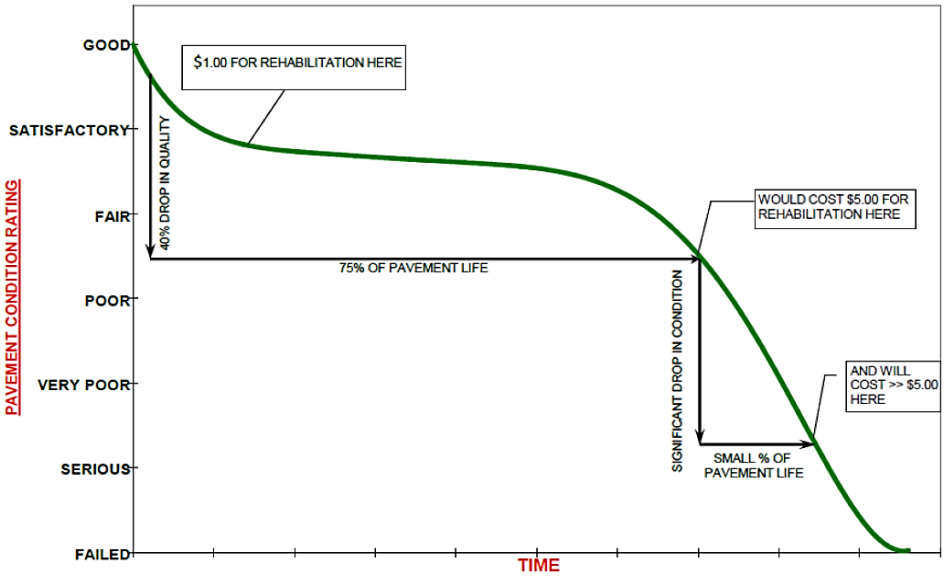
The PCI value and its corresponding pavement condition rating can be directly correlated with typical pavement condition life cycle shown in **Figure 3-2**. When pavement is first constructed or major rehabilitated work is accomplished such as a full-depth reconstruction, the pavement is in "Good" condition. The pavement deteriorates slowly at first and will begin to enter "Satisfactory" condition as distresses begin to occur. During this period, this is the most opportune time to perform preventative maintenance such as spall repairs and crack sealing to preserve pavement life.

If preventative maintenance is not performed, or changes in loading conditions occur, the pavement will continue to deteriorate and more and/or worsening distresses will occur. Once pavement falls into "Fair" condition, maintenance and rehabilitation efforts range from routine to minor in the near term (1-2 years). When the pavement is in "Poor" condition, maintenance and rehabilitation efforts become major in the near term with rehabilitation necessary. During "Fair" and "Poor" conditions, the cost to repair the pavement is roughly five times the cost of preventative maintenance performed when the pavement is in "Good" or "Satisfactory" condition.

Without any maintenance or rehabilitation efforts, the pavement condition will continue to deteriorate and will fall into "Very Poor" condition. In this condition the rehabilitation needs will be extensive and require reconstruction. If rehabilitation or reconstruction is not conducted the pavement will fall into "Serious" condition where operational restrictions typically exist and reconstruction is immediately required. During "Very Poor" and "Serious" conditions, the cost to repair the pavement is greater than five times the cost of preventative maintenance performed when the pavement is in "Good" or "Satisfactory" condition.

Lastly, when the pavement is rated as "Failed", the pavement has deteriorated and progressed to the point that safe aircraft operations are no longer possible and complete reconstruction is required.

FIGURE 3-2: TYPICAL PAVEMENT CONDITION LIFE CYCLE



Source: FAA AC 150/5380-7B, 2014

A maintenance classification category was developed to provide a better understanding of the relationship between the pavement condition rating and the pavement lifecycle previously described. The maintenance classification, detailed in **Table 3-3**, is a simple way to categorize the maintenance needs of each pavement section based on the PCI value and corresponding pavement condition rating. The three classifications categories are: preventative maintenance, rehabilitation, and reconstruction.

TABLE 3-3: PAVEMENT MAINTENANCE CLASSIFICATION

Maintenance Classification	*Pavement Condition*	*PCI Value*
Preventative	Good	100-86
	Satisfactory	85-71
Rehabilitation	Fair	70-56
	Poor	55-41
Reconstruction	Very Poor	40-26
	Serious	25-11
	Failed	10-0

Source: RS&H, 2020; FAA AC 150/5380-7B, 2014

3.1.6 SCI Analysis

In addition to the PCI value, a Structural Condition Index (SCI) can be derived from the PCI distresses. SCI is the summation of structural components from PCI. **Table 3-4** shows the SCI categories and the value ranges. An SCI of 80 is the FAA definition of structural failure of a rigid pavement and is consistent with 50 percent of slabs in the traffic area exhibiting a structural crack.

TABLE 3-4: SCI CLASSIFICATION

SCI Category	SCI Value
Acceptable	100-81
Unacceptable	80-0

Source: RS&H, 2020; FAA AC 150/5380-7B, 2014

The SCI is derived from six of the sixteen different rigid distress types that are indicative of the structural condition of the pavement and detailed in **Table 3-5**.

TABLE 3-5: RIGID PAVEMENT DISTRESS TYPES USED TO CALCULATE THE STRUCTURAL CONDITION INDEX

Distress Code	Distress	Severity Level
62	Corner Break	Low, Medium, High
63	Cracking (L/T/D)	Low, Medium, High
72	Intersecting Cracks/ Shattered Slab	Low, Medium, High
73	Shrinkage Cracking (cracking partial width of slab)	N/A
74	Spalling (Joint)	Low, Medium, High
75	Spalling (Corner)	Low, Medium, High

Source: RS&H, 2020; FAA AC 150/5320-6E, 2009

Notes: Used only to describe a load-induced crack that extends only part of the way across a slab. The SCI does not include conventional shrinkage cracks due to curing or other non load-related problems.

3.2 NONDESTRUCTIVE TESTING (NDT)

NDT was performed on select pavement sections to supplement the PCI survey data. This data was used to support the development of a multiyear Capital Improvement Plan (CIP). The purpose of the NDT is to acquire quantitative data for use as a reliable input in the structural evaluation of pavement performance and rehabilitation needs. NDT was performed per FAA Advisory Circular 150/5370-11B *Use of Nondestructive Testing* by Dynatest, Inc. using a heavy weight deflectometer (HWD).

3.2.1 Heavy Weight Deflectometer (HWD) Testing

The HWD test is designed to impart a load pulse to the pavement surface which simulates the load produced by a rolling aircraft wheel. The load is produced by dropping a large weight on a set of rubber buffers on a bracket connected to a circular load plate. A load cell mounted on top of the plate measures the imparted load. Deflection sensors mounted radially from the center of the load plate measure the deformation of the pavement in response to the load. The post processing software is used to back calculate the pavement layer moduli based on the impact load and surface deflection basin. The HWD data can also be used to calculate the degree of load transfer between adjacent concrete slabs, and to detect voids under slabs in rigid pavements. **Figure 3-3** depicts the equipment used.

FIGURE 3-3: HEAVY WEIGHT DEFLECTOMETER



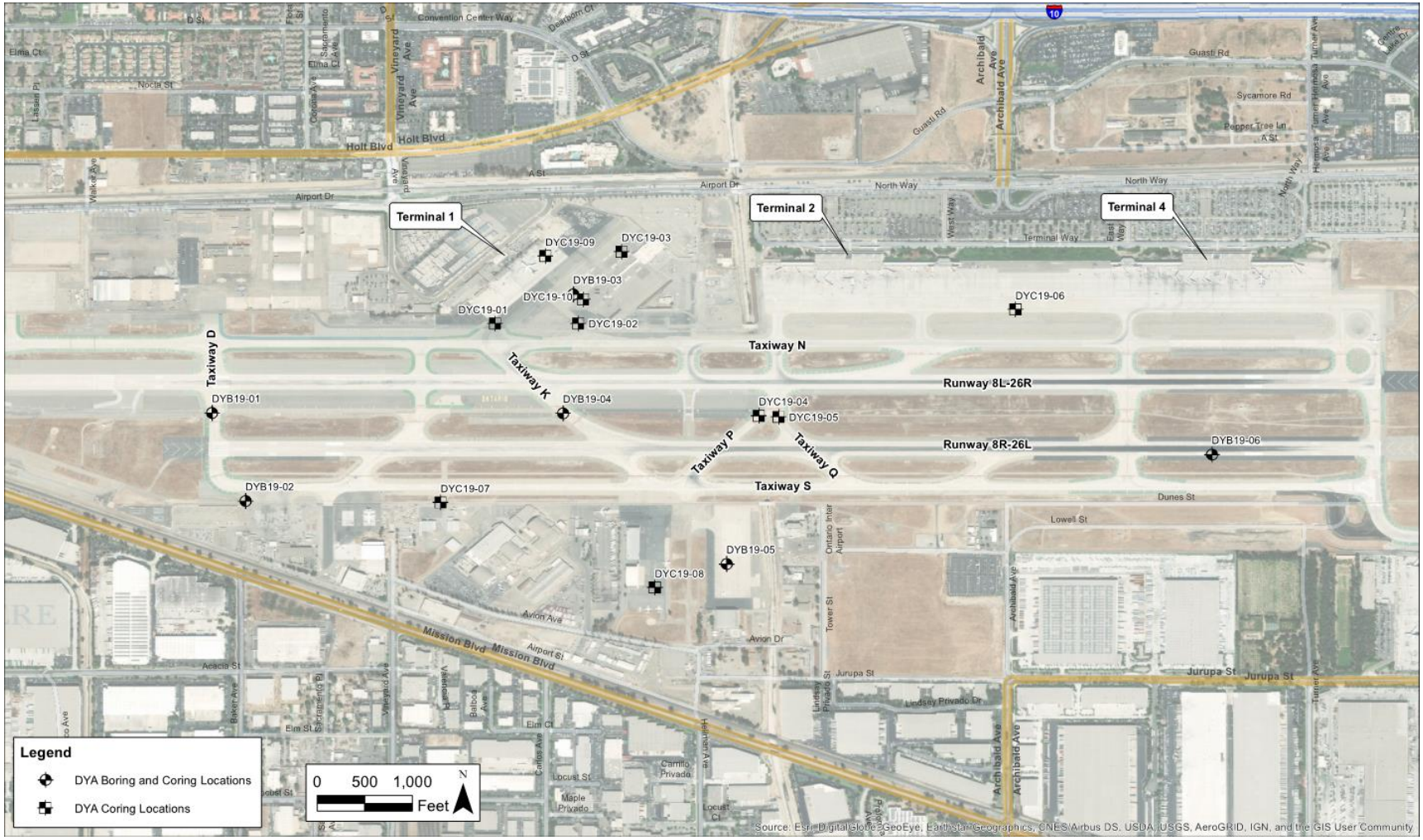
3.3 GEOTECHNICAL INVESTIGATION

A geotechnical investigation comprising of cores and bores was performed in order to determine existing pavement sections and subgrade strength values that were left unknown from previous APMS reports. Cores of the existing pavement section were sampled using a 6" diameter coring and barrel in order to determine the layer type and thickness used to calibrate the non-destructive testing equipment. Bores were used to determine the subgrade strength in the form of a CBR (California Bearing Ratio) or k value. A k value can be derived from the CBR value using the formula described on the FAA Advisory Circular *150/5320-6E*. Drive samples were collected with a standard penetration test (SPT) split-spoon sampler with dimensions in accordance with ASTM D1586. The sampler was driven with a 140-pound automatic trip hammer falling 30 inches. The values found from borings are then compared to non-destructive testing values.

Figure 3-4 depicts the locations of the cores and bores. Each of the cores shown is used to interpret the pavement section for nearby areas based on historical information.

The investigation found that soils at each location were primarily composed of medium-dense to very dense coarse-grained soils with varying amount of silts and clays. The full Geotechnical report with field and laboratory tested values can be found in **Appendix I**.

FIGURE 3-4: GEOTECHNICAL BORING AND CORING LOCATIONS



Source: Diaz Yourman & Associates, 2019

CHAPTER 4

PCI AND SCI RESULTS AND ANALYSIS

4.1 INTRODUCTION

This Chapter provides a detailed summary of the results and a comprehensive analysis of the Pavement Condition Index (PCI) Survey and Structural Condition Index (SCI) for runways, taxiways, and aprons.

4.2 RESULTS OVERVIEW

Ontario International Airport includes 8,874,569 square feet of AC pavement and 10,736,504 square feet of PCC pavement as shown on **Figure 4-1**.

As described in **Section 3.1.2**, pavements were broken into branches and sections, the pavement distresses were collected and analyzed, and the resulting PCI of each section is shown on **Figure 4-2**. A 200-scale set of exhibits which include the section labels that are used in the following tables found in Chapter 4 are included in **Appendix C**. The pavement sections shown on **Figure 4-2** are broken down into sample units as shown on **Figure 4-3**. Although the method for calculating pavement condition is by section, evaluating the pavement condition by sample unit allows for a more detailed understanding of the condition of the pavement. A 200-scale set of exhibits of the sample unit data is included in **Appendix D**. The Structural Condition Index (SCI) for each sample unit on the airfield is shown in **Figure 4-4**.

Ontario International Airport

Airfield Pavement Evaluation

Figure 4-1
Asphalt/Concrete
Pavement Areas

Legend

Pavement Type

- Asphalt Concrete (AC)
- Portland Concrete Cement (PCC)

March 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation

Figure 4-2
Pavement Condition Index
By Section

Legend

Pavement Sections

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

March 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation

Figure 4-3
Pavement Condition Index
By Sample Unit

Legend

Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

March 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation

Figure 4-4
Structural Condition Index
By Sample Unit

Legend

Pavement Sample Unit

Structural Condition Index (SCI)

- Acceptable (81 - 100)
- Unacceptable (0 - 80)
- Not Applicable

Note : SCI is only applicable for PCC

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

March 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

RS&H

4.3 RUNWAYS RESULTS AND ANALYSIS

Ontario International Airport consists of two runways (Runway 8L/26R and Runway 8R/26L). Each of the runways were split into three distinct pavement sections which include an outboard northern section (i.e. 01N), a center keel section (i.e. 01C) and an outboard southern section (i.e. 01S).

As part of processing the PCI and SCI survey distress data, a PCI value was calculated for each sample unit prior to being averaged by section. **Appendix D** shows the pavement condition rating for each sample unit. The Runway 8L/26R and Runway 8R/26L PCI and SCI values along with their corresponding pavement condition rating and maintenance classification by section are detailed in **Table 4-1**. The data coincides with what was observed in the field in showing that overall the full strength portion of the runways are in acceptable condition and the majority of distresses found were not structural. This means the runways require preventative and rehabilitation maintenance to be completed but not a complete reconstruction at this time. The rectangular panel shape (25' by 50') used for portions of the runways is potentially the cause for most of the structural distresses. These panels should be closely monitored as the runways age and reach their expected life expectancy. For those sections which are in poor condition, the sample unit level data identifies the group of slabs which are significantly downgrading the PCI value of the section. Significant amount of rehabilitation and preventative work needs to be done to the AC pavement that comprises the runway shoulders and blast pads.

TABLE 4-1: RUNWAY SECTION PCI AND SCI RESULTS

Branch	Section ID	PCI	Pavement Condition Rating	SCI	SCI Category	Maintenance Classification
Blast Pad Runway 26L End	01E	73	Satisfactory	Not Applicable		Preventative
Blast Pad Runway 26R End	01E	69	Fair	Not Applicable		Rehabilitation
Blast Pad Runway 8L End	01W	97	Good	Not Applicable		Preventative
	02W	93	Good	Not Applicable		Preventative
Blast Pad Runway 8R End	01W	74	Satisfactory	Not Applicable		Preventative
Runway 8L/26R	01C	95	Good	100	Acceptable	Preventative
	01N	99	Good	100	Acceptable	Preventative
	01S	99	Good	100	Acceptable	Preventative
	02C	94	Good	100	Acceptable	Preventative
	02N	99	Good	100	Acceptable	Preventative
	02S	100	Good	100	Acceptable	Preventative
	03C	88	Good	99	Acceptable	Preventative
	03N	99	Good	100	Acceptable	Preventative
	03S	100	Good	100	Acceptable	Preventative
	04C	89	Good	100	Acceptable	Preventative
	04N	98	Good	100	Acceptable	Preventative
	04S	99	Good	100	Acceptable	Preventative
	05C	87	Good	100	Acceptable	Preventative
	05N	98	Good	100	Acceptable	Preventative
	05S	98	Good	100	Acceptable	Preventative
	06C	61	Fair	98	Acceptable	Rehabilitation
	06N	87	Good	100	Acceptable	Preventative

Branch	Section ID	PCI	Pavement Condition Rating	SCI	SCI Category	Maintenance Classification
	06S	77	Satisfactory	100	Acceptable	Preventative
	07C	63	Fair	97	Acceptable	Rehabilitation
	07N	84	Satisfactory	100	Acceptable	Preventative
	07S	74	Satisfactory	99	Acceptable	Preventative
Runway 8R/26L	01C	81	Satisfactory	100	Acceptable	Preventative
	01N	85	Satisfactory	100	Acceptable	Preventative
	01S	78	Satisfactory	100	Acceptable	Preventative
	02C	73	Satisfactory	100	Acceptable	Preventative
	02N	77	Satisfactory	99	Acceptable	Preventative
	02S	74	Satisfactory	100	Acceptable	Preventative
	03C	70	Fair	97	Acceptable	Rehabilitation
	03N	85	Satisfactory	98	Acceptable	Preventative
	03S	78	Satisfactory	100	Acceptable	Preventative
	04C	51	Poor	87	Acceptable	Rehabilitation
	04N	80	Satisfactory	100	Acceptable	Preventative
	04S	71	Satisfactory	100	Acceptable	Preventative
	05C	55	Poor	82	Acceptable	Rehabilitation
	05N	74	Satisfactory	100	Acceptable	Preventative
	05S	77	Satisfactory	100	Acceptable	Preventative
	06C	73	Satisfactory	98	Acceptable	Preventative
	06N	83	Satisfactory	100	Acceptable	Preventative
	06S	83	Satisfactory	100	Acceptable	Preventative
Runway 8L/26R Shoulder	01N	66	Fair	Not Applicable		Rehabilitation
	02N	82	Satisfactory	Not Applicable		Preventative
	04N	93	Good	Not Applicable		Preventative
	05S	94	Good	Not Applicable		Preventative
	06N	94	Good	Not Applicable		Preventative
	07N	91	Good	Not Applicable		Preventative
	09N	93	Good	Not Applicable		Preventative
	11N	69	Fair	Not Applicable		Rehabilitation
	11S	94	Good	Not Applicable		Preventative
	12N	69	Fair	Not Applicable		Rehabilitation
	13S	94	Good	Not Applicable		Preventative
	14N	93	Good	Not Applicable		Preventative
	15N	65	Fair	Not Applicable		Rehabilitation
	15S	93	Good	Not Applicable		Preventative
	16N	82	Satisfactory	Not Applicable		Preventative
	17S	69	Fair	Not Applicable		Rehabilitation
	18N	92	Good	Not Applicable		Preventative
	18S	70	Fair	Not Applicable		Rehabilitation
	20N	85	Satisfactory	Not Applicable		Preventative
	20S	93	Good	Not Applicable		Preventative
	21N	66	Fair	Not Applicable		Rehabilitation
	21S	94	Good	Not Applicable		Preventative
	23N	89	Good	Not Applicable		Preventative
	23S	94	Good	Not Applicable		Preventative
	25N	70	Fair	Not Applicable		Rehabilitation
	25S	94	Good	Not Applicable		Preventative
	26N	72	Satisfactory	Not Applicable		Preventative

Branch	Section ID	PCI	Pavement Condition Rating	SCI	SCI Category	Maintenance Classification
	28N	93	Good	Not Applicable		Preventative
	30N	94	Good	Not Applicable		Preventative
	30S	90	Good	Not Applicable		Preventative
	31S	94	Good	Not Applicable		Preventative
	32N	88	Good	Not Applicable		Preventative
	3S	78	Satisfactory	Not Applicable		Preventative
	24N	60	Fair	Not Applicable		Rehabilitation
	35N	65	Fair	Not Applicable		Rehabilitation
	35S	89	Good	Not Applicable		Preventative
	37N	94	Good	Not Applicable		Preventative
	38N	80	Satisfactory	Not Applicable		Preventative
	38S	94	Good	Not Applicable		Preventative
	40N	69	Fair	Not Applicable		Rehabilitation
	40S	68	Fair	Not Applicable		Rehabilitation
	41N	65	Fair	Not Applicable		Rehabilitation
	42N	68	Fair	Not Applicable		Rehabilitation
	43S	87	Good	Not Applicable		Preventative
	44S	67	Fair	Not Applicable		Rehabilitation
Runway 8R/26L Shoulder	01N	86	Good	Not Applicable		Preventative
	02N	94	Good	Not Applicable		Preventative
	02S	91	Good	Not Applicable		Preventative
	03N	59	Fair	Not Applicable		Rehabilitation
	03S	89	Good	Not Applicable		Preventative
	05N	100	Good	Not Applicable		Preventative
	05S	57	Fair	Not Applicable		Rehabilitation
	06N	100	Good	Not Applicable		Preventative
	06S	67	Fair	Not Applicable		Rehabilitation
	07S	73	Satisfactory	Not Applicable		Preventative
	08N	91	Good	Not Applicable		Preventative
	08S	60	Fair	Not Applicable		Rehabilitation
	09N	88	Good	Not Applicable		Preventative
	09S	83	Satisfactory	Not Applicable		Preventative
	10N	61	Fair	Not Applicable		Rehabilitation
	10S	82	Satisfactory	Not Applicable		Preventative
	11N	60	Fair	Not Applicable		Rehabilitation
	11S	42	Poor	Not Applicable		Rehabilitation
	12N	50	Poor	Not Applicable		Rehabilitation
	12S	90	Good	Not Applicable		Preventative
	13N	84	Satisfactory	Not Applicable		Preventative
	13S	90	Good	Not Applicable		Preventative
	14N	90	Good	Not Applicable		Preventative
	14S	68	Fair	Not Applicable		Rehabilitation
	15N	49	Poor	Not Applicable		Rehabilitation
	15S	85	Satisfactory	Not Applicable		Preventative
	16S	87	Good	Not Applicable		Preventative
	17N	64	Fair	Not Applicable		Rehabilitation
	17S	59	Fair	Not Applicable		Rehabilitation
	18N	67	Fair	Not Applicable		Rehabilitation
	18S	66	Fair	Not Applicable		Rehabilitation

Branch	Section ID	PCI	Pavement Condition Rating	SCI	SCI Category	Maintenance Classification
	19S	84	Satisfactory	Not Applicable		Preventative
	20S	50	Poor	Not Applicable		Rehabilitation
	22S	95	Good	Not Applicable		Preventative
	23S	96	Good	Not Applicable		Preventative
	25S	47	Poor	Not Applicable		Rehabilitation
	26S	78	Satisfactory	Not Applicable		Preventative
	27S	64	Fair	Not Applicable		Rehabilitation

Note: See Appendix C for location of Section ID
Source: RS&H, 2020

4.4 TAXIWAYS RESULTS AND ANALYSIS

Ontario International Airport is comprised of 27 taxiways/taxilanes. With a large number of taxiways/taxilanes, the PCI and SCI values greatly vary. Similarly to the runways, a PCI value was calculated for each sample unit prior to being averaged by section. **Appendix D** shows the pavement condition rating for each sample unit. The taxiway/taxilane PCI and SCI values along with their corresponding pavement condition rating and maintenance classification by section are detailed in **Table 4-2**.

TABLE 4-2: TAXIWAY SECTION PCI AND SCI RESULTS

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
Taxilane N1 Shoulder	01S	69	Fair	Not Applicable		Rehabilitation
	03S	64	Fair	Not Applicable		Rehabilitation
	05S	64	Fair	Not Applicable		Rehabilitation
	07S	63	Fair	Not Applicable		Rehabilitation
	09S	68	Fair	Not Applicable		Rehabilitation
Taxiway B Shoulder	01E	82	Satisfactory	Not Applicable		Preventative
	02W	84	Satisfactory	Not Applicable		Preventative
Taxiway D Shoulder	01E	94	Good	Not Applicable		Preventative
	02W	94	Good	Not Applicable		Preventative
	03E	88	Good	Not Applicable		Preventative
	03W	81	Satisfactory	Not Applicable		Preventative
Taxiway F Shoulder	01E	62	Fair	Not Applicable		Rehabilitation
	02W	57	Fair	Not Applicable		Rehabilitation
Taxiway K Shoulder	01E	71	Satisfactory	Not Applicable		Preventative
	01W	94	Good	Not Applicable		Preventative
	02E	79	Satisfactory	Not Applicable		Preventative
Taxiway N Shoulder	01N	85	Satisfactory	Not Applicable		Preventative
	01S	90	Good	Not Applicable		Preventative
	03N	81	Satisfactory	Not Applicable		Preventative
	03S	94	Good	Not Applicable		Preventative
	05N	86	Good	Not Applicable		Preventative
	05S	70	Fair	Not Applicable		Rehabilitation
	07N	68	Fair	Not Applicable		Rehabilitation
	07S	65	Fair	Not Applicable		Rehabilitation
	09N	66	Fair	Not Applicable		Rehabilitation
	09S	68	Fair	Not Applicable		Rehabilitation
	10N	80	Satisfactory	Not Applicable		Preventative
	11N	64	Fair	Not Applicable		Rehabilitation

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
	11S	66	Fair	Not Applicable		Rehabilitation
	12N	60	Fair	Not Applicable		Rehabilitation
	13N	66	Fair	Not Applicable		Rehabilitation
	13S	70	Fair	Not Applicable		Rehabilitation
	15N	68	Fair	Not Applicable		Rehabilitation
	15S	70	Fair	Not Applicable		Rehabilitation
	16N	67	Fair	Not Applicable		Rehabilitation
	18N	88	Good	Not Applicable		Preventative
	18S	92	Good	Not Applicable		Preventative
	19S	94	Good	Not Applicable		Preventative
	20N	61	Fair	Not Applicable		Rehabilitation
	21S	63	Fair	Not Applicable		Rehabilitation
	23N	59	Fair	Not Applicable		Rehabilitation
	23S	75	Satisfactory	Not Applicable		Preventative
	25N	77	Satisfactory	Not Applicable		Preventative
	25S	62	Fair	Not Applicable		Rehabilitation
	26N	65	Fair	Not Applicable		Rehabilitation
	27S	66	Fair	Not Applicable		Rehabilitation
	28S	58	Fair	Not Applicable		Rehabilitation
Taxiway P Shoulder	01E	59	Fair	Not Applicable		Rehabilitation
	01W	64	Fair	Not Applicable		Rehabilitation
	02W	59	Fair	Not Applicable		Rehabilitation
Taxiway Q Shoulder	01E	62	Fair	Not Applicable		Rehabilitation
	01W	59	Fair	Not Applicable		Rehabilitation
Taxiway S Shoulder	01N	84	Satisfactory	Not Applicable		Preventative
	02S	89	Good	Not Applicable		Preventative
	03N	62	Fair	Not Applicable		Rehabilitation
	03S	62	Fair	Not Applicable		Rehabilitation
	04N	63	Fair	Not Applicable		Rehabilitation
	04S	76	Satisfactory	Not Applicable		Preventative
	05N	82	Satisfactory	Not Applicable		Preventative
	05S	62	Fair	Not Applicable		Rehabilitation
	06N	83	Satisfactory	Not Applicable		Preventative
	06S	80	Satisfactory	Not Applicable		Preventative
	07N	84	Satisfactory	Not Applicable		Preventative
	07S	100	Good	Not Applicable		Preventative
	08N	82	Satisfactory	Not Applicable		Preventative
	08S	100	Good	Not Applicable		Preventative
	09N	92	Good	Not Applicable		Preventative
Taxiway U Shoulder	01E	94	Good	Not Applicable		Preventative
	02W	94	Good	Not Applicable		Preventative
	03E	94	Good	Not Applicable		Preventative
	03W	81	Satisfactory	Not Applicable		Preventative
Taxiway W Shoulder	01E	67	Fair	Not Applicable		Rehabilitation
	02E	64	Fair	Not Applicable		Rehabilitation
	02W	80	Satisfactory	Not Applicable		Preventative
	03E	83	Satisfactory	Not Applicable		Preventative
	03W	77	Satisfactory	Not Applicable		Preventative
	04E	72	Satisfactory	Not Applicable		Preventative

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
	04W	75	Satisfactory	Not Applicable		Preventative
	06E	75	Satisfactory	Not Applicable		Preventative
	06W	72	Satisfactory	Not Applicable		Preventative
Taxilane G	01	84	Satisfactory	Not Applicable		Preventative
	02	61	Fair	Not Applicable		Rehabilitation
Taxilane H	01	84	Satisfactory	Not Applicable		Preventative
	02	59	Fair	Not Applicable		Rehabilitation
Taxilane J	01	96	Good	Not Applicable		Preventative
	02	81	Satisfactory	Not Applicable		Preventative
Taxilane N1	01	90	Good	100	Acceptable	Preventative
	02	87	Good	99	Acceptable	Preventative
Taxiway B	01	61	Fair	90	Acceptable	Rehabilitation
	02	84	Satisfactory	99	Acceptable	Preventative
Taxiway D	01	94	Good	100	Acceptable	Preventative
	02	82	Satisfactory	99	Acceptable	Preventative
	03	92	Good	100	Acceptable	Preventative
	04	96	Good	100	Acceptable	Preventative
	05	84	Satisfactory	100	Acceptable	Preventative
	06	64	Fair	92	Acceptable	Rehabilitation
	07	97	Good	100	Acceptable	Preventative
	08	86	Good	100	Acceptable	Preventative
	09	75	Satisfactory	100	Acceptable	Preventative
	10	62	Fair	94	Acceptable	Rehabilitation
Taxiway F	01	93	Good	100	Acceptable	Preventative
	02	83	Satisfactory	100	Acceptable	Preventative
	03	89	Good	100	Acceptable	Preventative
	04	96	Good	100	Acceptable	Preventative
	05	78	Satisfactory	100	Acceptable	Preventative
	06	61	Fair	79	Unacceptable	Rehabilitation
	07	77	Satisfactory	100	Acceptable	Preventative
	08	68	Fair	96	Acceptable	Rehabilitation
	09	56	Fair	82	Acceptable	Rehabilitation
Taxiway K	01	91	Good	99	Acceptable	Preventative
	02	62	Fair	94	Acceptable	Rehabilitation
	03	86	Good	100	Acceptable	Preventative
	04	94	Good	100	Acceptable	Preventative
	05	88	Good	96	Acceptable	Preventative
	06	67	Fair	100	Acceptable	Rehabilitation
	07	68	Fair	96	Acceptable	Rehabilitation
	08	72	Satisfactory	100	Acceptable	Preventative
	09	65	Fair	96	Acceptable	Rehabilitation
Taxiway L	01	88	Good	100	Acceptable	Preventative
	02	76	Satisfactory	98	Acceptable	Preventative
Taxiway M	02	69	Fair	100	Acceptable	Rehabilitation
	04	78	Satisfactory	100	Acceptable	Preventative
	05	79	Satisfactory	100	Acceptable	Preventative
Taxiway N	01	84	Satisfactory	99	Acceptable	Preventative
	02	90	Good	99	Acceptable	Preventative
	03	86	Good	99	Acceptable	Preventative

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
	04	91	Good	100	Acceptable	Preventative
	05	91	Good	100	Acceptable	Preventative
	06	73	Satisfactory	99	Acceptable	Preventative
	07	85	Satisfactory	98	Acceptable	Preventative
	08	88	Good	100	Acceptable	Preventative
	09	84	Satisfactory	98	Acceptable	Preventative
	10	85	Satisfactory	99	Acceptable	Preventative
	11	90	Good	100	Acceptable	Preventative
	12	62	Fair	97	Acceptable	Rehabilitation
	13	53	Poor	83	Acceptable	Rehabilitation
	14	82	Satisfactory	94	Acceptable	Preventative
Taxiway P	01	89	Good	100	Acceptable	Preventative
	02	78	Satisfactory	98	Acceptable	Preventative
	03	78	Satisfactory	100	Acceptable	Preventative
	04	90	Good	96	Acceptable	Preventative
	05	78	Satisfactory	80	Unacceptable	Preventative
	06	30	Very Poor	47	Unacceptable	Reconstruction
	07	66	Fair	96	Acceptable	Rehabilitation
	08	76	Satisfactory	100	Acceptable	Preventative
	09	68	Fair	100	Acceptable	Rehabilitation
	10	75	Satisfactory	100	Acceptable	Preventative
Taxiway Q	01	86	Good	98	Acceptable	Preventative
	02	74	Satisfactory	100	Acceptable	Preventative
	03	82	Satisfactory	96	Acceptable	Preventative
	04	76	Satisfactory	100	Acceptable	Preventative
	05	68	Fair	95	Acceptable	Rehabilitation
Taxiway R	01	85	Satisfactory	98	Acceptable	Preventative
	02	96	Good	99	Acceptable	Preventative
	03	94	Good	99	Acceptable	Preventative
Taxiway S	01	65	Fair	92	Acceptable	Rehabilitation
	02	73	Satisfactory	100	Acceptable	Preventative
	03	78	Satisfactory	98	Acceptable	Preventative
	04	64	Fair	88	Acceptable	Rehabilitation
	05	63	Fair	88	Acceptable	Rehabilitation
	06	83	Satisfactory	100	Acceptable	Preventative
	07	79	Satisfactory	97	Acceptable	Preventative
	08	74	Satisfactory	92	Acceptable	Preventative
Taxiway S1	01	41	Poor	Not Applicable		Rehabilitation
Taxiway S2	01	50	Poor	66	Unacceptable	Rehabilitation
Taxiway S3	01	36	Very Poor	Not Applicable		Reconstruction
Taxiway S5	01	100	Good	Not Applicable		Preventative
Taxiway T	01	87	Good	100	Acceptable	Preventative
	02	74	Satisfactory	97	Acceptable	Preventative
Taxiway U	01	85	Satisfactory	94	Acceptable	Preventative
	02	78	Satisfactory	100	Acceptable	Preventative
	03	82	Satisfactory	100	Acceptable	Preventative
	04	89	Good	100	Acceptable	Preventative
	05	90	Good	100	Acceptable	Preventative
	06	93	Good	100	Acceptable	Preventative

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
	07	86	Good	100	Acceptable	Preventative
	08	76	Satisfactory	100	Acceptable	Preventative
	09	82	Satisfactory	100	Acceptable	Preventative
Taxiway V	01	85	Satisfactory	100	Acceptable	Preventative
	02	46	Poor	79	Unacceptable	Rehabilitation
	03	73	Satisfactory	100	Acceptable	Preventative
Taxiway W	01	88	Good	99	Acceptable	Preventative
	02	55	Poor	86	Acceptable	Rehabilitation
	03	55	Poor	92	Acceptable	Rehabilitation
	04	71	Satisfactory	98	Acceptable	Preventative
	05	65	Fair	100	Acceptable	Rehabilitation
	06	63	Fair	100	Acceptable	Rehabilitation
	07	77	Satisfactory	100	Acceptable	Preventative
	08	72	Satisfactory	100	Acceptable	Preventative
	09	75	Satisfactory	100	Acceptable	Preventative
	10	88	Good	100	Acceptable	Preventative
	11	80	Satisfactory	100	Acceptable	Preventative
	12	90	Good	99	Acceptable	Preventative
Taxiway W1	01	83	Satisfactory	99	Acceptable	Preventative
Taxiway W2	01	84	Satisfactory	100	Acceptable	Preventative
Taxiway W3	01	86	Good	100	Acceptable	Preventative

Note: See Appendix C for location of Section ID
Source: RS&H, 2020

4.5 APRONS RESULTS AND ANALYSIS

The aprons at Ontario International Airport have a variety of PCI and SCI values that are generally significantly lower than the taxiways/taxilanes. Special attention needs to be payed to those areas that are serious or failed due to the safety concerns that they pose. Areas that are poor but are more important to the everyday operations of the airport, such as Section 01 of the Terminal 1 Apron, need to also be of concern.

TABLE 4-3: APRON SECTION PCI AND SCI RESULTS

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
Cargo South Apron	01	48	Poor	Not Applicable		Rehabilitation
	02	61	Fair	87	Acceptable	Rehabilitation
	03	22	Serious	Not Applicable		Reconstruction
	04	81	Satisfactory	92	Acceptable	Preventative
	05	43	Poor	43	Unacceptable	Rehabilitation
Cargo West Apron	Not Inspected					
FedEx Apron	01	64	Fair	Not Applicable		Rehabilitation
	02	54	Poor	Not Applicable		Rehabilitation
	03	71	Satisfactory	94	Acceptable	Preventative
	04	79	Satisfactory	94	Acceptable	Preventative
	05	67	Fair	82	Acceptable	Rehabilitation
	06	38	Very Poor	52	Unacceptable	Reconstruction
	07	60	Fair	Not Applicable		Rehabilitation

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
	08	69	Fair	Not Applicable		Rehabilitation
	09	80	Satisfactory	Not Applicable		Preventative
	10	18	Serious	Not Applicable		Reconstruction
	11	94	Good	Not Applicable		Preventative
	13	34	Very Poor	Not Applicable		Reconstruction
	15	100	Good	Not Applicable		Preventative
	16	9	Failed	Not Applicable		Reconstruction
	17	17	Serious	17	Unacceptable	Reconstruction
	18	29	Very Poor	Not Applicable		Reconstruction
	19	98	Good	100	Acceptable	Preventative
	20	98	Good	100	Acceptable	Preventative
	21	86	Good	100	Acceptable	Preventative
Int'l Terminal Apron	01	58	Fair	Not Applicable		Rehabilitation
	02	94	Good	Not Applicable		Preventative
	03	37	Very Poor	Not Applicable		Reconstruction
Atlantic Aviation Apron	01	48	Poor	Not Applicable		Rehabilitation
	03	0	Failed	Not Applicable		Reconstruction
Terminal 1 Apron	01	43	Poor	62	Unacceptable	Rehabilitation
	02	75	Satisfactory	Not Applicable		Preventative
Terminal 1A Apron	Not Inspected					
Terminal 2 Apron	01	80	Satisfactory	93	Acceptable	Preventative
Terminal 3 Apron	01	89	Good	100	Acceptable	Preventative
Terminal 4 Apron	01	78	Satisfactory	97	Acceptable	Preventative
Terminal 4 Apron Shoulder	01	43	Poor	Not Applicable		Rehabilitation
Cargo South Apron Taxiway	01	70	Fair	100	Acceptable	Rehabilitation
	02	100	Good	Not Applicable		Preventative

Note: See Appendix C for location of Section ID
Source: RS&H, 2020

4.6 VEHICLE SERVICE ROADS RESULTS AND ANALYSIS

Except for any recently reconstructed vehicle service roads and PCC portions, the data shows that much of the service road system has a poor PCI condition. **Table 4-4** shows that service roads throughout the airport tend to be on two opposite sides of the spectrum. The main distresses found include block cracking and alligator cracking. These distresses make it difficult to recommend rehabilitation to be done as opposed to a full reconstruction of large areas of these roads.

TABLE 4-4: VEHICLE SERVICE ROAD SECTION PCI AND SCI RESULTS

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
Vehicle Service Road East	01	42	Poor	Not Applicable		Rehabilitation
Vehicle Service Road North	01	46	Poor	Not Applicable		Rehabilitation
	02	46	Poor	Not Applicable		Rehabilitation

	03	54	Poor	Not Applicable		Rehabilitation
	04	100	Good	100	Acceptable	Preventative
	05	67	Fair	Not Applicable		Rehabilitation
	06	44	Poor	Not Applicable		Rehabilitation
	07	64	Fair	Not Applicable		Rehabilitation
	08	56	Fair	Not Applicable		Rehabilitation
	09	55	Poor	Not Applicable		Rehabilitation
Vehicle Service Road South	01	100	Good	100	Acceptable	Preventative
	02	92	Good	Not Applicable		Preventative
	03	43	Poor	Not Applicable		Rehabilitation
	04	78	Satisfactory	Not Applicable		Preventative
	05	79	Satisfactory	Not Applicable		Preventative
	06	100	Good	100	Acceptable	Preventative
	07	56	Fair	Not Applicable		Rehabilitation
	08	100	Good	Not Applicable		Preventative
Vehicle Service Road West	01	86	Good	Not Applicable		Preventative
	02	100	Good	100	Acceptable	Preventative
	03	93	Good	Not Applicable		Preventative
	04	100	Good	100	Acceptable	Preventative
	05	42	Poor	Not Applicable		Rehabilitation

Note: See Appendix C for location of Section ID
Source: RS&H, 2020

Based on the PCI survey results detailed in **Chapter 4**, 65.4% of the airfield pavement fell within the preventative maintenance category with 33.9% "Good" and 31.5% "Satisfactory". 32.9% of airfield pavements fell within the rehabilitation maintenance category with 20.9% fair and 12.0% poor. The remaining 1.7% falls within the reconstruction category with 0.5% "Very Poor", 1.0% "Serious" and 0.2% "Failed". The numbers detailed above are by square area.

CHAPTER 5

PAVEMENT CLASSIFICATION NUMBER (PCN)

5.1 INTRODUCTION

FAA Advisory Circular *150/5335-5C* defines the Pavement Classification Number (PCN) as a number that expresses the load-carrying capacity of a pavement for unrestricted operations. It is represented by a series of one number and four letters that depicts the pavement strength, type of pavement, subgrade strength, allowable tire pressures and method of determination.

Ontario International Airport's runway, taxiway, and apron pavements PCN values are calculated based on historical pavement sections as well as non destructive testing and geotechnical analysis. The PCN is also affected by the fleet mix which has been compiled from operations data provided by the airport. The fleet mix is shown in **Section 5.2.1** of this report.

The Aircraft Classification Number (ACN) is a single unique number that expresses the relative effect of an aircraft on airfield pavements with a specified standard subgrade category. It is an indication of the relative effect of an aircraft on a particular pavement section and is depends on weight, landing gear configuration and tire pressure.

Comparing the ACN with the PCN gives an indication of possible pavement damage implications of operating that aircraft on a particular pavement without restriction. If the ACN of an aircraft is less than the PCN of a pavement section, that pavement section can accommodate that specific aircraft without load restriction.

The ACN-PCN reporting system is the only pavement strength system approved by the International Civil Aviation Organization (ICAO), and is also being adopted by the Federal Aviation Administration (FAA) as the sole reporting mechanism for commercial service airports. However, the ACN-PCN reporting system is not a design or pavement life evaluation method. It is simply a snapshot classification system used to quickly determine an aircraft's potential to increase wear on a pavement section. Since a technically derived PCN is dependent on a specific aircraft mix, significant additions to the mix will require recalculation of the PCN. Impacts of aircraft operations on pavement life and/or total cumulative damage factor should be calculated separately.

5.2 PCN OVERVIEW

The PCN is reported as a 5-part code; for example: 65/F/B/X/T. The first part is a numeric value stating the assessed bearing strength value as explained in AC *150/5335-5C*. This number can either be technically derived or reported as the most damaging aircraft using the pavement on a regular basis.

"F" stands for flexible pavement; the other option is "R" (rigid). In the case of an asphalt overlay section, the section would still be considered rigid pavement until the asphalt thickness is 75% of the rigid pavement thickness.

"B" represents subgrade strength, which ranges from high subgrade strength (A) to very low subgrade strength (D). **Table 5-1** show the ranges for subgrade strength relative to pavement type (R or F). The method of obtaining the subgrade strength is by the non-destructive testing method of HWD (Heavy Weight Deflectometer). Results and information about the test can be found in **Appendix E**.

TABLE 5-1: STANDARD SUBGRADE CONDITION

Subgrade Strength Category	*California Bearing Ratio (CBR) for Flexible Pavement*	*Modulus of Subgrade Reaction (k value, in pci) for Rigid Pavement*	*Code Designation*
High	CBR ≥13	k ≥442 (≥120)	A
Medium	8<CBR<13	221<k<442 (60<k<120)	B
Low	4<CBR≤8	92<k≤221 (25<k≤60)	C
Ultra Low	CBR≤4	k≤92 (≤25)	D

Source: AC 150/5335-5C,2014; RS&H, 2020

"X" symbolizes the allowable tire pressure ranging from very high (W, no pressure limit) to very low (Z, pressure limited to 73 psi). FAA Advisory Circular 150/5335-5C recommends that well placed asphalt layers that are at least 4 or 5 inches in depth can be classified as W or X (tire pressure limited to 218 psi), while thinner layers can be rated no higher than Y (145 psi). For rigid pavements, the tire pressure is considered a non-issue, due to the high strength of concrete compared to commercial tire pressures, and can be classified as W. **Table 5-2** show the ranges for the pavement class based on the maximum tire pressure.

TABLE 5-2: MAXIMUM TIRE PRESSURE

Pavement Class	*Maximum Tire Pressure*
W	No Limit
X	217 psi
Y	145 psi
Z	72 psi

Source: AC 150/5335-5C,2014; RS&H, 2020

The "T" conveys that the analysis was completed via the "technical" method compared to the "using" aircraft method (U). The "using" aircraft method is an experience-based procedure and essentially assumes the PCN is equal to the highest ACN of the current aircraft fleet mix, as long as there are no areas of noticeable pavement distress caused by that aircraft. The using aircraft method can only be officially reported to the Airport Master Record, Form 5010, upon an agreement between the airport owner and the FAA and is acceptable on a temporary basis only. The technical method is a more accurate and precise representation of the pavement strength, and is the method used for this analysis. The computer program associated with the technical method is COMFAA and is developed and supplied by the FAA. The version utilized in this analysis is COMFAA 3.0.

5.2.1 Fleet Mix

The fleet mix data for this report was provided by Ontario International Airport staff for 2018. A growth factor of 3.5% is assumed in order to estimate future annual operations. **Table 5-3** lists the aircraft that have significant operations on each of the runways and are heavier than 12,500 lbs. There are additional aircraft in the fleet mix provided by the airport for PCN analysis but are not shown in the table below due to few operations and/or lower gross weight.

TABLE 5-3: FLEET MIX

Aircraft	Gross Weight. (lbs).	Annual Departures
A306 - Airbus A300 B4-600	375,888	2,109
A319 - Airbus A319	166,449	1,034
A320 - Airbus A320 All Series	171,961	1,762
A321 - Airbus A321 All Series	206,132	676
A359 - Airbus 350-900	590,839	67
ASTR - IAI Astra 1125	24,650	11
AT43 - Aérospatiale/Alenia ATR 42-200/300/320	36,817	255
B190 - Beech 1900/C-12J	17,120	41
B350 - Beech Super King Air 350	15,100	106
B38M - Boeing 737 Max 8	174,200	89
B712 - Boeing 717-200	121,000	79
B722 - Boeing 727-200	210,000	93
B733 - Boeing 737-300	138,500	16
B734 - Boeing 737-400	150,000	31
B737 - Boeing 737-700	154,500	10,906
B738 - Boeing 737-800	174,200	3,309
B739 - Boeing 737-900	174,200	1,305
B744 - Boeing 747-400	875,000	304
B748 - Boeing 747-8	987,000	123
B752 - Boeing 757-200	255,000	2,382
B762 - Boeing 767-200	361,000	579
B763 - Boeing 767-300	361,000	5,093
B772 - Boeing 777-200	545,000	25
B77W - Boeing 777-300ER	775,000	206
BE20 - Beech 200 Super King	12,590	62
BE30 - Raytheon 300 Super King Air	14,100	60
BE40 - Raytheon/Beech Beechjet 400/T-1	16,300	35
C25B - Cessna Citation CJ3	13,870	53
C25C - Cessna Citation CJ4	16,950	42
C550 - Cessna Citation II/Bravo	15,100	127
C560 - Cessna Citation V/Ultra/Encore	16,500	40
C56X - Cessna Excel/XLS	20,200	160
C650 - Cessna III/VI/VII	23,200	12
C680 - Cessna Citation Sovereign	30,300	39
C68A - Cessna Citation Latitude	30,800	17
C750 - Cessna Citation X	36,100	123
CL35 - Bombardier Challenger 300	38,850	214
CL60 - Bombardier Challenger 600/601/604	48,200	173
CRJ2 - Bombardier CRJ-200	53,000	1,057
CRJ7 - Bombardier CRJ-700	75,000	264
CRJ9 - Bombardier CRJ-900	84,500	949
DC10 - Boeing (Douglas) DC 10-10/30/40	583,000	162
E120 - Embraer Brasilia EMB 120	26,455	258
E145 - Embraer ERJ-145	48,501	22

Aircraft	Gross Weight. (lbs).	Annual Departures
E190 - Embraer 190	105,359	32
E545 - Embraer EMB-545 Legacy 450	35,759	10
E55P - Embraer Phenom 300	17,968	53
E75L - Embraer 175	82,673	1,549
F2TH - Dassault Falcon 2000	35,000	64
F900 - Dassault Falcon 900	45,500	46
FA20 - Dassault Falcon/Mystère 20	28,660	28
FA50 - Dassault Falcon/Mystère 50	40,780	115
GALX - IAI 1126 Galaxy/Gulfstream G200	35,450	37
GL5T - Bombardier BD-700 Global 5000	99,500	20
GLEX - Bombardier BD-700 Global Express	99,500	19
GLF4 - Gulfstream IV/G400	75,000	98
GLF5 - Gulfstream V/G500	90,900	62
GLF6 - Gulfstream	99,600	31
H25B - BAe HS 125/700-800/Hawker 800	27,520	96
LJ35 - Bombardier Learjet 35/36	18,000	25
LJ45 - Bombardier Learjet 45	21,500	35
LJ60 - Bombardier Learjet 60	23,500	64
LJ75 - Learjet 75	21,500	11
MD11 - Boeing (Douglas) MD 11	630,500	2,858
SW4 - Swearingen Merlin 4/4A Metro2	13,230	682

Source: Ontario International Airport, 2018

5.2.2 Runway Taxiway Configuration

Runway-taxiway configuration influences the PCN. The runway-taxiway configuration determines the "pass per traffic cycle" (P/TC) ratio. The P/TC ratio correlates to the number of passes an aircraft makes on a pavement section per operation. An operation includes a taxi-to-departure, the departure, landing, and taxi-to-parking. The P/TC differs whether a plane receives fuel at the airport between landing and departing. If a plane does not obtain fuel at the airport, the arrival weight will be similar to the departure weight, and therefore it would be considered that two passes on the runway and taxiways would be required per operation. If an aircraft obtains fuel at an airport, the landing weight will be significantly lower than the departure weight. Per FAA *AC 150/5335-5C*, the landing and the taxi-to-parking portions of the operation should be disregarded for this analysis due to the significant decrease in weight relative to the departure weight.

The P/TC also varies whether the runway has a central taxiway or a parallel taxiway. If the airport has a central taxiway, a departing plane may be required to back taxi on the runway and turn around prior to taking off, and also turn around and back taxi down the runway after landing. This situation would result in an additional pass on the runway for every operation. Since ONT has a parallel taxiway to each runway, only one pass on the runway occurs during the taxi to departure and departure portions of the operation.

5.3 PCN RESULTS AND ANALYSIS

5.3.1 PCN Results

Due to variability in pavement design within every section analyzed, when reporting the PCN by branch it must be adjusted to reflect the entire pavement structure, or it must be reported as the weakest PCN within the branch in order to be conservative. If a section that has a particularly low PCN is out of the

traffic pattern or clearly would receive less loading than what would be typical for the rest of the branch, it can be disregarded. The same methodology would also apply for an area with a particularly high PCN, for it would give an impression that the pavement should be able to support heavier aircraft and/or more operations than it should be. As part of the PCI analysis, a detailed historical investigation has been undertaken to account for every individual pavement section across the airfield. Because determination of PCN by the technical method is dependent upon the pavement section and subgrade strength, this information must be considered in cases where the data varies within a pavement branch. For this report, PCN numbers are reported at the branch level unless specified.

Please reference the PCI chapter of this report for more detailed information on existing pavement sections. It should be noted that the PCN results given in this report are based on the current operations and aircraft fleet mix. Should the number of operations increase drastically, or heavier aircraft operate on ONT airfield pavements, another PCN analysis should be conducted to determine if aircraft operations or weight restrictions are advisable.

The calculated PCN numerical values range from 5 to 62 from the runways, taxiways and aprons. The range in the PCN values is due to the variation in pavement section design across the airfield. **Table 5-4** displays the results for the PCN of the Runways, **Table 5-5** contains the results of the Taxiway PCN and **Table 5-6** shows the results of the PCN for the Apron.

TABLE 5-4: RUNWAY SECTION PCN RESULTS

Branch ID	Location	PCN Code	ACN Code	ACN/PCN
Runway 8L/26R	First 2,175' from 8L Start	43/R/B/W/T	57/R/B	1.3
Runway 8L/26R	2,175' from 8L Start to End	53/R/B/W/T	57/R/B	1.1
Runway 8R/26L	All	43/R/A/W/T	54/R/B	1.3

Source: RS&H, 2020

5.3.1.1 Taxiways

TABLE 5-5: TAXIWAY SECTION PCN RESULTS

Branch ID	Location	PCN Code	ACN Code	ACN/PCN
Taxilane N1	All	43/R/A/W/T	54/R/A	1.3
Taxiway D	All	49/R/B/W/T	57/R/B	1.2
Taxiway F	All	42/R/B/W/T	57/R/B	1.4
Taxiway G	All	9/F/B/X/T	62/F/B	6.9
Taxiway K	All	43/R/B/W/T	57/R/B	1.3
Taxiway L	All	43/R/A/W/T	54/R/A	1.3
Taxiway N	All	46/R/A/W/T	54/R/A	1.2
Taxiway P	All	48/R/A/W/T	54/R/A	1.1
Taxiway Q	All	44/R/B/W/T	57/R/B	1.3
Taxiway R	All	62/R/B/W/T	57/R/B	0.9
Taxiway S	All	44/R/B/W/T	57/R/B	1.3

Branch ID	Location	PCN Code	ACN Code	ACN/PCN
Taxiway S1	All	5/F/B/X/T	53/F/B	10.6
Taxiway S2	All	40/R/B/W/T	57/R/B	1.4
Taxiway S3	All	*	62/F/B	-
Taxiway S5	All	30/F/C/X/T	77/F/C	2.6
Taxiway T	All	46/R/B/W/T	57/R/B	1.2
Taxiway U	All	49/R/B/W/T	57/R/B	1.2
Taxiway V	All	43/R/A/W/T	54/R/A	1.3
Taxiway W	All	53/R/B/W/T	57/R/B	1.1
Taxiway Y	All	60/R/B/W/T	57/R/B	1.0
Taxiway Y1	All	56/R/B/W/T	57/R/B	1.0
Taxiway Y2	All	55/R/B/W/T	57/R/B	1.0
Taxiway Y3	All	56/R/B/W/T	57/R/B	1.0
Taxiway H	All	*	59/F/D	-

*: Pavement does not have the minimum thickness required by the FAA.
Source: RS&H, 2020

5.3.1.2 Apron

TABLE 5-6: APRON SECTION PCN RESULTS

Branch ID	Location	PCN Code	ACN Code	ACN/PCN
Terminal 2-4	All	38/R/B/W/T	57/R/B	1.5
International Terminal Apron	All	*	59/F/D	-

*: Pavement does not have the minimum thickness required by the FAA.
Source: RS&H, 2020

5.3.2 PCN Analysis

5.3.2.1 PCN Overloading

Pavements that encounter operational loads (ACNs) larger than the reported PCN will potentially reduce the design life of the pavement, where smaller loads will use up pavement life at a reduced rate. According to *AC 150/5335-5C*, it is acceptable for minor overloading (frequency and/or magnitude) to occur on the pavement sporadically. For all pavements, the annual number of overload airplane traffic cycles should not be greater than 5% of the total annual airplane traffic cycles. For flexible pavements, occasional traffic operations by aircraft with an ACN not more than 10% of the reported PCN should not significantly affect the pavement. For rigid pavement, occasional traffic operations by aircraft with an ACN not more than 5% of the reported PCN should not significantly affect the pavement.

Where overload operations are performed, extra attention needs to be paid to the pavement by airport personnel to detect any signs of accelerated pavement distress. Overloading should not be permitted in areas of pavement distress, or in any occurrence where the subgrade is weakened by water.

When there is frequent overloading, the airport authority has three options: one option is to leave the PCN as calculated but restrict the weight of aircraft that overload the pavement so their ACNs are lower than the reported PCN. The second option is to increase the PCN of the pavement by adding a structural overlay or reconstructing, so the pavement can accommodate aircraft with higher ACNs. The third option is to raise the PCN to equal the highest ACN of the aircraft mix, but make it known that accelerated pavement life and severe pavement distresses may occur. Of the three options, option two is the only option that does not restrict airport operations or shorten pavement life but does require the necessary funding.

5.3.2.2 Cumulative Damage Factor

When analyzing pavement life and durability, the total Cumulative Damage Factor (CDF) must be considered. The CDF is a ratio of the number of coverages of a given aircraft on a pavement to the estimated number of coverages the same aircraft would need to perform to fail the pavement. The life of the pavement is estimated by dividing the 20-year design life by the total CDF of the aircraft mix (e.g. a mix with a total CDF of 1.25 would be figured to fail the pavement in 20/1.25=16 years).

While the ACN-PCN method is used to help determine if a specific aircraft can operate on a particular pavement, the CDF is used to determine the long-term effects of adding additional aircraft to a mix. When comparing the PCN of a pavement to a new aircraft with a given ACN, even if the ACN is lower than the PCN, it would be a good idea to not only recalculate the PCN under the new loading, but also look at the new CDF to determine if the new aircraft will significantly shorten the life of the pavement.

CHAPTER 6

PAVEMENT MANAGEMENT PROGRAM (PMP)

6.1 INTRODUCTION

This chapter of the report focuses on the development of a management program for the airfield pavements and provides conclusions and recommendations based on the results of the visual pavement inspection and NTD testing data that is conducted for airside pavements.

As dictated in Grant Assurance No. 11, Airports receiving federal funds for capital improvements projects are required to have an effective airport pavement maintenance management program. Airports are required to implement such a program for the useful life of any pavement constructed, reconstructed, or repaired with federal funding.

Historically, many airports based their maintenance program on immediate need rather than long-term planning, leading to a reduced effectiveness of maintenance and rehabilitation dollars. FAA *AC 150/5380-7B* outlines the requirements for an effective PMP. Developing a PMP helps airports determine how to best allocate the funds available, to get the most out of the capital investment. One of the most important components of the PMP is to keep an updated inspection log of how the pavements are performing, in order to get an indication of condition and rate of deterioration. This systematic approach helps provide the Airport and Engineer a basis upon which to execute judgment for repairs. The current evaluated condition of the pavements will provide the basis of the recommendations herein.

The goals of this maintenance and rehabilitation program are to provide a detailed inventory of the existing airfield pavements, recommendations for inspection schedule, and repair procedures to monitor the pavement conditions. This program also identifies areas of airfield pavement that require maintenance and provides repair recommendations. Lastly this report sequences this maintenance based on the priority of the pavements, severity of distresses, and available funding. This PMP includes rough order of magnitude cost estimates for the recommended rehabilitation and repairs. This maintenance program should be incorporated into current maintenance practices and planned pavement improvements at ONT.

Cost estimates for preventative and rehabilitative maintenance recommended at ONT have been developed based on the observed pavement distresses and are included in **Appendix F**. Assuming an unconstrained budget, The total estimated cost of this program is approximately ***$37.2M.*** As also explained in the following sections, it is important to understand that these repairs will not guarantee that the pavement will return the pavement to a PCI value of 100. Also, these repairs do not have the lasting effects that a full depth reconstruction will have. For these reasons, the total estimated cost of preventative and rehabilitative maintenance does not equal the cost of the 10-year Capital Improvement Plan which includes full reconstruction in certain deteriorated areas.

6.2 PMP OVERVIEW

Airfield pavements have been divided into three maintenance categories. The three categories are preventative, rehabilitative, and reconstructive, in increasing order of effort and cost. The category is directly related to a pavement's PCI number calculated from the visual inspection. Most airside pavement at ONT are determined to be within the preventative or rehabilitative maintenance categories. Some

pavement sections have been found to be deteriorated so far as to be classified into the reconstruction category. The repair recommendations can be found in **Section 6.3**.

In addition to these rehabilitation projects, smaller preventative maintenance is recommended to prolong the usable life of the existing pavements. It is assumed that preventative maintenance will be performed by Airport maintenance staff, such as crack sealing and patching. It should be noted that there may be some efficiencies and cost savings if these repairs are packaged into a comprehensive repair plan.

A 10-year pavement improvement program has been developed for ONT in **Chapter 7**. The goals of this program are to identify areas of airfield pavement that need rehabilitation and reconstruction work and prioritize construction projects based on the severity of distresses and available funding. This program should be incorporated into the pavement improvements plan at ONT.

6.3 REPAIR COST

6.3.1 Reconstruction Pavement Section

Using the fleet mix shown in **Chapter 5** and the subgrade strength values obtained by the NDT, the reconstruction pavement section was calculated using FAARFIELD. FAARFIELD is the standard thickness design software which accompanies *AC 150/5320-6F Airport Pavement Design and Evaluation.* The following tables show the proposed reconstruction sections for PCC and AC pavements. The following results were used for estimating purposes and should only be used as an overview. FAARFIELD analysis should be verified for each individual project.

TABLE 6-1: PCC RECONSTRUCTION PAVEMENT SECTION

Layer Material	Thickness
P-501 - Surface Course	***19 in***
P-304 – Stabilized Base	***6 in***
P-154 - Subbase Course	***12 in***

Source: RS&H, 2020

TABLE 6-2: AC RECONSTRUCTION PAVEMENT SECTION

Layer Material	Thickness
P-401 - Surface Course	***5 in***
P-304 - Stabilized Course	***6 in***
P-209 - Base Course	***12 in***
P-154 - Subbase Course	***12.5 in***

Source: RS&H, 2020

TABLE 6-3: AC RECONSTRUCTION SHOULDER/BLAST PAD SECTION

Layer Material	Thickness
P-401 - Surface Course	***4 in***
P-209 - Base Course	***6 in***
P-154 - Subbase Course	***17 in***

Source: RS&H, 2020

6.3.2 AC and PCC Pavement Repair Cost

Table 6-4 lists the cost for airfield AC pavement repair costs by repair type and **Table 6-5** lists the airfield PCC pavement repair costs. The following prices were obtained from data from a variety of recent projects in the state of California. The following should only be used for estimating purposes due to the impact project size has on cost, as well as variance of labor and materials costs. The distress type and severity as well as overall condition of the pavement section or branch has been reviewed to determine the appropriate repair for each pavement branch or section.

TABLE 6-4: AC REPAIR COST

Repair Type	*Units*	*Cost*
Monitor	N/A	N/A
Clean	N/A	N/A
Seal Coat	SF	$ 0.25
Crack Seal (Linear Cracking)	LF	$ 2.00
Crack Seal (Block Cracking)	SF	$ 0.80
Crack Seal (Alligator Cracking)	SF	$ 4.00
Patch	SF	$ 5.00
Mill & Overlay	SF	$ 4.00
Full Depth Reconstruction (VSR)	SF	$ 14.00
Full Depth Reconstruction (Shoulder/Blast Pad)	SF	$ 10.50
Full Depth Reconstruction (Full Strength)	SF	$ 17.50

Note: All numbers in the table are in 2020 dollars.
Source: RS&H, 2020

TABLE 6-5: PCC REPAIR COST

Repair Type	*Units*	*Cost*
Monitor	N/A	N/A
Joint Seal	LF	$ 5.00
Crack Seal (Linear Cracking)	LF	$ 10.00
Crack Seal (Corner Cracking)	EA	$ 25.00
Partial Depth Patch (Joint Spall)	LF	$ 500.00
Partial Depth Patch	EA	$ 1,000.00
Partial Depth Patch (Large)	EA	$ 2,000.00
Full Depth Patch	EA	$ 3,000.00
Slab Replacement	EA	$ 20,000.00
Slab Replacement (Linear)	LF	$ 2,000.00
Full Depth Reconstruction	SF	$ 39.50

Note: All numbers in the table are in 2020 dollars.
Source: RS&H, 2020

6.4 ESTIMATED REPAIR COST BY BRANCH

Appendix F lists a cost estimate that was completed for each branch based on the individual pavement distresses and the repair cost for each. These estimates do not include soft costs, such as engineering design, or incidental construction costs such as drainage and electrical objects. Individual worksheets for each of the pavement branches can also be seen in **Appendix F**. Some branches have both AC and PCC pavement and are therefore listed twice on the table in **Appendix F**. It is important to understand that these repairs will not guarantee that the pavement will return to a PCI value of 100. Also, these repairs do not have the lasting effects that a full depth reconstruction will have. For example, if a section of pavement has spalls, spall repairs will create patches which are still distresses that need to be accounted for and therefore that section will not have a perfect 100 PCI. Those same patches will also not have 20-

year design life which is common of a full depth reconstruction. It may be entirely possible that the same patch will need to be repaired several times within a 20-year period. There are many cases in on the table in **Appendix F** where a full depth reconstruction of an entire branch makes more economic sense than repairing all individual distresses, even though the repairs may have a lower initial cost. The Capital Improvement Plan in **Chapter 7** takes this into consideration and combines both full reconstruction and maintenance projects.

6.5 10 YEAR "NO ACTION" ANALYSIS

Long term forecasting is a tool that can be used to identify which pavements will fall below the critical point first; The rate of deterioration is dependent on the current pavement condition and the pavement construction history. As additional inspections are performed, and additional data can be integrated, these projections can be further refined and pavements which are deteriorating at an unusual rate can be identified.

Airfield pavements where analyzed to develop a PCI value of each pavement section ten years into the future assuming no pavement maintenance or repairs are performed. Previous construction history discussed in **Chapter 2** as well as current pavement condition found in **Chapter 4** were used to determine the estimated rate of deterioration. **Appendix G** has tables which show what the estimated PCI values will be for the next 10 years if no action is taken. The appendix also has PCI maps after 5 years and 10 years of deterioration which correspond to the tables. In addition to current pavement conditions, this data will help determine project sequencing.

By performing regular inspections of the airfield pavements, the current conditions of the pavements can be closely monitored and can provide accurate information for yearly PMP updates. Utilizing the PAVER ™ software, ONT can record the existing pavements and keep up-to-date records of maintenance projects. This will allow the software to see the impacts of these project on the proposed PMP and allow ONT to adapt its maintenance strategies accordingly.

CHAPTER 7

CAPITAL IMPROVEMENT PLAN (CIP)

7.1 INTRODUCTION

The goal of the Capital Improvement Plan (CIP) is to focus on areas of concern due to their importance to airport operations and areas which may cause a safety concern due to poor pavement condition, all while managing available funding. This program should be incorporated into current maintenance practices and planned pavement improvements at ONT.

Although most of the airfield pavements fell within the preventative category, there were some immediate, short-term, and long-term needs identified based on the observed pavement condition. Additionally, it should be noted that most of the pavement at ONT have exceeded the FAA design life expectancy of 20 years.

The CIP developed for ONT is meant to assist in decision making for wiser investments in infrastructure. It allows ONT to identify areas of work that require attention immediately and areas that if improved using preventative maintenance measures will allow for a longer life-cycle of the present infrastructure.

Overall, the CIP and the strategies expressed herein, are expected to capitalize on the facilities in place today, ensure future capital expenditures are maximized, and incrementally build future revenue producing facilities that will further enhance Ontario International Airport.

7.2 CIP OVERVIEW

Table 7-1 lists the CIP overview for the next 10 fiscal years. A visual representation of this table can be found on **Figure 7-1**. The projects are grouped by their approximate cost in order to provide an average cost per year. All the prices are in today's dollars. An annual inflation rate was not added to the estimated costs below. Also, soft costs such as engineering design, or incidental construction costs such as drainage and electrical objects are not included in these estimates. It is also important to note that project costs may vary greatly depending on unknown future labor and material costs.

TABLE 7-1: CIP OVERVIEW

Fiscal Year	Pavement Branch	Main Type of Repairs	Estimated Cost	Fiscal Year Estimated Cost
1	Runway 8R/26L Keel	Full Reconstruction	$ 26,594,000.00	$ 43,421,000.00
	Runway Shoulder 8R, Runway Blast Pads 8R & 26L	Full Reconstruction	$ 16,697,000.00	
	Taxiway F (Sections: 7,8), Taxiway K (7,8), Taxiway P (8,9), Taxiway Q (3,4)	Slab Replacement, Patching	$ 130,000.00	
2	Runway 8L/26R	Patching, Crack Seal	$ 473,000.00	$ 16,576,000.00
	Runway Shoulder 8L	Crack Seal, Seal Coat	$ 536,000.00	
	Taxiway F (Sections: 2,3), Taxiway K (3,4), Taxiway P (3,4)	Slab Replacement, Patching	$ 162,000.00	
	Terminal 1 Apron	Full Reconstruction	$ 15,405,000.00	
3	VSR East	Full Reconstruction	$ 1,443,000.00	$ 6,078,000.00
	VSR South	Mill & Overlay, Full Reconstruction	$ 651,000.00	
	VSR West	Full Reconstruction	$ 2,151,000.00	
	VSR North	Full Reconstruction, Mill & Overlay	$ 1,833,000.00	

Fiscal Year	Pavement Branch	Main Type of Repairs	Estimated Cost	Fiscal Year Estimated Cost
4	Taxiway N (Sections: 12,13), Taxiway V (2,3), Taxiway W (2,3)	Full Reconstruction	$ 10,629,000.00	$ 10,629,000.00
5	Taxiway K, Taxiway P, Taxiway Q, Taxiway F	Slab Replacement, Patching	$ 849,000.00	$ 2,031,000.00
	Taxiway N Shoulder	Crack Seal, Seal Coat	$ 602,000.00	
	Taxiway S Shoulder	Crack Seal, Seal Coat	$ 580,000.00	
6	Cargo South Apron, Atlantic Aviation Apron	Full Reconstruction	$ 29,928,000.00	$ 29,928,000.00
7	Terminal 2 Apron, Terminal 3 Apron, Terminal 4 Apron, Taxilane N1	Slab Replacement, Patching	$ 835,000.00	$ 835,000.00
8	Taxiway S1, Taxiway S2, Taxiway S3	Full Reconstruction	$ 2,559,000.00	$ 2,559,000.00
9	Taxiway S	Full Reconstruction	$ 45,742,000.00	$ 45,742,000.00
10	FedEx Apron (Sections: 2, 5, 6, 10, 13, 17, 18)	Full Reconstruction	$ 13,727,000.00	$ 20,823,000.00
	International Terminal Apron (Sections: 1,3)	Full Reconstruction	$ 7,096,000.00	
			Total	**$178,622,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.
Source: RS&H, 2020

7.2.1 Fiscal Year 1

Runway 8R/26L was built in 1979 and has now reached 40 years of life. Despite the age, most of the pavement is in satisfactory condition. Due to the age and the type of distresses, full reconstruction of the keel section and maintenance and rehabilitation projects repairing the large amount of joint seal damage and spalling of the outboard sections are necessary at this time. The connecting Taxiways: F, K, P and Q, which connect the runways are deteriorating. The age of these taxiways is now exceeding their 20-year design pavement life and structural issues such as linear cracking and shattered slabs were seen during the pavement inspection. While full reconstruction of these taxiways may not be necessary at this time, rehabilitation repairs need to be made. The portions of these Taxiways which are within the Runway 8R/26L safety area should be repaired at the same time as any work being done to the Runway.

The shoulder and blast pad pavement for Runway 8R/26L has been deteriorating up to a point where large cracks which are over an inch wide are frequently seen. Large cracks will let water in which will potentially wash off the base material creating an unstable foundation. From the visual inspection it is obvious that crack seal and seal coat projects have been done to these shoulders, but the effects of these repairs have worn off. A full reconstruction of the Runway 8R/26L shoulders is recommended. Further engineering evaluation on the condition of the base material should be done prior to a full reconstruction project.

7.2.2 Fiscal Year 2

Runway 8L/26R is in far better condition than Runway 8R/26L with the majority of pavement being in good condition. Due to the importance of this runway, maintenance projects mainly addressing the joint seal damage and spalling are recommended. Noticeable rubber build up was noticed on both runways, it

is recommended that any rubber removal projects are completed prior to any joint seal project. The Runway 8L/26R shoulders and Taxiways F, K and P within the runway safety area should also be maintained and rehabilitated during this time. Full reconstruction is not needed at this time for any of those areas.

The Terminal 1 Apron is comprised of both AC and PCC pavement. The current state of the PCC pavement is that it has high FOD potential and will soon be of safety concern. The high number of shattered slabs and other structural distresses give this pavement a poor rating. The AC pavement of this branch is not in nearly as bad of shape, but the age of the pavement may be a reason for replacement. Most distresses are joint reflection cracking and it would be beneficial for geotechnical testing prior to a reconstruction of the AC pavement.

7.2.3 Fiscal Year 3

Of the four VSR branches, VSR East is in the worst condition. Large portions of VSR East should be reconstructed due to the high amount of alligator cracking. VSR East experienced a large amount of ONT Operations department and UPS vehicle traffic therefore making it of high importance for the whole airport.

VSR South is of high importance for FedEx, any vehicles coming in through SAAP South and for emergency vehicles coming out of the ARFF station. A mill and overlay of a large portion of VSR South should be of high priority prior to the road needing a costly full depth reconstruction.

The section of VSR which connects to the FedEx apron is already creating rideability issues with the large amount of medium and high severity alligator cracking. The same can be said about the westerly section of VSR North. These portions of pavement do not experience nearly as much traffic as the rest of the VSR system but will soon be of safety concern. The sections of VSR North which are used to get to the terminals are in better condition, but rehabilitation projects should be done in order to keep them from deteriorating.

Overall the ONT VSR roads are in poor condition and a large amount of rehabilitation and reconstruction needs to be made.

7.2.4 Fiscal Year 4

The westerly portion of Taxiway N, Taxiway V between Taxiway N and Runway 8L/26R, and Taxiway W between Taxiway N and Runway 8L/26R will need to be reconstructed based on the poor condition of the pavement. This portion of pavement has many structural distresses such as linear cracking and shattered slabs.

7.2.5 Fiscal Year 5

Taxiways, such as Taxiways: K, P, Q and F, which connect the runways are deteriorating. The age of these taxiways is now exceeding their 20-year design pavement life and structural issues such as linear cracking and shattered slabs were seen during the pavement inspection. While full reconstruction of these taxiways may not be necessary at this time, rehabilitation repairs need to be made.

Taxiway N and S shoulders currently range from fair to good condition. Looking at the 2023 and 2028 "no action" analysis in **Appendix G**., it becomes apparent that doing preventative maintenance on these large pieces of pavement will help the airport from prematurely having to fully reconstruct. The preventative maintenance will most likely be made up of crack seal and seal coat projects.

7.2.6 Fiscal Year 6

The South Cargo Apron and Atlantic Aviation Apron both have AC pavement which is currently failing and will soon be a FOD hazard. Portions of the PCC found at the South Cargo Apron has recently been rehabbed for spalls and other minor distresses. The easterly side of the South Cargo Apron PCC will also need similar rehab procedures. The full reconstruction of AC pavements and the rehabilitation of the PCC pavement in this area will need to be completed for the safety of this apron. The amount of use and type of aircraft which use these pavements need to be evaluated prior to any major rehabilitation/reconstruction efforts. These estimated costs do not include the newly reconstructed AC pavement in these branches.

7.2.7 Fiscal Year 7

The Terminal 2, 3, 4 and Taxilane N1 are mostly in good and satisfactory conditions but due to their importance to ONT airport commercial operations, maintenance and rehabilitation projects need to be completed to these areas. Small areas near the terminals have structural distresses which warrant select slab replacements while the rest of the apron will need to get the joint seal damage and spalling addressed. Closures to these areas should be coordinated in a way to limit impact to airport operations.

7.2.8 Fiscal Year 8

The three taxiways which connect Taxiway S to the FedEx Apron will need to be reconstructed based on their current conditions. Taxiways S1 and S3 are AC pavement which have a large amount of low severity block cracking. In order to maintain these two taxiways safe, a crack seal and seal coat project may be necessary within the next few years. Taxiway S2 is a PCC taxiway which currently has linear cracking and several shattered slabs.

7.2.9 Fiscal Year 9

Taxiway S is currently scheduled to have maintenance done to it by the end of 2019. This maintenance includes select panel replacement, joint seal, crack repair and spall repair. These repairs should increase the life of the pavement, but it will not completely restore the pavement to a good condition. It should be expected that this pavement will need to be replaced towards the end of fiscal year 9. Monitoring Taxiway S will become very important due to the current state and age of the pavement.

7.2.10 Fiscal Year 10

The FedEx apron has some of the worst condition pavement of the whole airfield, but the future use of this pavement is unknown. Depending on the future use, this pavement will need to be reconstructed due to safety issues.

The International Terminal Apron is in poor condition, but the current and future use of this pavement does not merit immediate action. Depending on the future use, this pavement may need to be rehabilitated sooner than Fiscal Year 10.

Ontario International Airport

Airfield Pavement Evaluation

Figure 7-1
CIP Overview

Legend

CIP Fiscal Year

- Not on CIP
- Year 1
- Year 2
- Year 3
- Year 4
- Year 5
- Year 6
- Year 7
- Year 8
- Year 9
- Year 10

March 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

RS&H

APPENDIX A

PAVEMENT SECTION HISTORY

Appendix D. Work History Report

Network: ONT-AS **Branch:** APCARGOS **(**Cargo South Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 1,117.17 Ft **Width:** 178.23 Ft **True Area:** 199,116.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APCARGOS **(**Cargo South Apron**)** **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 201.65 Ft **Width:** 99.16 Ft **True Area:** 19,995.06 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APCARGOS **(**Cargo South Apron**)** **Section:** 03 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 136.02 Ft **Width:** 59.87 Ft **True Area:** 8,143.79 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APCARGOS **(**Cargo South Apron**)** **Section:** 04 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 967.35 Ft **Width:** 309.79 Ft **True Area:** 299,676.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APCARGOW **(**Cargo West Apron**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** APRON **Rank:** S **Length:** 777.43 Ft **Width:** 399.06 Ft **True Area:** 310,240.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 6/13, Tif 0059799
06/01/1986	BA-AG	Base Course - Aggregate	$0	6.00	False	Sheet 6/13, Tif 0059799

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 574.68 Ft **Width:** 232.10 Ft **True Area:** 133,385.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 1,267.36 Ft **Width:** 266.81 Ft **True Area:** 338,142.05 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 183.85 Ft **Width:** 63.34 Ft **True Area:** 11,645.75 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 04 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 183.85 Ft **Width:** 63.34 Ft **True Area:** 11,644.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 05 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 83.89 Ft **Width:** 22.22 Ft **True Area:** 1,863.93 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 83.89 Ft **Width:** 22.22 Ft **True Area:** 1,863.93 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 07 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 722.87 Ft **Width:** 48.08 Ft **True Area:** 34,751.94 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 08 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 229.36 Ft **Width:** 12.86 Ft **True Area:** 2,948.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 09 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 449.00 Ft **Width:** 195.50 Ft **True Area:** 87,779.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 10 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 140.77 Ft **Width:** 36.73 Ft **True Area:** 5,171.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 11 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 277.07 Ft **Width:** 63.47 Ft **True Area:** 17,585.96 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 12 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 163.85 Ft **Width:** 45.45 Ft **True Area:** 7,447.82 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 13 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 261.02 Ft **Width:** 75.31 Ft **True Area:** 19,658.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 14 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 162.25 Ft **Width:** 12.64 Ft **True Area:** 2,051.58 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 15 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 417.91 Ft **Width:** 108.07 Ft **True Area:** 45,161.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 16 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 99.74 Ft **Width:** 43.73 Ft **True Area:** 4,362.12 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 235.87 Ft **Width:** 106.84 Ft **True Area:** 25,199.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 94.91 Ft **Width:** 15.25 Ft **True Area:** 1,447.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 03 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 308.69 Ft **Width:** 180.27 Ft **True Area:** 55,647.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 04 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 152.18 Ft **Width:** 65.91 Ft **True Area:** 10,029.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 05 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 52.01 Ft **Width:** 30.98 Ft **True Area:** 1,611.38 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 162.87 Ft **Width:** 69.80 Ft **True Area:** 11,368.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APINTTERM **(**Int'l Terminal Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 1,018.32 Ft **Width:** 278.75 Ft **True Area:** 283,858.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APINTTERM **(**Int'l Terminal Apron**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 806.60 Ft **Width:** 291.71 Ft **True Area:** 235,293.61 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APINTTERM **(**Int'l Terminal Apron**)** **Section:** 03 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 329.34 Ft **Width:** 84.05 Ft **True Area:** 27,680.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APLAONT **(**LA-ONT Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** T **Length:** 1,094.83 Ft **Width:** 165.12 Ft **True Area:** 180,776.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APLAONT **(**LA-ONT Apron**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** T **Length:** 202.91 Ft **Width:** 122.42 Ft **True Area:** 24,841.23 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APLAONT **(**LA-ONT Apron**)** **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** T **Length:** 109.45 Ft **Width:** 33.72 Ft **True Area:** 3,691.18 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APLAONT **(**LA-ONT Apron**)** **Section:** 04 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** T **Length:** 143.55 Ft **Width:** 45.84 Ft **True Area:** 6,580.06 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APMERCATL **(**Atlantic Aviation Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 1,228.76 Ft **Width:** 271.33 Ft **True Area:** 333,397.53 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APMERCATL **(**Atlantic Aviation Apron**)** **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 200.28 Ft **Width:** 49.93 Ft **True Area:** 10,000.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM1 **(**Terminal 1 Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 86.25 Ft **Width:** 38.99 Ft **True Area:** 3,362.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM1 **(**Terminal 1 Apron**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 95.62 Ft **Width:** 43.94 Ft **True Area:** 4,201.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM1 **(**Terminal 1 Apron**)** **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 877.63 Ft **Width:** 294.76 Ft **True Area:** 258,688.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM1A **(**Terminal 1A Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 574.15 Ft **Width:** 173.10 Ft **True Area:** 99,388.21 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM1A **(**Terminal 1A Apron**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 431.73 Ft **Width:** 159.67 Ft **True Area:** 68,936.23 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM1A **(**Terminal 1A Apron**)** **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 266.84 Ft **Width:** 122.88 Ft **True Area:** 32,789.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM2 **(**Terminal 2 Apron**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** APRON **Rank:** P **Length:** 1,704.01 Ft **Width:** 263.09 Ft **True Area:** 448,304.70 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	14.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	6.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** APTERM3 **(**Terminal 3 Apron**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** APRON **Rank:** P **Length:** 1,376.09 Ft **Width:** 246.69 Ft **True Area:** 339,468.73 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	14.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	6.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** APTERM4 **(**Terminal 4 Apron**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** APRON **Rank:** P **Length:** 1,884.16 Ft **Width:** 272.26 Ft **True Area:** 512,988.69 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	14.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	6.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: BPRW26L **(**Blast Pad Runway 26L End**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1978 **Use:** BLAST PAD **Rank:** T **Length:** 400.69 Ft **Width:** 255.46 Ft **True Area:** 102,360.69 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1978	NC-AC	New Construction - AC	$0	4.00	True	Page 17/73, Design Report, Tif 2009205_25L
06/01/1978	BA-AG	Base Course - Aggregate	$0	6.00	False	Page 17/73, Design Report, Tif 2009205_25L

Network: ONT-AS **Branch**: BPRW26R **(**Blast Pad Runway 26R End**)** **Section:** 01E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** BLAST PAD **Rank:** T **Length:** 397.18 Ft **Width:** 210.27 Ft **True Area:** 83,515.89 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: BPRW8L **(**Blast Pad Runway 8L End**)** **Section:** 01W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** BLAST PAD **Rank:** T **Length:** 435.39 Ft **Width:** 246.06 Ft **True Area:** 107,130.42 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: BPRW8L **(**Blast Pad Runway 8L End**)** **Section:** 02W **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** BLAST PAD **Rank:** T **Length:** 150.04 Ft **Width:** 9.98 Ft **True Area:** 1,497.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: BPRW8R **(**Blast Pad Runway 8R End**)** **Section:** 01W **Surface:** AC
L.C.D.: 06/02/1978 **Use:** BLAST PAD **Rank:** T **Length:** 401.97 Ft **Width:** 248.10 Ft **True Area:** 99,729.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1978	NC-AC	New Construction - AC	$0	4.00	True	Page 17/73, Design Report, Tif 2009205_25L
06/01/1978	BA-AG	Base Course - Aggregate	$0	6.00	False	Page 17/73, Design Report, Tif 2009205_25L

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 01C **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,000.32 Ft **Width:** 74.98 Ft **True Area:** 75,000.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 01N **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,000.16 Ft **Width:** 37.50 Ft **True Area:** 37,501.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 01S **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,000.16 Ft **Width:** 37.49 Ft **True Area:** 37,499.97 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 02C **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 3,680.30 Ft **Width:** 74.99 Ft **True Area:**275,998.33 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 02N **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 3,680.13 Ft **Width:** 37.50 Ft **True Area:**138,001.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 02S **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 3,680.13 Ft **Width:** 37.50 Ft **True Area:**137,994.67 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 03C **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,480.32 Ft **Width:** 74.98 Ft **True Area:**111,000.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 03N **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,480.15 Ft **Width:** 37.50 Ft **True Area:** 55,500.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 03S **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,480.15 Ft **Width:** 37.50 Ft **True Area:** 55,498.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 04C **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,740.32 Ft **Width:** 74.99 Ft **True Area:**130,499.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 04N **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,740.15 Ft **Width:** 37.50 Ft **True Area:** 65,249.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 04S **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,740.15 Ft **Width:** 37.50 Ft **True Area:** 65,250.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 05C **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 2,080.31 Ft **Width:** 74.99 Ft **True Area:** 156,000.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 05N **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 2,080.15 Ft **Width:** 37.50 Ft **True Area:** 77,999.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 05S **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 2,080.15 Ft **Width:** 37.50 Ft **True Area:** 78,000.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 06C **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 1,229.38 Ft **Width:** 49.99 Ft **True Area:** 61,458.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 06N **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 1,229.37 Ft **Width:** 49.99 Ft **True Area:** 61,457.94 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 06S **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 1,229.39 Ft **Width:** 49.99 Ft **True Area:** 61,458.70 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 07C **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 990.32 Ft **Width:** 50.03 Ft **True Area:** 49,549.35 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 07N **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 990.34 Ft **Width:** 49.94 Ft **True Area:** 49,458.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 07S **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 990.30 Ft **Width:** 49.99 Ft **True Area:** 49,503.52 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 01C **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 1,440.21 Ft **Width:** 49.99 Ft **True Area:** 72,000.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 01N **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 1,440.21 Ft **Width:** 49.99 Ft **True Area:** 72,001.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 01S **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 1,440.21 Ft **Width:** 49.99 Ft **True Area:** 72,000.07 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 02C **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,100.20 Ft **Width:** 50.00 Ft **True Area:** 105,000.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 02N **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,100.20 Ft **Width:** 50.00 Ft **True Area:** 105,000.03 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 02S **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,100.20 Ft **Width:** 50.00 Ft **True Area:** 105,000.45 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 03C **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 3,320.19 Ft **Width:** 50.00 Ft **True Area:** 165,999.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 03N **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 3,320.19 Ft **Width:** 50.00 Ft **True Area:**166,000.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 03S **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 3,320.19 Ft **Width:** 50.00 Ft **True Area:**166,002.59 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 04C **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 200.22 Ft **Width:** 49.95 Ft **True Area:** 10,000.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	11.00	False	10-12", Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 04N **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 200.22 Ft **Width:** 49.95 Ft **True Area:** 10,000.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	11.00	False	10-12", Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 04S **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 200.22 Ft **Width:** 49.94 Ft **True Area:** 9,999.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	11.00	False	10-12", Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 05C **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 950.21 Ft **Width:** 49.99 Ft **True Area:** 47,500.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 05N **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 950.21 Ft **Width:** 49.99 Ft **True Area:** 47,499.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 05S **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 950.21 Ft **Width:** 49.99 Ft **True Area:** 47,499.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 06C **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,190.20 Ft **Width:** 50.00 Ft **True Area:**109,500.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 06N **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,190.20 Ft **Width:** 50.00 Ft **True Area:** 109,500.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: RW8R/26L **(**Runway 8R/26L**)** **Section:** 06S **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,190.20 Ft **Width:** 50.00 Ft **True Area:** 109,500.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch**: SHAPTERM4 **(**Terminal 4 Apron Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 428.47 Ft **Width:** 82.91 Ft **True Area:** 35,523.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 44/106, Tif 0096287
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 44/106, Tif 0096287

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 01N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 84.83 Ft **Width:** 49.85 Ft **True Area:** 4,228.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 01S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 129.32 Ft **Width:** 73.92 Ft **True Area:** 9,560.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 02N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 149.59 Ft **Width:** 47.63 Ft **True Area:** 7,124.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 02S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 75.14 Ft **Width:** 35.85 Ft **True Area:** 2,693.74 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 03N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 117.55 Ft **Width:** 20.96 Ft **True Area:** 2,463.79 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 03S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 122.33 Ft **Width:** 42.72 Ft **True Area:** 5,225.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 04N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,674.42 Ft **Width:** 61.26 Ft **True Area:** 102,567.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 04S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 123.42 Ft **Width:** 13.34 Ft **True Area:** 1,646.75 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 05N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 115.24 Ft **Width:** 22.53 Ft **True Area:** 2,596.06 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 05S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,082.01 Ft **Width:** 60.53 Ft **True Area:** 65,490.86 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 06N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 150.99 Ft **Width:** 51.52 Ft **True Area:** 7,778.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 06S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 87.85 Ft **Width:** 11.34 Ft **True Area:** 996.62 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 07N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 139.73 Ft **Width:** 48.36 Ft **True Area:** 6,757.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 07S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 122.10 Ft **Width:** 43.70 Ft **True Area:** 5,335.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 08N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 105.96 Ft **Width:** 22.50 Ft **True Area:** 2,383.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 08S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 122.41 Ft **Width:** 38.81 Ft **True Area:** 4,751.34 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 09N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,534.66 Ft **Width:** 62.43 Ft **True Area:** 95,810.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 09S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 61.31 Ft **Width:** 41.84 Ft **True Area:** 2,565.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 10N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 101.45 Ft **Width:** 19.12 Ft **True Area:** 1,939.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 10S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 512.73 Ft **Width:** 53.02 Ft **True Area:** 27,185.43 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 11N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 134.97 Ft **Width:** 44.83 Ft **True Area:** 6,050.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 11S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 150.56 Ft **Width:** 44.33 Ft **True Area:** 6,674.75 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 12N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 134.14 Ft **Width:** 40.68 Ft **True Area:** 5,456.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 12S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 60.03 Ft **Width:** 7.47 Ft **True Area:** 448.61 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	20.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 13N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 100.60 Ft **Width:** 17.97 Ft **True Area:** 1,807.45 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 13S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 149.40 Ft **Width:** 42.80 Ft **True Area:** 6,394.78 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 14N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 613.12 Ft **Width:** 61.52 Ft **True Area:** 37,717.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 14S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 61.77 Ft **Width:** 7.86 Ft **True Area:** 485.56 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 15N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 146.23 Ft **Width:** 38.93 Ft **True Area:** 5,692.61 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 15S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,543.82 Ft **Width:** 60.18 Ft **True Area:** 92,905.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 16N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 392.52 Ft **Width:** 35.92 Ft **True Area:** 14,100.96 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 16S **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 129.90 Ft **Width:** 17.10 Ft **True Area:** 2,221.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 17N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 230.68 Ft **Width:** 12.32 Ft **True Area:** 2,841.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 17S **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 161.81 Ft **Width:** 41.01 Ft **True Area:** 6,636.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 18N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,137.46 Ft **Width:** 58.78 Ft **True Area:** 66,856.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 18S **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 162.44 Ft **Width:** 41.37 Ft **True Area:** 6,720.02 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 19N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 80.42 Ft **Width:** 18.36 Ft **True Area:** 1,476.26 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 19S **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 131.11 Ft **Width:** 18.13 Ft **True Area:** 2,377.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 20N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 117.05 Ft **Width:** 42.58 Ft **True Area:** 4,984.12 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 20S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 839.38 Ft **Width:** 56.33 Ft **True Area:** 47,277.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 21N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 116.30 Ft **Width:** 41.25 Ft **True Area:** 4,797.18 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 21S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 260.11 Ft **Width:** 38.03 Ft **True Area:** 9,892.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 22N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 78.92 Ft **Width:** 18.00 Ft **True Area:** 1,420.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 22S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 136.17 Ft **Width:** 11.41 Ft **True Area:** 1,553.13 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 23N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 547.07 Ft **Width:** 60.75 Ft **True Area:** 33,236.17 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 23S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 162.36 Ft **Width:** 41.16 Ft **True Area:** 6,683.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 24N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 79.99 Ft **Width:** 19.15 Ft **True Area:** 1,531.60 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 24S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 101.01 Ft **Width:** 11.29 Ft **True Area:** 1,140.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 25N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 117.02 Ft **Width:** 43.56 Ft **True Area:** 5,097.63 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 25S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 973.11 Ft **Width:** 60.72 Ft **True Area:** 59,089.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 26N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 110.59 Ft **Width:** 36.63 Ft **True Area:** 4,051.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 26S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 90.16 Ft **Width:** 25.13 Ft **True Area:** 2,265.84 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 27N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 72.99 Ft **Width:** 15.17 Ft **True Area:** 1,107.37 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 27S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 151.05 Ft **Width:** 37.32 Ft **True Area:** 5,637.05 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 28N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 962.05 Ft **Width:** 42.51 Ft **True Area:** 40,896.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 28S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 151.43 Ft **Width:** 35.89 Ft **True Area:** 5,434.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 29N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 540.59 Ft **Width:** 11.49 Ft **True Area:** 6,213.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 29S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 90.51 Ft **Width:** 10.87 Ft **True Area:** 983.74 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 30N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 225.45 Ft **Width:** 34.75 Ft **True Area:** 7,834.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 30S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 585.45 Ft **Width:** 56.94 Ft **True Area:** 33,336.46 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 31N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 141.81 Ft **Width:** 13.69 Ft **True Area:** 1,942.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 31S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 132.72 Ft **Width:** 48.54 Ft **True Area:** 6,441.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 32N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,695.30 Ft **Width:** 65.74 Ft **True Area:** 111,441.23 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 32S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 71.89 Ft **Width:** 10.90 Ft **True Area:** 783.23 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 33N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 96.40 Ft **Width:** 19.36 Ft **True Area:** 1,866.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 33S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 135.59 Ft **Width:** 45.84 Ft **True Area:** 6,215.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 34N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 133.18 Ft **Width:** 44.13 Ft **True Area:** 5,876.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 34S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 72.95 Ft **Width:** 22.07 Ft **True Area:** 1,609.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 35N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 132.46 Ft **Width:** 42.26 Ft **True Area:** 5,597.13 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 35S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 2,756.07 Ft **Width:** 62.18 Ft **True Area:** 171,367.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 36N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 95.87 Ft **Width:** 18.34 Ft **True Area:** 1,757.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 36S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 89.16 Ft **Width:** 22.30 Ft **True Area:** 1,988.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 37N **Surface:** AC
L.C.D.: 06/01/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,551.59 Ft **Width:** 14.99 Ft **True Area:** 23,264.92 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1986	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/250, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 37S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 125.44 Ft **Width:** 47.81 Ft **True Area:** 5,996.54 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 38N **Surface:** AC
L.C.D.: 06/01/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,552.68 Ft **Width:** 36.41 Ft **True Area:** 56,532.06 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 38S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 150.43 Ft **Width:** 44.44 Ft **True Area:** 6,684.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 39N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 99.13 Ft **Width:** 20.35 Ft **True Area:** 2,016.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 39S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 116.32 Ft **Width:** 20.75 Ft **True Area:** 2,413.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 40N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 135.58 Ft **Width:** 45.71 Ft **True Area:** 6,196.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 40S **Surface:** AC
L.C.D.: 06/01/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,697.68 Ft **Width:** 34.57 Ft **True Area:** 58,696.14 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 41N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 212.46 Ft **Width:** 53.75 Ft **True Area:** 11,419.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 41S **Surface:** AC
L.C.D.: 06/01/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,697.68 Ft **Width:** 15.29 Ft **True Area:** 25,951.18 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1986	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 42N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 152.04 Ft **Width:** 50.85 Ft **True Area:** 7,731.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 42S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 119.61 Ft **Width:** 22.19 Ft **True Area:** 2,654.34 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 43S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 156.12 Ft **Width:** 49.00 Ft **True Area:** 7,649.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 44S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 142.60 Ft **Width:** 50.44 Ft **True Area:** 7,192.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 01N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 99.02 Ft **Width:** 49.94 Ft **True Area:** 4,945.35 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 01S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 102.01 Ft **Width:** 15.00 Ft **True Area:** 1,530.22 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 02N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 59.98 Ft **Width:** 46.88 Ft **True Area:** 2,811.60 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 02S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 102.01 Ft **Width:** 35.29 Ft **True Area:** 3,600.14 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 03N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,401.60 Ft **Width:** 50.06 Ft **True Area:** 70,169.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 03S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 151.61 Ft **Width:** 39.54 Ft **True Area:** 5,995.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, tif 0000051

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 04N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 154.31 Ft **Width:** 18.21 Ft **True Area:** 2,810.50 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 04S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 115.34 Ft **Width:** 17.19 Ft **True Area:** 1,982.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 05N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 188.49 Ft **Width:** 41.06 Ft **True Area:** 7,739.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 05S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,100.84 Ft **Width:** 49.84 Ft **True Area:** 54,864.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 06N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 143.50 Ft **Width:** 45.33 Ft **True Area:** 6,504.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 06S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 131.46 Ft **Width:** 54.79 Ft **True Area:** 7,202.54 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 07N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 108.93 Ft **Width:** 20.61 Ft **True Area:** 2,245.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 07S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 246.06 Ft **Width:** 49.82 Ft **True Area:** 12,257.61 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 08N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,319.23 Ft **Width:** 54.16 Ft **True Area:** 71,452.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 08S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,595.04 Ft **Width:** 49.97 Ft **True Area:** 79,696.75 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 09N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 680.72 Ft **Width:** 45.59 Ft **True Area:** 31,032.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 09S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 375.59 Ft **Width:** 47.71 Ft **True Area:** 17,919.58 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 10N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 408.03 Ft **Width:** 48.69 Ft **True Area:** 19,865.45 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 10S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 130.83 Ft **Width:** 56.24 Ft **True Area:** 7,357.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 11N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 353.97 Ft **Width:** 71.85 Ft **True Area:** 25,432.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 11S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 412.14 Ft **Width:** 49.73 Ft **True Area:** 20,493.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 12N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 2,512.18 Ft **Width:** 49.85 Ft **True Area:** 125,243.20 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 12S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 129.32 Ft **Width:** 55.06 Ft **True Area:** 7,120.96 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 13N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 274.40 Ft **Width:** 50.76 Ft **True Area:** 13,928.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 13S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 198.86 Ft **Width:** 50.72 Ft **True Area:** 10,086.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 14N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 148.34 Ft **Width:** 57.19 Ft **True Area:** 8,483.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 14S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 517.17 Ft **Width:** 49.61 Ft **True Area:** 25,655.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 15N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,845.03 Ft **Width:** 50.29 Ft **True Area:** 92,794.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 15S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 366.80 Ft **Width:** 48.14 Ft **True Area:** 17,657.86 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 16N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 114.98 Ft **Width:** 18.75 Ft **True Area:** 2,156.22 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 16S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 128.52 Ft **Width:** 53.61 Ft **True Area:** 6,890.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 17N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 150.51 Ft **Width:** 43.11 Ft **True Area:** 6,488.96 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 17S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,067.90 Ft **Width:** 50.00 Ft **True Area:** 53,395.78 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 18N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 97.40 Ft **Width:** 50.11 Ft **True Area:** 4,881.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 18S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 126.50 Ft **Width:** 54.92 Ft **True Area:** 6,947.73 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 19S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 372.51 Ft **Width:** 47.87 Ft **True Area:** 17,833.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 20S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 688.51 Ft **Width:** 50.06 Ft **True Area:** 34,469.05 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 21S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 95.36 Ft **Width:** 18.39 Ft **True Area:** 1,753.93 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 22S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 131.02 Ft **Width:** 43.32 Ft **True Area:** 5,676.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 23S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 131.53 Ft **Width:** 43.96 Ft **True Area:** 5,781.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8R (Runway 8R/26L Shoulder) **Section:** 24S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 95.57 Ft **Width:** 18.57 Ft **True Area:** 1,775.09 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 25S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,838.67 Ft **Width:** 50.49 Ft **True Area:** 92,827.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 26S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 151.17 Ft **Width:** 55.55 Ft **True Area:** 8,397.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 27S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 104.66 Ft **Width:** 50.16 Ft **True Area:** 5,249.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 01S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 135.26 Ft **Width:** 46.12 Ft **True Area:** 6,238.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 02S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 101.55 Ft **Width:** 20.32 Ft **True Area:** 2,063.09 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 03S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,160.29 Ft **Width:** 38.94 Ft **True Area:** 45,183.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 04S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,091.94 Ft **Width:** 16.63 Ft **True Area:** 18,160.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 05S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,704.97 Ft **Width:** 37.64 Ft **True Area:** 64,169.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 06S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,636.32 Ft **Width:** 16.09 Ft **True Area:** 26,330.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 07S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,771.62 Ft **Width:** 37.61 Ft **True Area:** 66,628.60 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 08S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,701.03 Ft **Width:** 16.08 Ft **True Area:** 27,350.82 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 09S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 208.19 Ft **Width:** 57.20 Ft **True Area:** 11,907.51 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 10S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 139.66 Ft **Width:** 28.48 Ft **True Area:** 3,976.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWA **(**Taxiway A Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 182.24 Ft **Width:** 29.92 Ft **True Area:** 5,453.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWA **(**Taxiway A Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 54.59 Ft **Width:** 36.11 Ft **True Area:** 1,971.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWA **(**Taxiway A Shoulder**)** **Section:** 02E **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 81.92 Ft **Width:** 7.14 Ft **True Area:** 584.48 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWB (Taxiway B Shoulder) **Section:** 01E **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 302.96 Ft **Width:** 35.54 Ft **True Area:** 10,765.89 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWB (Taxiway B Shoulder) **Section:** 01W **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 309.17 Ft **Width:** 18.02 Ft **True Area:** 5,570.94 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch**: SHTWB (Taxiway B Shoulder) **Section:** 02E **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 265.25 Ft **Width:** 15.41 Ft **True Area:** 4,086.33 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch**: SHTWB (Taxiway B Shoulder) **Section:** 02W **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 309.34 Ft **Width:** 42.09 Ft **True Area:** 13,020.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWC (Taxiway C Shoulder) **Section:** 01E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 75.97 Ft **Width:** 34.69 Ft **True Area:** 2,635.18 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWC (Taxiway C Shoulder) **Section:** 01W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 168.54 Ft **Width:** 8.91 Ft **True Area:** 1,502.12 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWC (Taxiway C Shoulder) **Section:** 02E **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 76.20 Ft **Width:** 62.33 Ft **True Area:** 4,749.89 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWC (Taxiway C Shoulder) **Section:** 02W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 233.51 Ft **Width:** 33.00 Ft **True Area:** 7,706.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWD (Taxiway D Shoulder) **Section:** 01E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 73.56 Ft **Width:** 34.93 Ft **True Area:** 2,569.23 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWD (Taxiway D Shoulder) **Section:** 01W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 38.70 Ft **Width:** 7.13 Ft **True Area:** 275.78 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWD (Taxiway D Shoulder) **Section:** 02E **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 38.56 Ft **Width:** 7.05 Ft **True Area:** 271.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWD (Taxiway D Shoulder) **Section:** 02W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 72.86 Ft **Width:** 37.09 Ft **True Area:** 2,702.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWD (Taxiway D Shoulder) **Section:** 03E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 149.88 Ft **Width:** 41.05 Ft **True Area:** 6,152.07 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWD (Taxiway D Shoulder) **Section:** 03W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 149.95 Ft **Width:** 46.70 Ft **True Area:** 7,003.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWF (Taxiway F Shoulder) **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 233.61 Ft **Width:** 39.82 Ft **True Area:** 9,302.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: SHTWF (Taxiway F Shoulder) **Section:** 01W **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 124.23 Ft **Width:** 18.77 Ft **True Area:** 2,332.36 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: SHTWF (Taxiway F Shoulder) **Section:** 02E **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 197.80 Ft **Width:** 18.40 Ft **True Area:** 3,639.11 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: SHTWF **(**Taxiway F Shoulder**)** **Section:** 02W **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 170.54 Ft **Width:** 42.10 Ft **True Area:** 7,179.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: SHTWK **(**Taxiway K Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 157.67 Ft **Width:** 35.72 Ft **True Area:** 5,632.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWK **(**Taxiway K Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 172.10 Ft **Width:** 47.35 Ft **True Area:** 8,148.95 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHTWK **(**Taxiway K Shoulder**)** **Section:** 02W **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 359.96 Ft **Width:** 40.90 Ft **True Area:** 14,721.86 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHTWL **(**Taxiway L Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 260.83 Ft **Width:** 19.97 Ft **True Area:** 5,208.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWL **(**Taxiway L Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 260.83 Ft **Width:** 20.05 Ft **True Area:** 5,229.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWL **(**Taxiway L Shoulder**)** **Section:** 02E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 83.72 Ft **Width:** 19.99 Ft **True Area:** 1,673.54 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWL **(**Taxiway L Shoulder**)** **Section:** 02W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 84.04 Ft **Width:** 19.99 Ft **True Area:** 1,680.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWM **(**Taxiway M Shoulder**)** **Section:** 01N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 728.52 Ft **Width:** 44.85 Ft **True Area:** 32,670.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 01S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,263.59 Ft **Width:** 49.61 Ft **True Area:** 62,688.56 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 02N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,643.71 Ft **Width:** 49.45 Ft **True Area:** 81,282.22 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 02S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,455.85 Ft **Width:** 48.50 Ft **True Area:** 70,608.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 03N **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 330.78 Ft **Width:** 40.54 Ft **True Area:** 13,409.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 03S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 967.41 Ft **Width:** 48.00 Ft **True Area:** 46,434.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 04N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 741.56 Ft **Width:** 46.63 Ft **True Area:** 34,575.74 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 01N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 231.00 Ft **Width:** 60.51 Ft **True Area:** 13,979.11 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 01S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 340.21 Ft **Width:** 37.51 Ft **True Area:** 12,759.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 02N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,218.39 Ft **Width:** 15.03 Ft **True Area:** 18,316.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 02S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 307.62 Ft **Width:** 16.94 Ft **True Area:** 5,210.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 03N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,220.08 Ft **Width:** 35.72 Ft **True Area:** 43,577.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 03S **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,487.68 Ft **Width:** 35.11 Ft **True Area:** 52,229.06 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 04N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 311.39 Ft **Width:** 17.44 Ft **True Area:** 5,431.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 04S **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,448.32 Ft **Width:** 15.46 Ft **True Area:** 22,386.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 05N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 346.75 Ft **Width:** 40.52 Ft **True Area:** 14,049.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 05S **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,692.60 Ft **Width:** 36.07 Ft **True Area:** 61,049.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 06N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 394.74 Ft **Width:** 18.09 Ft **True Area:** 7,142.37 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 06S **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,618.73 Ft **Width:** 16.60 Ft **True Area:** 26,865.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWN **(**Taxiway N Shoulder**)** **Section:** 07N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 372.42 Ft **Width:** 43.80 Ft **True Area:** 16,313.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWN **(**Taxiway N Shoulder**)** **Section:** 07S **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 608.73 Ft **Width:** 37.98 Ft **True Area:** 23,118.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWN **(**Taxiway N Shoulder**)** **Section:** 08N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,804.05 Ft **Width:** 15.07 Ft **True Area:** 27,193.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch**: SHTWN **(**Taxiway N Shoulder**)** **Section:** 08S **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 499.18 Ft **Width:** 17.43 Ft **True Area:** 8,698.84 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWN **(**Taxiway N Shoulder**)** **Section:** 09N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,914.79 Ft **Width:** 36.24 Ft **True Area:** 69,390.35 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHTWN **(**Taxiway N Shoulder**)** **Section:** 09S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 77.71 Ft **Width:** 37.01 Ft **True Area:** 2,875.70 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN **(**Taxiway N Shoulder**)** **Section:** 10N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 319.71 Ft **Width:** 37.19 Ft **True Area:** 11,890.56 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWN **(**Taxiway N Shoulder**)** **Section:** 10S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 45.35 Ft **Width:** 9.47 Ft **True Area:** 429.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 11N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 386.91 Ft **Width:** 46.77 Ft **True Area:** 18,094.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 11S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,410.92 Ft **Width:** 36.61 Ft **True Area:** 51,652.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 12N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 822.67 Ft **Width:** 49.72 Ft **True Area:** 40,903.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 12S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,379.58 Ft **Width:** 16.12 Ft **True Area:** 22,241.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 13N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 608.28 Ft **Width:** 48.62 Ft **True Area:** 29,572.74 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 13S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 682.64 Ft **Width:** 44.78 Ft **True Area:** 30,569.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 14N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 100.82 Ft **Width:** 17.55 Ft **True Area:** 1,769.05 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 14S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 611.51 Ft **Width:** 19.33 Ft **True Area:** 11,818.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 15N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 135.84 Ft **Width:** 40.90 Ft **True Area:** 5,555.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 15S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 855.19 Ft **Width:** 38.59 Ft **True Area:** 33,003.59 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 16N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,160.43 Ft **Width:** 38.75 Ft **True Area:** 44,964.89 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 16S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 819.44 Ft **Width:** 16.65 Ft **True Area:** 13,640.21 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 17N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,091.91 Ft **Width:** 16.56 Ft **True Area:** 18,076.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 17S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 178.31 Ft **Width:** 49.51 Ft **True Area:** 8,827.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 18N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,704.92 Ft **Width:** 37.82 Ft **True Area:** 64,474.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 18S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 210.49 Ft **Width:** 52.54 Ft **True Area:** 11,059.17 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 19N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,636.14 Ft **Width:** 16.03 Ft **True Area:** 26,221.42 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 19S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 435.03 Ft **Width:** 33.27 Ft **True Area:** 14,472.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 20N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 329.91 Ft **Width:** 41.90 Ft **True Area:** 13,821.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 20S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 367.60 Ft **Width:** 15.35 Ft **True Area:** 5,642.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 21N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 295.17 Ft **Width:** 17.91 Ft **True Area:** 5,287.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 21S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,250.45 Ft **Width:** 36.84 Ft **True Area:** 46,063.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 22N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,091.45 Ft **Width:** 30.02 Ft **True Area:** 32,769.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWN (Taxiway N Shoulder) **Section:** 22S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,214.76 Ft **Width:** 15.88 Ft **True Area:** 19,288.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 23N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,091.32 Ft **Width:** 19.96 Ft **True Area:** 21,777.97 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 23S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 329.24 Ft **Width:** 43.78 Ft **True Area:** 14,415.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 24N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 314.39 Ft **Width:** 17.57 Ft **True Area:** 5,524.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 24S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 294.24 Ft **Width:** 18.66 Ft **True Area:** 5,490.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 25N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 350.52 Ft **Width:** 40.07 Ft **True Area:** 14,044.60 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 25S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,342.86 Ft **Width:** 19.57 Ft **True Area:** 26,280.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 26N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 208.02 Ft **Width:** 54.75 Ft **True Area:** 11,389.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 26S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,405.63 Ft **Width:** 30.25 Ft **True Area:** 42,517.36 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWN **(**Taxiway N Shoulder**)** **Section:** 27N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 139.52 Ft **Width:** 26.40 Ft **True Area:** 3,683.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN **(**Taxiway N Shoulder**)** **Section:** 27S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 139.25 Ft **Width:** 42.93 Ft **True Area:** 5,978.36 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWN **(**Taxiway N Shoulder**)** **Section:** 28S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 212.67 Ft **Width:** 57.32 Ft **True Area:** 12,191.45 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHTWP **(**Taxiway P Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 166.71 Ft **Width:** 52.02 Ft **True Area:** 8,672.67 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHTWP **(**Taxiway P Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 194.23 Ft **Width:** 41.41 Ft **True Area:** 8,043.43 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWP **(**Taxiway P Shoulder**)** **Section:** 02W **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 159.98 Ft **Width:** 44.15 Ft **True Area:** 7,062.83 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHTWQ **(**Taxiway Q Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 169.94 Ft **Width:** 53.16 Ft **True Area:** 9,033.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHTWQ **(**Taxiway Q Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 141.16 Ft **Width:** 49.78 Ft **True Area:** 7,026.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 01N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 427.03 Ft **Width:** 37.00 Ft **True Area:** 15,802.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 01S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 333.38 Ft **Width:** 21.49 Ft **True Area:** 7,163.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 02N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 392.65 Ft **Width:** 15.72 Ft **True Area:** 6,172.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 02S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 314.53 Ft **Width:** 41.01 Ft **True Area:** 12,899.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 03N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 727.07 Ft **Width:** 50.56 Ft **True Area:** 36,761.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 03S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 285.64 Ft **Width:** 60.50 Ft **True Area:** 17,281.02 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 04N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 2,252.35 Ft **Width:** 53.55 Ft **True Area:** 120,617.07 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 04S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 917.41 Ft **Width:** 53.53 Ft **True Area:** 49,107.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 05N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 450.96 Ft **Width:** 49.74 Ft **True Area:** 22,431.60 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 05S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 2,057.57 Ft **Width:** 52.05 Ft **True Area:** 107,096.79 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 06N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 1,110.55 Ft **Width:** 57.54 Ft **True Area:** 63,900.13 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 06S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 5,508.99 Ft **Width:** 48.89 Ft **True Area:** 269,353.43 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 07N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 1,161.62 Ft **Width:** 50.58 Ft **True Area:** 58,759.50 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 07S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 448.85 Ft **Width:** 44.28 Ft **True Area:** 19,872.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 08N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 808.46 Ft **Width:** 57.01 Ft **True Area:** 46,092.84 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 09N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 363.85 Ft **Width:** 39.23 Ft **True Area:** 14,275.20 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 10N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 328.61 Ft **Width:** 16.88 Ft **True Area:** 5,547.50 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 11N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 379.03 Ft **Width:** 38.43 Ft **True Area:** 14,567.63 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 12N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 345.63 Ft **Width:** 16.66 Ft **True Area:** 5,759.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 13N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 1,200.46 Ft **Width:** 50.68 Ft **True Area:** 60,834.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 14N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 421.16 Ft **Width:** 51.68 Ft **True Area:** 21,765.12 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWU (Taxiway U Shoulder) **Section:** 01E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 118.51 Ft **Width:** 33.95 Ft **True Area:** 4,023.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWU (Taxiway U Shoulder) **Section:** 01W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 117.48 Ft **Width:** 15.14 Ft **True Area:** 1,779.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWU (Taxiway U Shoulder) **Section:** 02E **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 118.24 Ft **Width:** 15.12 Ft **True Area:** 1,787.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWU (Taxiway U Shoulder) **Section:** 02W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 117.80 Ft **Width:** 35.72 Ft **True Area:** 4,207.82 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWU (Taxiway U Shoulder) **Section:** 03E **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 156.51 Ft **Width:** 50.15 Ft **True Area:** 7,849.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWU (Taxiway U Shoulder) **Section:** 03W **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 156.92 Ft **Width:** 55.90 Ft **True Area:** 8,772.37 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 736.49 Ft **Width:** 48.76 Ft **True Area:** 35,914.48 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 44/106, Tif 0096287
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 44/106, Tif 0096287

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 01W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 248.99 Ft **Width:** 15.13 Ft **True Area:** 3,766.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 02E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 250.15 Ft **Width:** 50.73 Ft **True Area:** 12,691.14 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 02W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 248.86 Ft **Width:** 36.03 Ft **True Area:** 8,965.38 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 03E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 115.31 Ft **Width:** 50.66 Ft **True Area:** 5,841.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 03W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 646.69 Ft **Width:** 49.81 Ft **True Area:** 32,212.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 04E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 533.74 Ft **Width:** 70.10 Ft **True Area:** 37,415.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 04W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 600.01 Ft **Width:** 30.50 Ft **True Area:** 18,301.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 05E **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,392.91 Ft **Width:** 17.10 Ft **True Area:** 23,817.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 05W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 615.01 Ft **Width:** 14.78 Ft **True Area:** 9,090.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 06E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,252.44 Ft **Width:** 41.83 Ft **True Area:** 52,394.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 06W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 210.01 Ft **Width:** 26.52 Ft **True Area:** 5,568.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWW (Taxiway W Shoulder) **Section:** 07W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 240.01 Ft **Width:** 13.77 Ft **True Area:** 3,305.22 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: TLG (Taxilane G) **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 1,249.85 Ft **Width:** 174.45 Ft **True Area:** 218,034.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TLG (Taxilane G) **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 956.83 Ft **Width:** 64.20 Ft **True Area:** 61,423.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TLH **(Taxilane H)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 531.86 Ft **Width:** 70.97 Ft **True Area:** 37,746.02 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TLH **(Taxilane H)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 224.35 Ft **Width:** 46.25 Ft **True Area:** 10,376.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TLJ **(Taxilane J)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 553.20 Ft **Width:** 75.55 Ft **True Area:** 41,795.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TLJ **(Taxilane J)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 200.71 Ft **Width:** 51.89 Ft **True Area:** 10,414.37 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TLN1 **(Taxiway N1)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 3,165.86 Ft **Width:** 192.63 Ft **True Area:** 609,837.14 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	14.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TLN1 **(Taxiway N1)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 2,210.79 Ft **Width:** 192.91 Ft **True Area:** 426,476.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	14.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWA **(Taxiway A)** **Section:** 01 **Surface:** AC
L.C.D.: 06/03/2004 **Use:** TAXIWAY **Rank:** S **Length:** 186.86 Ft **Width:** 69.29 Ft **True Area:** 12,946.52 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/03/2004	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 52/350, Tif 0000052
06/03/2004	NC-AC	New Construction - AC	$0	4.00	True	Sheet 52/350, Tif 0000052
06/01/2004	SB-AG	Subbase - Aggregate	$0	17.00	False	P-154, Sheet 52/350, Tif 0000052

Network: ONT-AS **Branch:** TWA **(Taxiway A)** **Section:** 02 **Surface:** AC
L.C.D.: 06/03/2004 **Use:** TAXIWAY **Rank:** S **Length:** 275.00 Ft **Width:** 31.92 Ft **True Area:** 8,777.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/03/2004	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 52/350, Tif 0000052
06/03/2004	NC-AC	New Construction - AC	$0	4.00	True	Sheet 52/350, Tif 0000052
06/01/2004	SB-AG	Subbase - Aggregate	$0	17.00	False	P-154, Sheet 52/350, Tif 0000052

Network: ONT-AS **Branch**: TWA **(**Taxiway A**)** **Section:** 03 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 652.00 Ft **Width:** 75.28 Ft **True Area:** 49,082.93 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TWA **(**Taxiway A**)** **Section:** 04 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 640.75 Ft **Width:** 49.97 Ft **True Area:** 32,016.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TWA1 **(**Taxiway A1**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 932.42 Ft **Width:** 52.75 Ft **True Area:** 49,181.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TWB **(**Taxiway B**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** TAXIWAY **Rank:** S **Length:** 89.94 Ft **Width:** 50.92 Ft **True Area:** 4,579.42 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 6/13, Tif 0059799
06/01/1986	BA-AG	Base Course - Aggregate	$0	6.00	False	Sheet 6/13, Tif 0059799

Network: ONT-AS **Branch**: TWB **(**Taxiway B**)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 244.71 Ft **Width:** 102.51 Ft **True Area:** 25,085.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheeet 61/172, Tif 0063737

Network: ONT-AS **Branch**: TWC **(**Taxiway C**)** **Section:** 01 **Surface:** AC
L.C.D.: 06/03/2004 **Use:** TAXIWAY **Rank:** T **Length:** 271.16 Ft **Width:** 62.84 Ft **True Area:** 17,039.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/03/2004	NC-AC	New Construction - AC	$0	4.00	True	Sheet 52/350, Tif 0000052
06/02/2004	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 52/350, Tif 0000052
06/01/2004	SB-AG	Subbase - Aggregate	$0	17.00	False	P-154, Sheet 52/350, Tif 0000052

Network: ONT-AS **Branch**: TWC **(**Taxiway C**)** **Section:** 02 **Surface:** AC
L.C.D.: 06/03/2004 **Use:** TAXIWAY **Rank:** T **Length:** 340.41 Ft **Width:** 41.67 Ft **True Area:** 14,186.20 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/03/2004	NC-AC	New Construction - AC	$0	4.00	True	Sheet 52/350, Tif 0000052
06/02/2004	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 52/350, Tif 0000052
06/01/2004	SB-AG	Subbase - Aggregate	$0	17.00	False	P-154, Sheet 52/350, Tif 0000052

Network: ONT-AS **Branch**: TWCARGOS **(**Cargo South Apron Taxiway**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 250.00 Ft **Width:** 55.83 Ft **True Area:** 13,958.17 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWCARGOS **(**Cargo South Apron Taxiway**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 90.88 Ft **Width:** 15.85 Ft **True Area:** 1,440.73 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** T **Length:** 471.18 Ft **Width:** 58.95 Ft **True Area:** 27,776.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 477.11 Ft **Width:** 58.14 Ft **True Area:** 27,736.97 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 474.60 Ft **Width:** 60.52 Ft **True Area:** 28,721.33 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 467.42 Ft **Width:** 58.07 Ft **True Area:** 27,143.45 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 05 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 73.00 Ft **Width:** 25.91 Ft **True Area:** 1,891.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 50.79 Ft **Width:** 24.97 Ft **True Area:** 1,268.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 07 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 274.08 Ft **Width:** 89.87 Ft **True Area:** 24,630.92 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 08 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 73.65 Ft **Width:** 30.59 Ft **True Area:** 2,253.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD (Taxiway D) **Section:** 09 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 50.48 Ft **Width:** 22.73 Ft **True Area:** 1,147.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD (Taxiway D) **Section:** 10 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 208.63 Ft **Width:** 7.48 Ft **True Area:** 1,560.55 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD (Taxiway D) **Section:** 11 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 190.66 Ft **Width:** 86.98 Ft **True Area:** 16,584.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD (Taxiway D) **Section:** 12 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 100.00 Ft **Width:** 4.20 Ft **True Area:** 420.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWF (Taxiway F) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 600.03 Ft **Width:** 35.30 Ft **True Area:** 21,180.96 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWF (Taxiway F) **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 300.01 Ft **Width:** 57.19 Ft **True Area:** 17,157.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWF (Taxiway F) **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 300.01 Ft **Width:** 58.00 Ft **True Area:** 17,399.42 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWF (Taxiway F) **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 90.27 Ft **Width:** 59.83 Ft **True Area:** 5,400.34 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: TWF **(**Taxiway F**)** **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 176.96 Ft **Width:** 102.50 Ft **True Area:** 18,138.11 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: TWF **(**Taxiway F**)** **Section:** 06 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 192.08 Ft **Width:** 41.54 Ft **True Area:** 7,979.69 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: TWF **(**Taxiway F**)** **Section:** 07 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 414.86 Ft **Width:** 89.14 Ft **True Area:** 36,981.17 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: TWF **(**Taxiway F**)** **Section:** 08 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 358.00 Ft **Width:** 64.15 Ft **True Area:** 22,966.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: TWF **(**Taxiway F**)** **Section:** 09 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 379.18 Ft **Width:** 84.79 Ft **True Area:** 32,151.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: TWFEDEX **(**FedEx Apron Taxiway**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 662.07 Ft **Width:** 81.46 Ft **True Area:** 53,934.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TWK **(**Taxiway K**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 368.72 Ft **Width:** 89.81 Ft **True Area:** 33,116.38 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: TWK **(**Taxiway K**)** **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 340.00 Ft **Width:** 33.59 Ft **True Area:** 11,421.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWK **(**Taxiway K**)** **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 654.29 Ft **Width:** 52.17 Ft **True Area:** 34,132.82 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWK **(**Taxiway K**)** **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 520.01 Ft **Width:** 66.88 Ft **True Area:** 34,778.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWK **(**Taxiway K**)** **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 201.91 Ft **Width:** 40.65 Ft **True Area:** 8,207.26 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWK **(**Taxiway K**)** **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 444.12 Ft **Width:** 96.87 Ft **True Area:** 43,023.79 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWK **(**Taxiway K**)** **Section:** 07 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 766.92 Ft **Width:** 70.07 Ft **True Area:** 53,741.20 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWK **(**Taxiway K**)** **Section:** 08 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 490.73 Ft **Width:** 67.19 Ft **True Area:** 32,970.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWK **(**Taxiway K**)** **Section:** 09 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 390.74 Ft **Width:** 79.27 Ft **True Area:** 30,973.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWL **(**Taxiway L**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 250.75 Ft **Width:** 78.13 Ft **True Area:** 19,591.43 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWL **(**Taxiway L**)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 250.18 Ft **Width:** 61.10 Ft **True Area:** 15,287.07 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWL **(**Taxiway L**)** **Section:** 03 **Surface:** AC
L.C.D.: 06/03/2004 **Use:** TAXIWAY **Rank:** S **Length:** 190.83 Ft **Width:** 66.67 Ft **True Area:** 12,722.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/03/2004	NC-AC	New Construction - AC	$0	4.00	True	Sheet 52/350, Tif 0000052
06/02/2004	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 52/350, Tif 0000052
06/01/2004	BA-AG	Base Course - Aggregate	$0	17.00	False	P-154, Sheet 52/350, Tif 0000052

Network: ONT-AS **Branch:** TWL **(**Taxiway L**)** **Section:** 04 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 100.21 Ft **Width:** 49.84 Ft **True Area:** 4,994.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWL **(**Taxiway L**)** **Section:** 05 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 134.95 Ft **Width:** 50.22 Ft **True Area:** 6,777.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWL **(**Taxiway L**)** **Section:** 06 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 155.96 Ft **Width:** 50.41 Ft **True Area:** 7,862.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWM **(**Taxiway M**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 1,263.88 Ft **Width:** 47.34 Ft **True Area:** 59,836.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWM **(**Taxiway M**)** **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 50.89 Ft **Width:** 23.98 Ft **True Area:** 1,220.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWM **(**Taxiway M**)** **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 50.47 Ft **Width:** 27.08 Ft **True Area:** 1,366.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWM **(**Taxiway M**)** **Section:** 04 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 1,658.13 Ft **Width:** 50.18 Ft **True Area:** 83,211.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TWM **(**Taxiway M**)** **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** T **Length:** 179.91 Ft **Width:** 50.12 Ft **True Area:** 9,017.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: TWM **(**Taxiway M**)** **Section:** 06 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** T **Length:** 208.61 Ft **Width:** 86.00 Ft **True Area:** 17,939.11 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: TWM **(**Taxiway M**)** **Section:** 07 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 996.93 Ft **Width:** 47.66 Ft **True Area:** 47,514.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TWN **(**Taxiway N**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 281.19 Ft **Width:** 79.20 Ft **True Area:** 22,270.55 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: TWN **(**Taxiway N**)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 423.92 Ft **Width:** 56.40 Ft **True Area:** 23,907.13 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: TWN **(**Taxiway N**)** **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 1,974.73 Ft **Width:** 101.31 Ft **True Area:** 200,058.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch**: TWN **(**Taxiway N**)** **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 2,480.48 Ft **Width:** 81.20 Ft **True Area:** 201,418.43 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch**: TWN **(**Taxiway N**)** **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 112.00 Ft **Width:** 92.95 Ft **True Area:** 10,409.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 469.59 Ft **Width:** 79.91 Ft **True Area:** 37,523.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 07 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 1,118.30 Ft **Width:** 78.11 Ft **True Area:** 87,353.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 08 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 775.33 Ft **Width:** 86.76 Ft **True Area:** 67,267.42 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 09 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 1,270.25 Ft **Width:** 81.53 Ft **True Area:** 103,566.68 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 10 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 1,770.12 Ft **Width:** 79.25 Ft **True Area:** 140,275.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 11 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 370.30 Ft **Width:** 84.28 Ft **True Area:** 31,209.95 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 12 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 1,100.08 Ft **Width:** 74.94 Ft **True Area:** 82,440.86 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 13 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 668.82 Ft **Width:** 83.91 Ft **True Area:** 56,119.55 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TWP (Taxiway P) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 271.73 Ft **Width:** 117.53 Ft **True Area:** 31,935.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: TWP (Taxiway P) **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 250.30 Ft **Width:** 77.81 Ft **True Area:** 19,474.92 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: TWP (Taxiway P) **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 249.92 Ft **Width:** 61.01 Ft **True Area:** 15,249.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: TWP (Taxiway P) **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 380.01 Ft **Width:** 58.13 Ft **True Area:** 22,088.14 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tlf 0000051

Network: ONT-AS **Branch**: TWP (Taxiway P) **Section:** 05 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 123.31 Ft **Width:** 33.43 Ft **True Area:** 4,122.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TWP (Taxiway P) **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 120.44 Ft **Width:** 41.18 Ft **True Area:** 4,959.92 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TWP (Taxiway P) **Section:** 07 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 303.17 Ft **Width:** 77.36 Ft **True Area:** 23,452.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TWP (Taxiway P) **Section:** 08 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 289.51 Ft **Width:** 54.50 Ft **True Area:** 15,778.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: TWP (Taxiway P) **Section:** 09 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 278.26 Ft **Width:** 67.03 Ft **True Area:** 18,652.92 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWP (Taxiway P) **Section:** 10 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 378.17 Ft **Width:** 79.23 Ft **True Area:** 29,961.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWQ (Taxiway Q) **Section:** 01 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 170.32 Ft **Width:** 70.10 Ft **True Area:** 11,939.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWQ (Taxiway Q) **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 193.28 Ft **Width:** 88.51 Ft **True Area:** 17,107.48 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWQ (Taxiway Q) **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 451.36 Ft **Width:** 68.02 Ft **True Area:** 30,702.73 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWQ (Taxiway Q) **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 490.83 Ft **Width:** 66.14 Ft **True Area:** 32,461.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1992	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/02/1991	Unknown	Unknown Major - construction	$0	0.00	True	
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWQ (Taxiway Q) **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 387.36 Ft **Width:** 80.21 Ft **True Area:** 31,069.95 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1992	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/02/1991	Unknown	Unknown Major - construction	$0	0.00	True	
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWR (Taxiway R) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 271.68 Ft **Width:** 122.87 Ft **True Area:** 33,381.38 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWR (Taxiway R) **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 850.16 Ft **Width:** 65.94 Ft **True Area:** 56,061.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWR **(**Taxiway R**)** **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 1,189.47 Ft **Width:** 51.32 Ft **True Area:** 61,038.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWS **(**Taxiway S**)** **Section:** 01 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 190.02 Ft **Width:** 103.28 Ft **True Area:** 19,624.37 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWS **(**Taxiway S**)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 557.83 Ft **Width:** 91.93 Ft **True Area:** 51,280.67 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWS **(**Taxiway S**)** **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 3,450.70 Ft **Width:** 78.12 Ft **True Area:** 269,582.46 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWS **(**Taxiway S**)** **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 4,199.87 Ft **Width:** 80.26 Ft **True Area:** 337,075.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWS **(**Taxiway S**)** **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 1,950.50 Ft **Width:** 76.80 Ft **True Area:** 149,802.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWS **(**Taxiway S**)** **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 470.47 Ft **Width:** 35.95 Ft **True Area:** 16,913.44 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWS **(**Taxiway S**)** **Section:** 07 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 193.18 Ft **Width:** 88.78 Ft **True Area:** 17,149.95 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWS **(Taxiway S)** **Section:** 08 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 469.01 Ft **Width:** 34.67 Ft **True Area:** 16,258.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWS1 **(Taxiway S1)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 526.27 Ft **Width:** 101.66 Ft **True Area:** 53,497.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWS2 **(Taxiway S2)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 250.08 Ft **Width:** 86.65 Ft **True Area:** 21,669.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWS3 **(Taxiway S3)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 200.13 Ft **Width:** 41.92 Ft **True Area:** 8,389.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWT **(Taxiway T)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 512.47 Ft **Width:** 63.41 Ft **True Area:** 32,496.17 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWT **(Taxiway T)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 392.39 Ft **Width:** 79.72 Ft **True Area:** 31,281.51 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWU **(Taxiway U)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 271.78 Ft **Width:** 122.45 Ft **True Area:** 33,278.52 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWU **(Taxiway U)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** S **Length:** 254.37 Ft **Width:** 70.22 Ft **True Area:** 17,861.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWU **(Taxiway U)** **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** S **Length:** 250.18 Ft **Width:** 66.84 Ft **True Area:** 16,721.53 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWU **(Taxiway U)** **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 474.79 Ft **Width:** 56.01 Ft **True Area:** 26,595.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWU **(Taxiway U)** **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 225.73 Ft **Width:** 135.74 Ft **True Area:** 30,640.09 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWU **(Taxiway U)** **Section:** 06 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 167.00 Ft **Width:** 44.86 Ft **True Area:** 7,491.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWU **(Taxiway U)** **Section:** 07 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 548.63 Ft **Width:** 75.88 Ft **True Area:** 41,629.50 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWU **(Taxiway U)** **Section:** 08 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 239.11 Ft **Width:** 91.81 Ft **True Area:** 21,953.61 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWU **(Taxiway U)** **Section:** 09 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 1,024.55 Ft **Width:** 48.44 Ft **True Area:** 49,631.54 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWV **(Taxiway V)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** S **Length:** 445.01 Ft **Width:** 82.74 Ft **True Area:** 36,821.12 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWV **(**Taxiway V**)** **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 250.32 Ft **Width:** 65.69 Ft **True Area:** 16,443.70 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWV **(**Taxiway V**)** **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 273.72 Ft **Width:** 67.35 Ft **True Area:** 18,435.86 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 430.70 Ft **Width:** 80.84 Ft **True Area:** 34,817.20 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 114.91 Ft **Width:** 34.76 Ft **True Area:** 3,994.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 165.00 Ft **Width:** 80.23 Ft **True Area:** 13,237.48 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 04 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 190.09 Ft **Width:** 87.99 Ft **True Area:** 16,726.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 05 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 275.08 Ft **Width:** 81.33 Ft **True Area:** 22,371.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 250.39 Ft **Width:** 103.34 Ft **True Area:** 25,876.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 07 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 190.01 Ft **Width:** 88.24 Ft **True Area:** 16,766.55 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 08 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 151.61 Ft **Width:** 39.58 Ft **True Area:** 6,000.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 09 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 159.18 Ft **Width:** 89.70 Ft **True Area:** 14,277.53 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 10 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 385.40 Ft **Width:** 89.89 Ft **True Area:** 34,644.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 11 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 534.79 Ft **Width:** 29.13 Ft **True Area:** 15,580.21 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 12 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 545.31 Ft **Width:** 8.16 Ft **True Area:** 4,449.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWW **(**Taxiway W**)** **Section:** 13 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 1,840.94 Ft **Width:** 96.69 Ft **True Area:** 178,006.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWW1 **(**Taxiway W1**)** **Section:** 01 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 270.06 Ft **Width:** 82.44 Ft **True Area:** 22,263.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW2 **(**Taxiway W2**)** **Section:** 01 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 270.04 Ft **Width:** 83.37 Ft **True Area:** 22,513.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW3 **(**Taxiway W3**)** **Section:** 01 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 178.35 Ft **Width:** 100.75 Ft **True Area:** 17,969.52 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Summary:

Work Description	Section Count	Area Total (SqFt)	Thickness Avg (in)	Thickness STD (in)
Base Course - Aggregate	219	7,986,863.87	9.04	2.73
Base Course - Stablized (non-Bi.)	69	4,679,124.06	9.00	3.27
New Construction - AC	246	5,322,648.54	2.77	1.22
New Construction - Initial (Major	139	5,342,911.23	.00	.00
New Construction - PCC	116	9,280,248.85	15.60	.92
Subbase - Aggregate	4	52,949.83	17.00	.00
Unknown Major - construction	2	63,531.26	.00	.00

Network: ONT-AS	**Branch:** APTERM1A (Terminal 1A Apron)	**Section:** 01	**Surface:** AC
Use: Apron	**Area:** 61109.26 sq. ft		

Work Date	Pavement Section	Thickness (in)	Comments
03/2019	AC Surface - P-403	4	
	Crushed Aggregate Base - P-209	6	
	Subgrade - P-152 @ 100% Compaction	6	
	Subgrade - P-152 @ 95% Compaction	6	Dependant on In-Situ Field Test

Network: ONT-AS	**Branch:** APTERM1A (Terminal 1A Apron)	**Section:** 02	**Surface:** AC
Use: Apron	**Area:** 68921.98 sq. ft		

Work Date	Pavement Section	Thickness (in)	Comments
03/2019	AC Surface - P-401	4	
	AC Base - P-403	5	
	Crushed Aggregate Base - P-209	7	
	Subgrade - P-152 @ 100% Compaction	29	
	Subgrade - P-152 @ 95% Compaction	56	Dependant on In-Situ Field Test

Network: ONT-AS	**Branch:** TLG (Taxilane G)	**Section:** 01	**Surface:** AC
Use: Taxilane	**Area:** 218006.25 sq. ft		

Work Date	Pavement Section	Thickness (in)	Comments
03/2019	AC Surface - P-401	4	
	AC Base - P-403	5	
	Crushed Aggregate Base - P-209	7	
	Subgrade - P-152 @ 100% Compaction	29	
	Subgrade - P-152 @ 95% Compaction	56	Dependant on In-Situ Field Test

Network: ONT-AS	**Branch:** TWS (Taxiway S)	**Section:** 07	**Surface:** PCC
Use: Taxiway	**Area:** 17140.33 sq. ft		

Work Date	Pavement Section	Thickness (in)	Comments
06/2018	PCC Surface - P-501	18	
	Lean Concrete Base Course - P-306	6	
	Subgrade - Scarify and Compact to 95%	6	

Select Panel Replacement

Network: ONT-AS	**Branch:** TWS (Taxiway S)	**Section:** 03	**Surface:** PCC
Use: Taxiway	**Area:** 14625.00 sq. ft		

Work Date	Pavement Section	Thickness (in)	Comments
Estimated 12/2019	Reinforced PCC Surface - P-501	15	Panels 25' x25' or 25' x 20'
	Base - P-152 @ 100% Compaction	12	
	Existing Base and Subbase	Unknown	

Select Panel Replacement

Network: ONT-AS	**Branch:** TWS (Taxiway S)	**Section:** 04	**Surface:** PCC
Use: Taxiway	**Area:** 27000.00 sq. ft		

Work Date	Pavement Section	Thickness (in)	Comments
Estimated 12/2019	Reinforced PCC Surface - P-501	15	Panels 25' x25' or 25' x 20'
	Base - P-152 @ 100% Compaction	12	
	Existing Base and Subbase	Unknown	

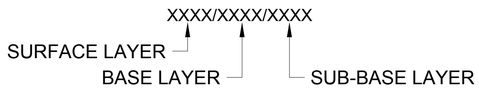
Reconstruction Over Cucamonga Channel

Network: ONT-AS	**Branch:** TWS (Taxiway S)	**Section:** 04	**Surface:** PCC
Use: Taxiway	**Area:** 26250.00 sq. ft		

Work Date	Pavement Section	Thickness (in)	Comments
Estimated 12/2019	PCC Surface - P-501	17	Panels 17.5' x17.5' or 20' x 20'
	Lean Concrete Base Course - P-306	12	
	Crushed Aggregate Base - P-208	5	
	CLSM	24	CLSM to Top of Existing Channel Structure

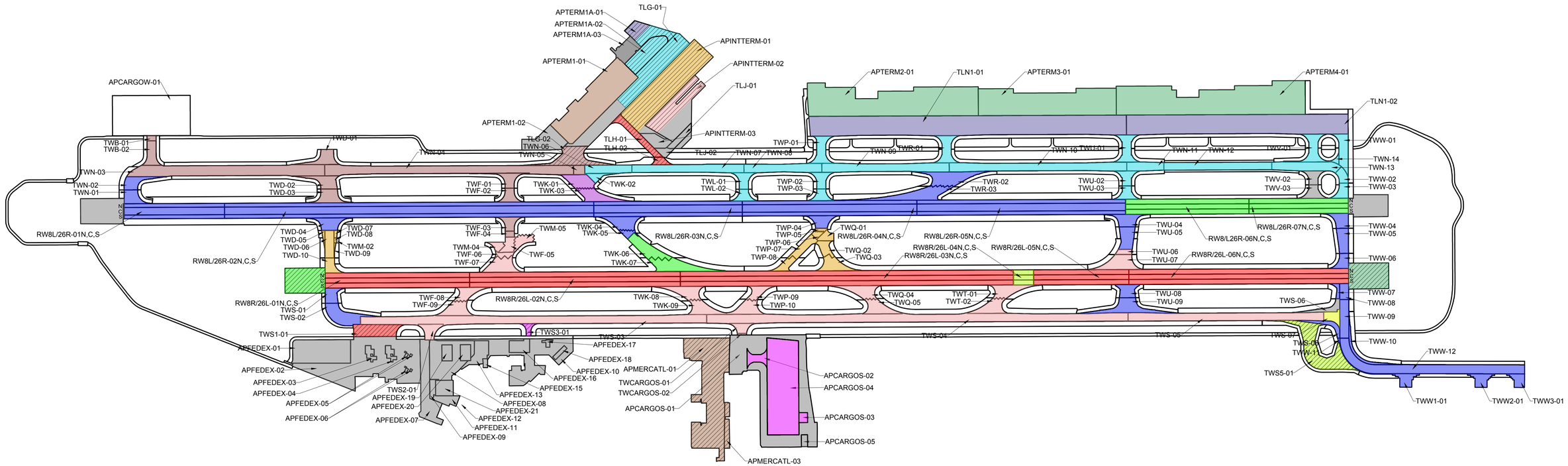
KEY

AC: ASPHALT CONCRETE PAVEMENT
PCC: PORTLAND CEMENT CONCRETE PAVEMENT
CAB: CRUSHED AGGREGATE BASE
CTB: CEMENT TREATED BASE
LSS: LIME-STABILIZED SOIL
%: PERCENT COMPACTION ON SUB-BASE



LEGEND

- 3" AC/3" CAB/Unk
- 3.5" AC/5.5" CTB/3" CAB
- 4" AC/4" CAB/9" Unk %
- 4" AC/4" CAB/Unk
- 4" AC/6" CAB/9" Unk %
- 4" AC/6" CAB/6" @ 100% & 6" @ 95%
- 5" AC/2" CAB
- 11" AC/8" CAB/6" @ 95%
- 9" AC/7" CAB/29" @ 100% & 55" @ 95%
- 3" AC/5" PCC
- 5.5" AC/6" PCC
- 7.5" PCC/Unk
- 12" PCC/Unk
- 14" PCC/6" CTB/6" @ 100% & 18" @ 95%
- 16" PCC/3.5" CTB /4.5" LSS
- 15" PCC/6" CTB/Unk
- 15" PCC/13" CTB/Unk
- 15" PCC/9" CAB/11" @ 100%, 11" @ 98%, & 6" @ 98%
- 15" PCC/11" CAB/6" @ 100%
- 15" PCC/12" CTB/6" @ 100% & 18" @ 95%
- 16" PCC/6" CTB/Unk
- 16" PCC/13" CTB/8" @ 100% & 18" @ 95%
- 16" PCC/13" CTB/Unk
- 17" PCC/6" CTB/6" @ 100% & 18" @ 95%
- 18" PCC/6" Lean Conc. Base Course /6" @ 95%
- Unknown

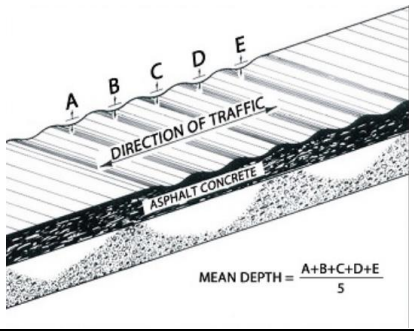


APPENDIX B

AIRFIELD PAVEMENT DISTRESSES

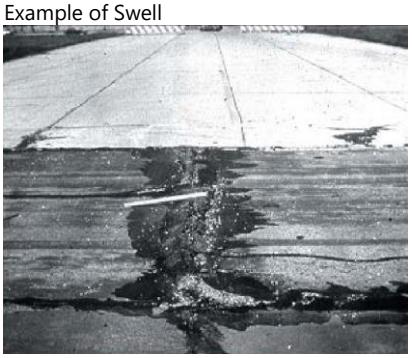
TABLE A-1: FLEXIBLE PAVEMENT DISTRESSES

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
41	Alligator or Fatigue Cracking	Load	Low Fine, longitudinal hairline cracks running parallel to each other with no or only a few interconnecting cracks. The cracks are not spalled. Buckling or shattering causes low-severity ride quality. Medium Further development of light alligator cracking into a pattern or network of cracks that may be lightly spalled. Buckling or shattering causes medium-severity ride quality. High Network or pattern cracking progressed so that pieces are well-defined and spalled at the edges; some of the pieces rock under traffic.	High Severity Alligator Cracking at South Cargo Apron 
42	Bleeding	Other	No degrees of severity are defined. Bleeding should be noted when it is extensive enough to cause a reduction in skid resistance.	Example of Bleeding 
43	Block Cracking	Climate	Low Blocks are defined by cracks that are non-spalled (sides of the crack are vertical) or only lightly spalled, causing no FOD potential. Non-filled cracks have 1/4 inch or less mean width, and filled cracks have filler in satisfactory condition. Medium Blocks are defined by either: (1) filled or non-filled cracks that are moderately spalled (some FOD potential); (2) non-filled cracks that are not spalled or have only minor spalling (some FOD potential), but have a mean width greater than approximately 1/4 inch; or (3) filled cracks that are not spalled or have only minor spalling (some FOD potential), but have filler in unsatisfactory condition. High Blocks are well-defined by cracks that are severely spalled with loose or missing material, causing a definite FOD potential.	Low Severity Block Cracking at FedEx Apron 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
44	Corrugation	Load	Low Corrugations are minor and do not significantly affect ride quality. Medium Corrugations are noticeable and significantly affect ride quality. High Corrugations are easily noticed and severely affect ride quality.	Example of Corrugation 
45	Depressions	Load	Low Depression can be observed or located by stained areas, only slightly affects pavement riding quality, and may cause hydroplaning potential on runways. Medium The depression can be observed, moderately affects pavement riding quality, and causes hydroplaning potential on runways. High The depression can be readily observed, severely affects pavement riding quality, and causes definite hydroplaning potential.	Medium Severity Depression at Taxiway S3 
46	Jet Blast Erosion	Other	No degrees of severity are defined. It is sufficient to indicate that jet blast erosion exists.	Example of Jet Blast Erosion 
47	Joint Reflection Cracking	Other	Low Cracks have only light spalling (little or no FOD potential) or no spalling and can be filled or non-filled. If non-filled, the cracks have a mean width of 1/4 inch or less. Filled cracks are of any width, but their filler material is in satisfactory condition. Medium One of the following conditions exists: (1) cracks are moderately spalled (some FOD potential) and can be either filled or non-filled of any width; (2) filled cracks are not spalled or are only lightly spalled, but the filler is in unsatisfactory condition; (3) non-filled cracks are not spalled or are only lightly spalled, but the mean	Low Joint Reflection Cracking at Terminal 1 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
			crack width is greater than 1/4 inch; or (4) light random cracking exists near the crack or at the corner of intersecting cracks. High Cracks are severely spalled (definite FOD potential) and can be either filled or non-filled of any width.	
48	Longitudinal and Transverse Cracking	Climate/ Other	Low Cracks have either minor spalling (little or no FOD potential) or no spalling. The cracks can be filled or non-filled. Non-filled cracks have a mean width of 1/4 inch or less; filled cracks are of any width, but their filler material is in satisfactory condition. Medium One of the following conditions exists: (1) cracks are moderately spalled (some FOD potential) and can be either filled or non-filled of any width; (2) filled cracks are not spalled or are only lightly spalled, but the filler is in unsatisfactory condition; (3) non-filled cracks are not spalled or are only lightly spalled, but mean crack width is greater than 1/4 inch; or (4) lightly random cracking exists near the crack or at the corners of intersecting cracks.. High Cracks are severely spalled, causing definite FOD potential. They can be either filled or non-filled of any width.	Medium Longitudinal and Transverse Cracking at Runway 8R Blast Pad 
49	Oil Spillage	Other	No degrees of severity are defined. It is sufficient to indicate that oil spillage exists.	Example of Oil Spillage 

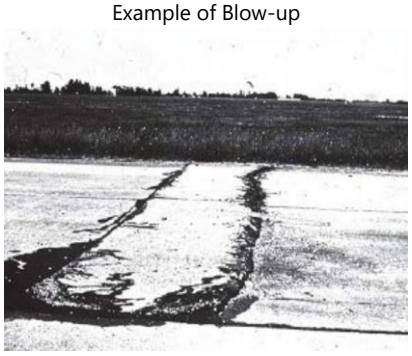
Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
50	Patching and Utility Cut Patch	Other	Low Patch is in good condition and is performing satisfactorily. Little or no FOD potential. Medium Patch is somewhat deteriorated and affects riding quality to some extent. Some FOD potential. High Patch is badly deteriorated and affects riding quality significantly or has high FOD potential. Patch needs replacement.	Low Severity Patching at Atlantic Aviation Apron 
51	Polished Aggregate	Load	No degrees of severity are defined. However, the degree of polishing should be significant before it is included in the condition survey and rated as a defect.	Example of Polished Aggregate 
52	Raveling	Climate	Low Occurs if any one of these conditions exist: (1) In a square yard representative area, the number of coarse aggregate particles missing is between 5 and 20. (2) Missing aggregate clusters is less than 2 percent of the examined square yard area. In low-severity raveling, there is little or no FOD potential. Medium Occurs if any one of these conditions exist: (1) In a square yard representative area, the number of coarse aggregate particles missing is between 21 and 40. (2) Missing aggregate clusters is between 2 and 10 percent of the examined square yard area. In medium-severity raveling, there is some FOD potential. High Occurs if any one of these conditions exist: (1) In a square yard representative area, the number of coarse aggregate particles missing is over 40. (2) Missing aggregate clusters is more than 10 percent of the examined square yard area. In	Example of Raveling 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
			high-severity raveling, there is significant FOD potential.	
53	Rutting	Load	Low 1/4 to 1/2 inch Medium 1/2 to 1 inch High > 1 inch	Example of Rutting 
54	Shoving	Other	Low A slight amount of shoving has occurred, with little effect on ride quality and no break-up of the asphalt pavement. Medium A significant amount of shoving has occurred, causing moderate roughness or break-up of the asphalt pavement. High A large amount of shoving has occurred, causing severe roughness or break-up of the asphalt pavement.	Example of Shoving 
55	Slippage Cracking	Climate	No degrees of severity are defined. It is sufficient to indicate that a slippage crack exists.	Example of Slippage Cracking 
56	Swell	Climate/Other	Low Swell is barely visible and has a minor effect on the pavement's ride quality as determined at the normal aircraft speed for the pavement section under consideration. (Low-severity swells may not always be observable, but their existence can be confirmed by driving a vehicle over the section at the normal aircraft speed. An upward acceleration will occur if the swell is present). Medium Swell can be observed without difficulty and has a significant effect on the pavement's ride quality as determined at the normal aircraft speed for the pavement section under consideration.	Example of Swell 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
			High Swell can be readily observed and severely affects the pavement's ride quality at the normal aircraft speed for the pavement section under consideration.	
57	Weathering	Load/Climate/ Other	Low Asphalt surface beginning to show signs of aging which may be accelerated by climatic conditions. Loss is the fine aggregate matrix is noticeable and may be accompanied by fading of the asphalt color. Edges of the coarse aggregates are beginning to be exposed. Pavement may be relatively new (as new as 6 months old). Medium Loss of fine aggregate matrix is noticeable and edges of coarse aggregate have been exposed up to 1/4 width (of the longest side) of the coarse aggregate due to the loss of fine aggregate matrix. High Edges of coarse aggregate have been exposed greater than 1/4 width (of the longest side) of the coarse aggregate. There is considerable loss of fine aggregate matrix leading to potential or some loss of coarse aggregate.	Hight Severity Weathering at FedEx Apron 

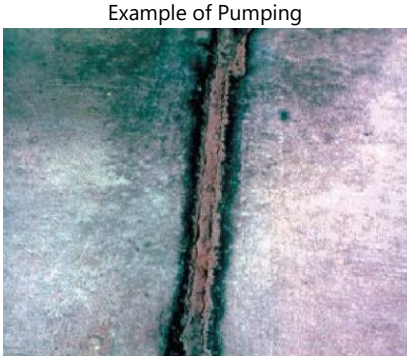
Source: ASTM D5340

TABLE A-2: RIGID PAVEMENT DISTRESSES

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
61	Blow-up	Load/ Climate	Low Buckling or shattering has not rendered the pavement inoperative, and only a slight amount of roughness exists. Medium Buckling or shattering has not rendered the pavement inoperative, but a significant amount of roughness exists. High Buckling or shattering has rendered the pavement inoperative.	Example of Blow-up 
62	Corner Break	Load	Low Crack has either no spalling or minor spalling (no foreign object damage (FOD) potential). If non-filled, it has a mean width less than approximately 1/8 inch; a filled crack can be of any width, but the filler material must be in satisfactory condition. The area between the corner break and the joints is not cracked. Medium One of the following conditions exists: (1) filled or non-filled crack is moderately spalled (some FOD potential); (2) a non-filled crack has a mean width between 1/8 inch and 1 inch; (3) a filled crack is not spalled or only lightly spalled, but the filled is in unsatisfactory condition; (4) the area between the corner break and the joints is lightly cracked with loose or missing particles. High One of the following conditions exists: (1) filled or non-filled crack is severely spalled, causing definite FOD potential; (2) a non-filled crack has a mean width greater than approximately 1 inch, creating a tire damage potential; or (3) the area between the corner break and the joints is severely cracked.	Low Severity Corner Break at Runway 8R/26L 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
63	Long., Trans., or Diagonal Crack	Load	Low Crack has no spalling or minor spalling (no FOD potential). If non-filled, it is less than 1/8-inch-wide; a filled crack can be of any width, but its filler material must be in satisfactory condition. Medium One of the following conditions exists: (1) a filled or non-filled crack is moderately spalled (some FOD potential); (2) a non-filled crack has a mean width between 1/8 inch and 1 inch; (3) a filled crack has no spalling or minor spalling, but the filler is in unsatisfactory condition; or (4) the slab is divided into three pieces by two or more cracks. High One of the following conditions exists: (1) a filled or non-filled crack is severely spalled (definite FOD potential); (2) a non-filled crack has a mean width approximately greater than 1 inch, creating tire damage potential, or (3) the slab is divided into three pieces by two or more cracks, one of which is at least medium-severity.	Medium Severity Crack at Taxiway S 
64	Durability ("D") Crack	Climate	Low "D" cracking is defined by hairline cracks occurring in a limited area of the slab, such as one or two corners or along one joint. Little or no disintegration has occurred. No FOD potential. Medium (1) "D" cracking has developed over a considerable amount of slab area with little or no disintegration or FOD potential; or (2) "D" cracking has occurred in a limited area of the slab, such as in one or two corners or along one joint, but pieces are missing and disintegration has occurred. Some FOD potential. High "D" cracking has developed over a considerable amount of slab area with disintegration of FOD potential.	Example of Durability Cracking 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
65	Joint Seal Damage	Other	Low Joint sealer is in generally good condition throughout the section. Sealant is performing well, with only a minor amount of any of the above types of damage present. Medium Joint sealer is in generally fair condition over the entire surveyed section, with one or more of the above types of damage occurring to a moderate degree. Sealant needs replacement within 2 years. High Joint sealer is in generally poor condition over the entire surveyed section, with one or more of the above types of damage occurring to a severe degree. Sealant needs immediate replacement.	High Severity Joint Seal Damage at Runway 8L/26R 
66	Patching, Small	Other	Low Patch is functioning well, with little or no deterioration. Medium Patch has deteriorated, and/or moderate spalling can be seen around the edges. Patch material can be dislodged, with considerable effort (minor FOD potential). High Patch has deteriorated, either by spalling around the patch or cracking within the patch, to a state which warrants replacement.	Medium Severity Small Patching at Taxiway W 
67	Patching, Large	Other	Low Patch is functioning well, with little or no deterioration. Medium Patch has deteriorated, and/or moderate spalling can be seen around the edges. Patch material can be dislodged with considerable effort, causing some FOD potential. High Patch has deteriorated to a state which causes considerable roughness and/or high FOD potential. The extent of the deterioration warrants replacement of the patch.	Low Severity Large Patching at South Cargo Apron 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
68	Popouts	Climate/Other	No degrees of severity are defined for popouts. However, popouts must be extensive before they are counted as a distress; i.e., average popout density must exceed approximately three popouts per square yard over the entire slab area.	Popouts at Taxilane N1 
69	Pumping	Load	No degrees of severity are defined. It is sufficient to indicate that pumping exists.	Example of Pumping 
70	Scaling	Load/ Climate	Low Minimal loss of surface paste that poses no FOD hazard. No FOD potential. Medium The loss of surface paste that poses some FOD potential including isolated fragments of loose mortar, exposure of the sides of coarse aggregate (less than 1/4 of the width of coarse aggregate), or evidence of coarse aggregate coming loose from the surface. High The high severity is associated with low durability concrete that will continue to pose a high FOD hazard; normally the layer of surface mortar is observable at the perimeter of the scaled area and is likely to continue to scale due to environmental or other factors. Indication of high-severity FOD is that routine sweeping is not sufficient to avoid FOD issues.	Example of Scaling 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
71	Settlement or Faulting	Load	Low < 1/4 inch for runways/taxiways and 1/8 – 1/2 inch for aprons. Medium 1/4 – 1/2 inch for runways/taxiways and 1/2 - 1 inch for aprons. High > 1/2 inch for runways/taxiways and> 1 inch for aprons.	Low Severity Settlement at Taxiway K 
72	Shattered Slab	Load	Low Slab is broken into four or five pieces with the vast majority of the cracks (over 85 percent) of low-severity. Medium (1) Slab is broken into four or five pieces with over 15 percent of the cracks of medium-severity (no high-severity cracks); or (2) slab is broken into six or more pieces with over 85 percent of the cracks of low-severity. High At this level of severity, the slab is called shattered: (1) slab is broken into four or five pieces with some or all of the cracks of high-severity; (2) slab is broken into six or more pieces with over 15 percent of the cracks of medium- or high-severity.	Low Severity Shattered Slab at Taxiway S 
73	Shrinkage Cracking	Other	No degrees of severity are defined. It is sufficient to indicate that shrinkage cracks exist.	Shrinkage Cracking at Runway 8R/26L 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
74	Spalling (Joint)	Load/ Other	Low For a spall length of <2 ft.; spall is broken into pieces or fragmented; little FOD or tire damage potential exists. For a spall length of >2 ft.; (a) spall is broken into no more than three pieces defined by low- or medium-severity cracks; little or no FOD potential exists; or (b) joint is lightly frayed; little or no FOD potential exists. Medium For a spall length of <2 ft.; spall is broken into pieces or fragmented, with some of the pieces loose or absent, causing considerable FOD or tire damage potential. For a spall length of >2 ft.; (a) spall is broken into more than three pieces defined by light or medium cracks; (b) spall is broken into no more than three pieces with one or more of the cracks being severe with some FOD potential existing; or (c) joint is moderately frayed, with some FOD potential. High For a spall length of <2 ft.; the joint is lightly frayed, the spall should not be counted. For a spall length of >2 ft.; (1) spall is broken into more than three pieces defined by one or more high-severity cracks with high FOD potential; or (2) joint is severely frayed, with high FOD potential.	Medium Severity Joint Spall at Taxiway R 
75	Spalling (Corner)	Load/ Other	Low One of the following conditions exists: (1) spall is broken into one or two pieces defined by low-severity cracks (little or no FOD potential), (2) spall is defined by one medium-severity crack (little or no FOD potential). Medium One of the following conditions exists: (1) spall is broken into two or more pieces defined by medium- severity crack(s), and a few small fragments may be absent or loose; (2) spall is defined by one severe, fragmented crack that may be accompanied by a few hairline cracks;	Medium Severity Corner Spall at Taxiway W 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
			or (3) spall has deteriorated to the point where loose material is causing some FOD potential. High One of the following conditions exists: (1) spall is broken into two or more pieces defined by high- severity fragmented crack(s), with loose or absent fragments; (2) pieces of the spall have been displaced to the extent that a tire damage hazard exists; or (3) spall has deteriorated to the point where loose material is causing high FOD potential.	
76	Alkali Silica Reaction	Other	Low Minimal to no Foreign Object Damage (FOD) potential from cracks, joints or ASR related popouts; cracks at the surface are tight. Little to no evidence of movement in pavement or surrounding structures or elements. Medium Some FOD potential; increased sweeping or other FOD removal methods may be required. May be evidence of slab movement and/ or some damage to adjacent structures or elements. Medium ASR distress is differentiated from low by having one or more of the following: increased FOD potential, increased cracking of the slab, some fragments along cracks or at crack intersections present, surface popouts of concrete may occur, pattern of wider cracks (1.0 mm or wider) that may be subdivided by tighter cracks. High One or both of the following exist: 1) Loose or missing concrete fragments which pose high FOD potential, 2) Slab surface integrity and function significantly degraded and pavement requires immediate repair; may also require repairs to adjacent structures or elements.	Example of Alkali Silica Reaction 

Source: ASTM D5340

APPENDIX C

PAVEMENT CONDITION INDEX BY SECTION

Ontario International Airport

Airfield Pavement Evaluation
Appendix C

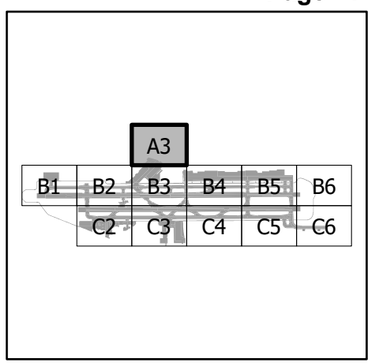
Pavement Condition Index
By Section

Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

APTERM1A - 01
APTERM1A - 03
APTERM1A - 02
TLG - 01
APINTTERM - 01
APTERM1 - 01

Ontario International Airport

Airfield Pavement Evaluation
Appendix C

Pavement Condition Index
By Section

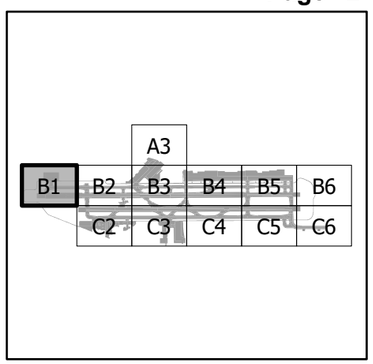
Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Page 2



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

APCARGOW - 01
VSRW - 01
TWB - 01
VSRN - 01
TWB - 02
SHTWB - 01E
SHTWB - 02W
SHTWN - 03N
SHTWN - 01N
TWN - 03
SHTWN - 03S
VSRW - 02
TWN - 02
SHTWN - 01S
SHRW8L - 01N
TWN - 01
SHRW8L - 02N
SHRW8L - 04N
RW8L/26R - 01N
RW8L/26R - 02N
BPRW8L - 01W
RW8L/26R - 01C
RW8L/26R - 02C
BPRW8L - 02W
RW8L/26R - 01S
RW8L/26R - 02S
SHRW8L - 05S
VSRW - 03
VSRW - 04
VSRW - 05

Ontario International Airport

Airfield Pavement Evaluation
Appendix C

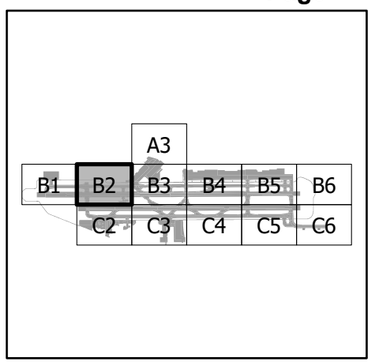
Pavement Condition Index
By Section

Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix C

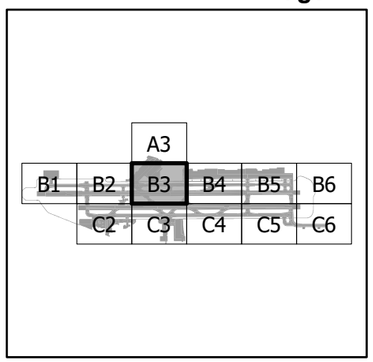
Pavement Condition Index
By Section

Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix C

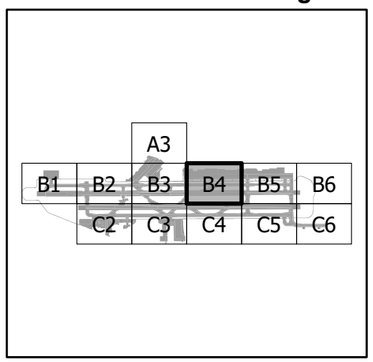
Pavement Condition Index
By Section

Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix C

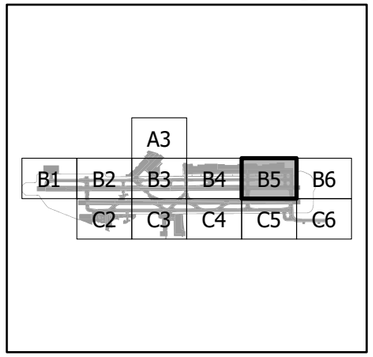
Pavement Condition Index
By Section

Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected



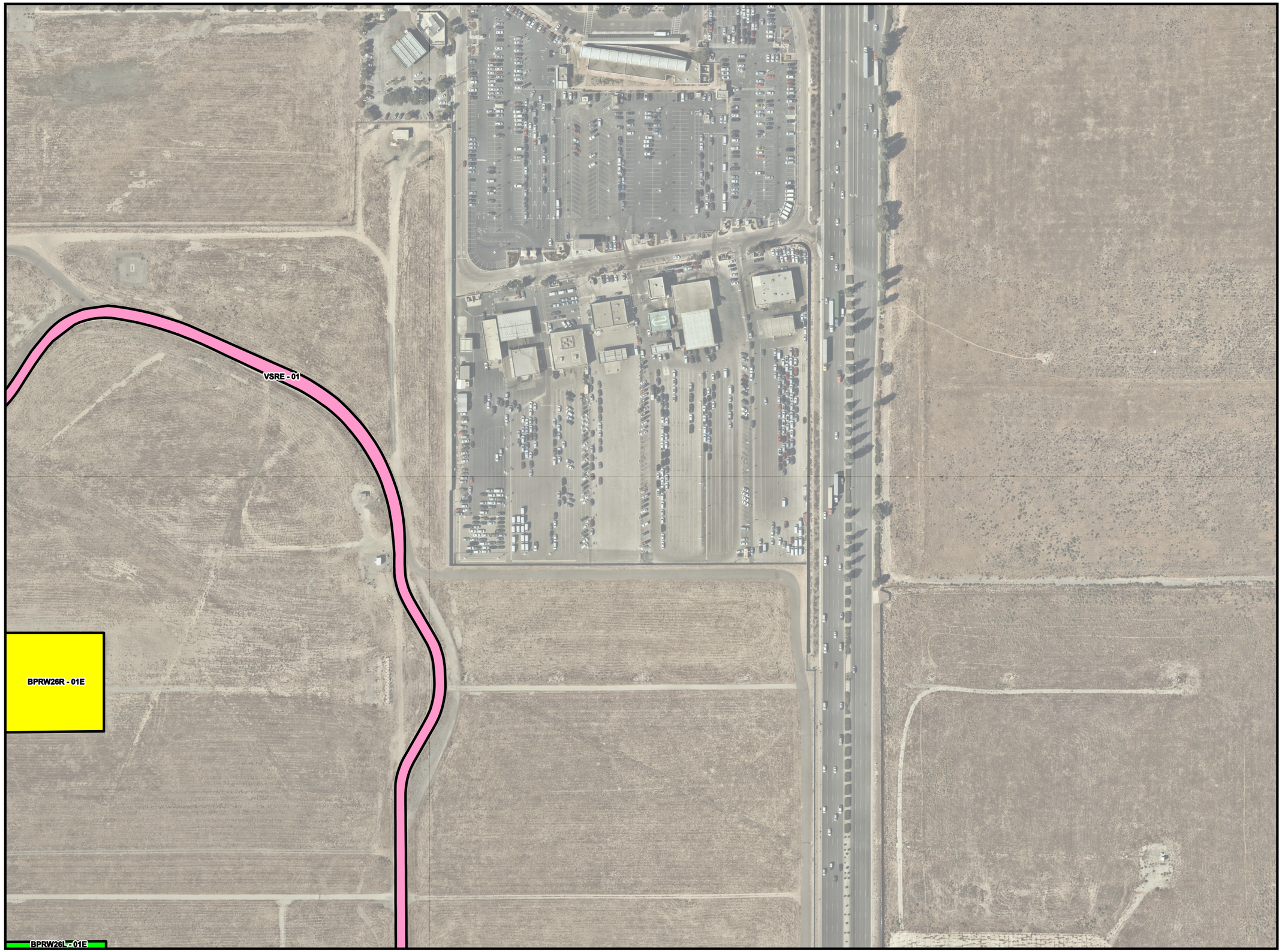
March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H



Ontario International Airport

Airfield Pavement Evaluation
Appendix C

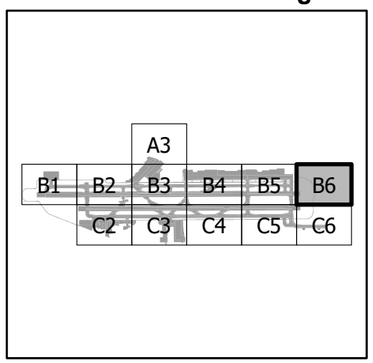
Pavement Condition Index
By Section

Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix C

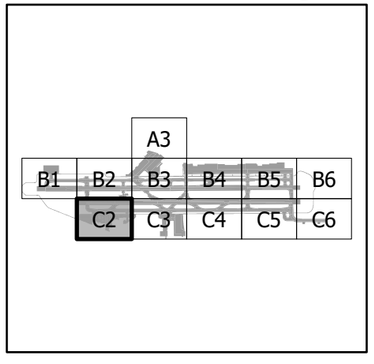
Pavement Condition Index
By Section

Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix C

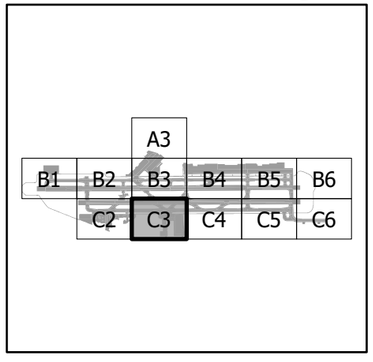
Pavement Condition Index
By Section

Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected



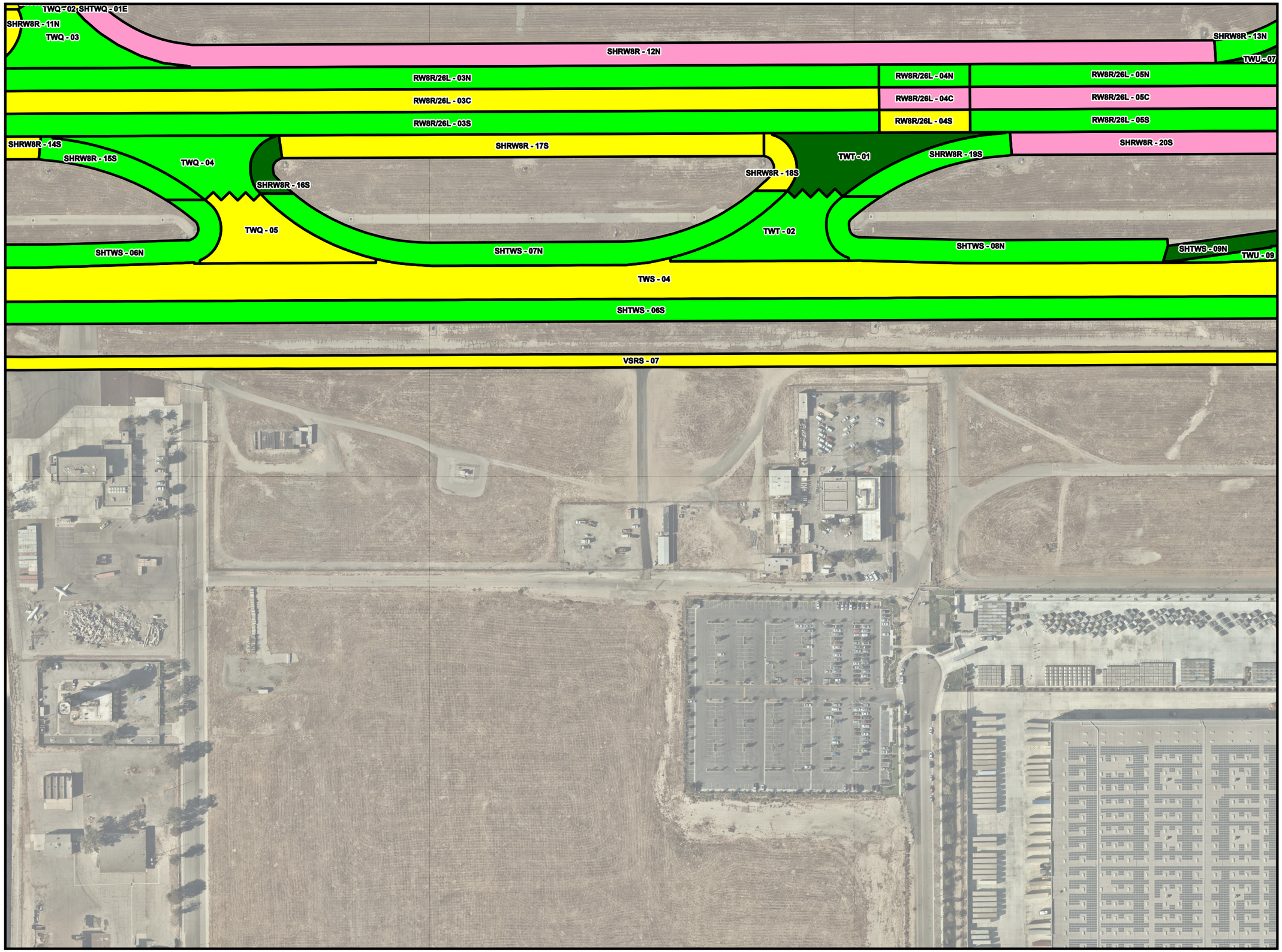
March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H



Ontario International Airport

Airfield Pavement Evaluation
Appendix C

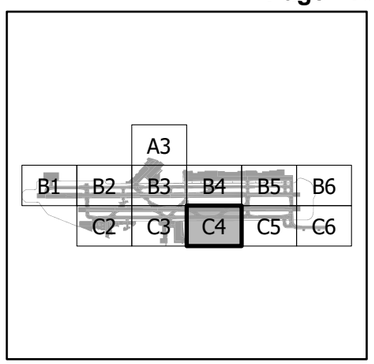
Pavement Condition Index
By Section

Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected



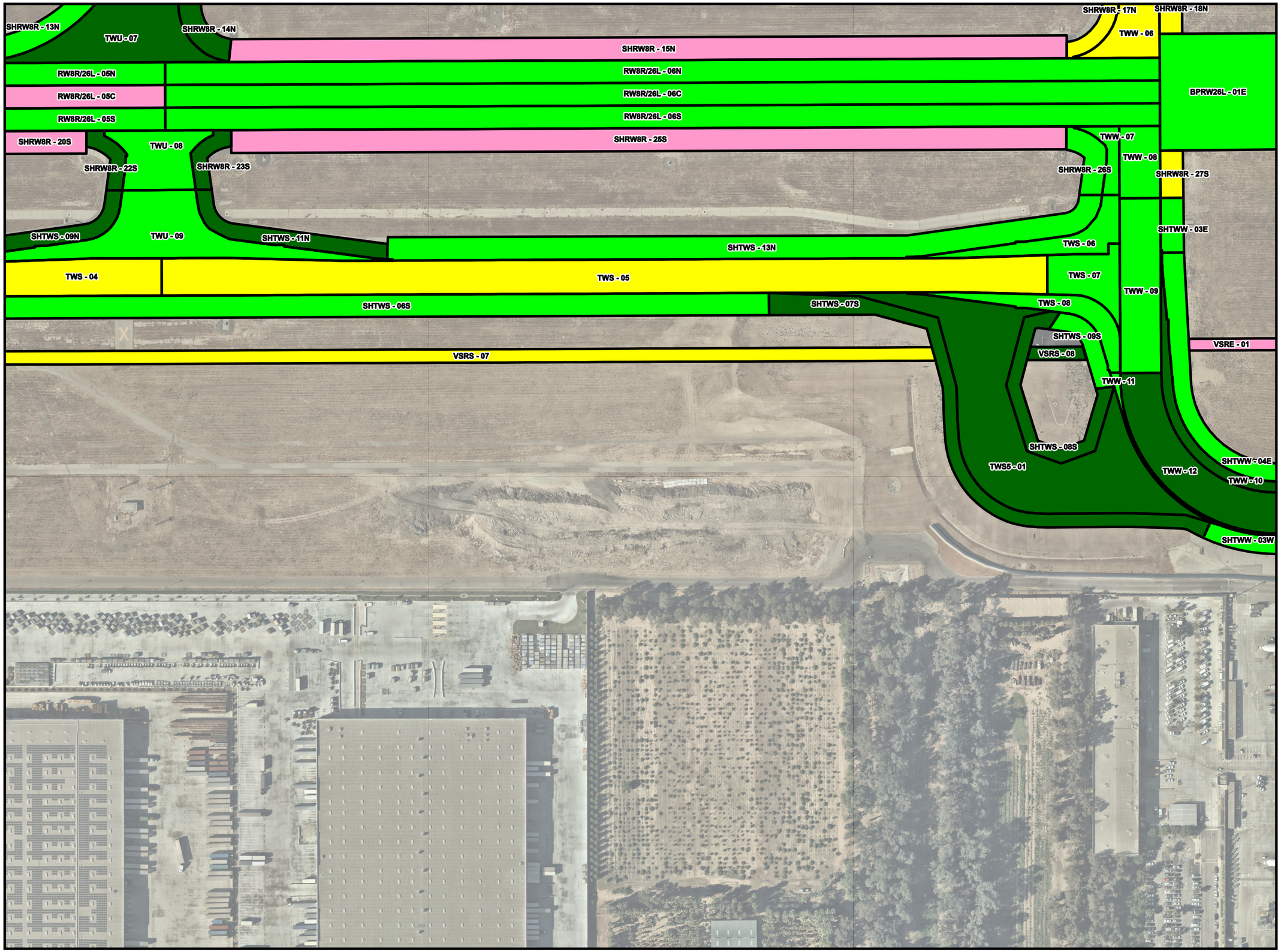
March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H



Ontario International Airport

Airfield Pavement Evaluation
Appendix C

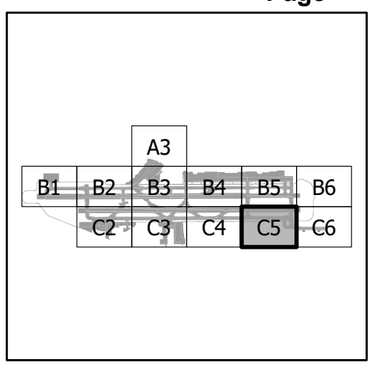
Pavement Condition Index
By Section

Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix C

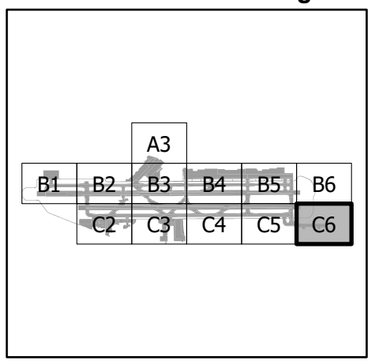
Pavement Condition Index
By Section

Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

APPENDIX D

PAVEMENT CONDITION INDEX BY SAMPLE UNIT

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

Legend

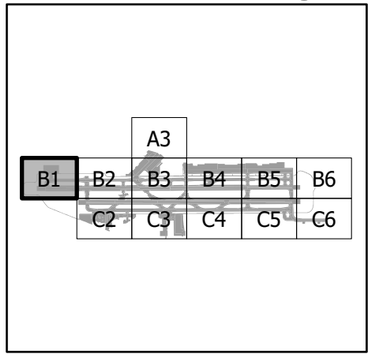
Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

Page 1



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

Legend

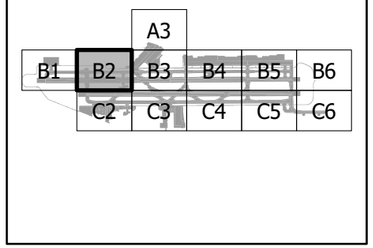
Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

Page 2



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

Legend

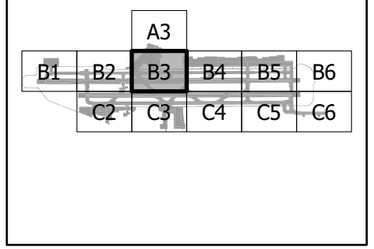
Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

Page 3



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

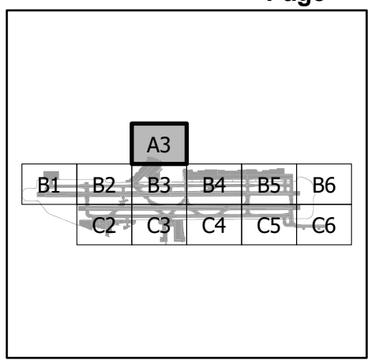
Legend

Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

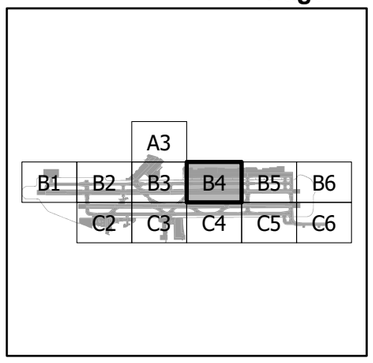
Legend

Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

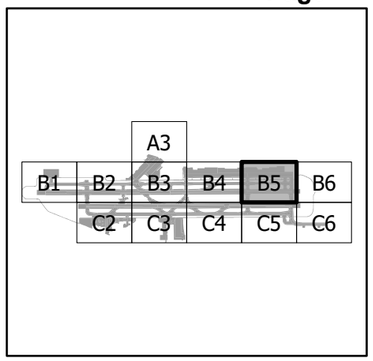
Legend

Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

Legend

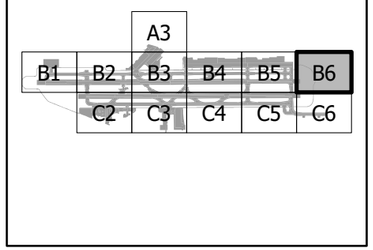
Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

Page 7



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

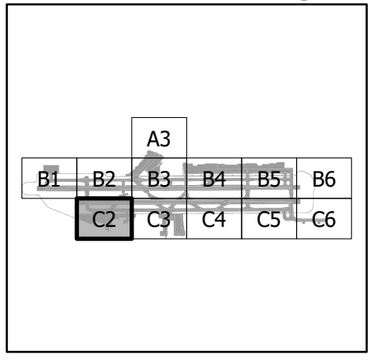
Legend

Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

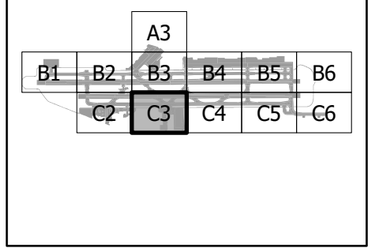
Legend

Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

Legend

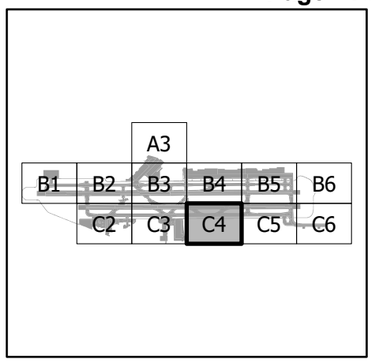
Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

Page 10



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

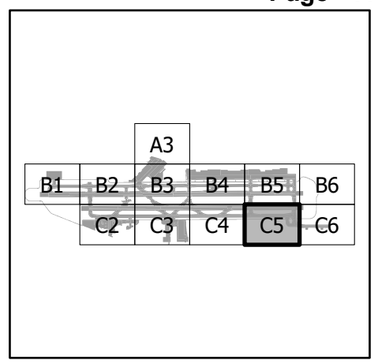
Legend

Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

Legend

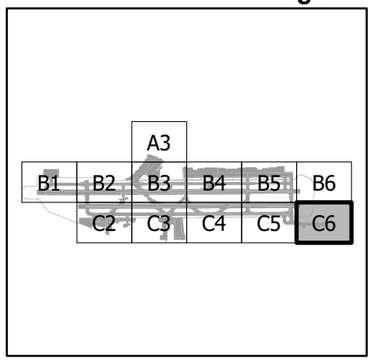
Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

Page 12



March 2020

0 100 200 300 400 Ft.

N

ONTARIO INTERNATIONAL AIRPORT

RS&H

APPENDIX E

NON-DESTRUCTIVE TESTING RESULTS

DYNATEST CONSULTING, INC.

165 South Chestnut Street
Ventura, California 93001 USA
Tel +1 805 648-2230
Fax +1 805 648-2231

Email: usa@dynatest.com
Webpage: www.dynatest.com

Pavement Engineering Specialists
and Equipment

Reynolds, Smith, & Hills (RS&H)

February 2020

Load/Deflection Analysis of
Dynatest Heavy Weight Deflectometer Test Results
and
ACN/PCN Evaluation
for:

Ontario International Airport (ONT)



in
Ontario, California

Table of Contents

1. Executive Summary 1
2. Introduction 5
3. The Dynatest FWD/HWD Test System 5
4. The ELMOD Computer Program 5
5. Analysis Approach 7
   5.1. HWD Test Lines 7
   5.2. Pavement Layer Thicknesses 7
   5.3. Design Aircraft Mix 10
6. Discussion of Results 12
   6.1. General 12
   6.2. Layer Moduli 17
   6.3. Transverse Load Transfer Efficiency Evaluation 25
   6.4. Structural Evaluation 28
7. Aircraft Classification Number-Pavement Classification Number (ACN-PCN) 30
   7.1. Background 30
   7.2. ACN 31
   7.3. PCN Evaluation 33
8. Limited Distress Survey 34
9. General Remarks 34
10. Disclaimer 35
Appendix A - Dynatest FWD/HWD Test System 36
Appendix B – Airport Feature Stationing 39
Appendix C – Normalized Center Deflections 49
Appendix D – Pavement Layer Moduli Plots 73
Appendix E – ELMOD Structural Adequacy Evaluation 108
Appendix F – Pavement Condition Distress Survey 128
Appendix G – Fleet Mix Distribution Map 152
Appendix H – Geotechnical Exploration Data 154

1. Executive Summary

The following information, relative to the tested features at Ontario International Airport (ONT), is summarized from SECTIONS 2 through 7 of this report and is for the benefit of those simply interested in a general overview of the analysis without the input data, discussion, and other details associated with and leading to these recommendations. It is imperative that reviewers familiarize themselves with the detailed information included in the following report prior to making any specific decisions based on these recommendations.

The objectives of this project are to determine, using a network level approach, the structural capacity, slab load transfer efficiency (LTE), and Pavement Classification Number (PCN) for all features at ONT Airport for a design period of twenty years subject to the proposed aircraft traffic mix. The structural analysis is based on mechanistic design principles, Heavy Weight Deflectometer (HWD) and Ground Penetration Radar (GPR) measurements collected by Dynatest North America, Inc. (Dynatest), and the design traffic and pavement thickness information provided by RS&H. The pavement structural evaluation was conducted using Dynatest computer program, ELMOD 6.0, and pavement classification number was calculated using Federal Aviation Administration (FAA) computer software, COMFAA.

RS&H reviewed and approved the proposed design aircraft mix for ONT. Each airport feature was assigned a percentage of the total airport operations according to the color-coded traffic distribution map provided by RS&H presented in Appendix G of this report. Table 1 shows the airport features evaluated in this project. A total of 31 airport facilities and 68 pavement sections were tested and evaluated.

Table 2 shows the PCN codes calculated using COMFAA for the existing pavement structures. The PCN values are associated with the traffic used in the evaluation, and any change in traffic during the evaluation period will change the PCN (e.g. an increase in traffic will decrease the PCN and a decrease in traffic will increase the PCN). In addition, Table 2 shows the ACN/PCN ratio for each feature. The results show that the ACN/PCN for the evaluated aircraft is greater than 1.1 for all aprons, the Taxilane N1 and G, the Taxiways D, F, G, K, L, N, Q, S, S1, S2, S3, S5, T, U, and V, and both Runways. Typically, an ACN/PCN ratio greater than 1.1 is considered to be problematic for the proposed aircraft mix.

DRAFT

Table 1 – Airport Features Evaluated

Tested Airport Features		
Atlantic Aviation Apron	Taxiway L	Taxiway U
International Terminal Apron	Taxiway N	Taxiway V
Runway 8L-26R	Taxiway P	Taxiway W
Runway 8R-26L	Taxiway Q	Taxiway Y
Taxilane H	Taxiway R	Taxiway Y1
Taxilane N1	Taxiway S	Taxiway Y2
Taxiway CSA	Taxiway S1	Taxiway Y3
Taxiway D	Taxiway S2	Terminal 1 Apron
Taxiway F	Taxiway S3	Terminal 2-4
Taxiway G	Taxiway S5	-
Taxiway K	Taxiway T	-

Table 2 – ONT PCN Codes

Feature	From Station	To Station	PCN Code	ACN Code	ACN/PCN
Runway 8L-26R (Sec1)	0+00	21+75	43/R/B/W/T	57/R/B	1.3
Runway 8L-26R (Sec2)	21+75	End	53/R/B/W/T	57/R/B	1.1
Runway 8R-26L	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxilane N1	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway D	0+00	End	49/R/B/W/T	57/R/B	1.2
Taxiway F	0+00	End	42/R/B/W/T	57/R/B	1.4
Taxiway G	0+00	End	9/F/B/X/T	62/F/B	6.9
Taxiway K	0+00	End	43/R/B/W/T	57/R/B	1.3
Taxiway L	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway N	0+00	End	46/R/A/W/T	54/R/A	1.2
Taxiway P	0+00	End	48/R/A/W/T	54/R/A	1.1
Taxiway Q	0+00	End	44/R/B/W/T	57/R/B	1.3
Taxiway R	0+00	End	62/R/B/W/T	57/R/B	0.9
Taxiway S	0+00	End	44/R/B/W/T	57/R/B	1.3
Taxiway S1	0+00	End	5/F/B/X/T	53/F/B	10.6
Taxiway S2	0+00	End	40/R/B/W/T	57/R/B	1.4
Taxiway S3	0+00	End	<Min[1)]	62/F/B	---
Taxiway S5	0+00	End	37/F/B/X/T	77/F/B	2.1
Taxiway T	0+00	End	46/R/B/W/T	57/R/B	1.2
Taxiway U	0+00	End	49/R/B/W/T	57/R/B	1.2
Taxiway V	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway W	0+00	End	53/R/B/W/T	57/R/B	1.1
Taxiway Y	0+00	End	60/R/B/W/T	57/R/B	1.0
Taxiway Y1	0+00	End	56/R/B/W/T	57/R/B	1.0
Taxiway Y2	0+00	End	55/R/B/W/T	57/R/B	1.0

DRAFT

Feature	From Station	To Station	PCN Code	ACN Code	ACN/PCN
Taxiway Y3	0+00	End	56/R/B/W/T	57/R/B	1.0
Taxilane H	0+00	End	<Min[1)]	59/F/D	---
Terminal 1 Apron	0+00	End	21/R/C/W/T	68/R/C	3.24
Terminal 2-4	0+00	End	38/R/B/W/T	57/R/B	1.5
International Terminal Apron	0+00	End	<Min[1)]	59/F/D	---

1) Taxilane H, Taxiway S3, and International Terminal Apron do not meet the minimum thickness required by FAA.

The mechanistic analysis using ELMOD indicates that the 20-year design life corresponding to the proposed aircraft mix will not be met for 27 out of 31 evaluated airport features. Therefore, rehabilitation is strongly recommended for those features to ensure that the design life will be met. It is recommended that a project-level evaluation be conducted to determine the most cost-effective pavement rehabilitation/reconstruction alternatives for each feature. Table 3 shows the determined structural adequacy and required structural Hot Mix Asphalt (HMA) overlay or preventive maintenance, for the evaluated features. An airport feature having a remaining life of less than 20 years was considered to be structurally inadequate to withstand the proposed traffic loading.

It is important to state that FAA AC 150/5320-6F Sections 3.1.3.3.2 and 3.1.4.3.1 requires that a stabilized subbase, such as Cement Treated Base (CTB), is present under both new flexible and rigid pavements serving airplanes weighing 100,000 lb. or more.

Table 3 –Structural Overlay for the Proposed Aircraft Mix with Remove and Repair

Feature	Test Line	Station (ft.) [1)]	Structurally Adequate Yes/No	Structural Overlay	Remove and Repair Location[5)]
Atlantic Aviation Apron [4)]	3 Parallel Test Lines	0+00 to End	-	-	-
International Terminal Apron	3 Parallel Test Lines	0+00 to End	No	Reconstruction[3)]	-
Runway 8L-26R	2 Parallel Test Lines	0+00 to 35+00	No	Reconstruction[3)]	-
		35+00 to End	Yes	Preventive Maintenance	-
Runway 8R-26L	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	Sta 45+00 Sta 65+00
Taxilane H	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3)]	-
Taxilane N1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3)]	-
Taxiway CSA[4)]	-	-	-	-	-
Taxiway D	2 Parallel Test Lines	0+00 to 9+00	No	Reconstruction[3)]	-
		9+00 to End	Yes	6.0" HMA Overlay[2)]	-

Feature	Test Line	Station (ft.) [1]	Structurally Adequate Yes/No	Structural Overlay	Remove and Repair Location[5]
Taxiway F	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	Sta 9+50 Sta 11+50
Taxiway G	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway K	2 Parallel Test Lines	0+00 to 5+50	Yes	Preventive Maintenance	-
		5+50 to End	No	Reconstruction[3]	-
Taxiway L	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway N	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway P	2 Parallel Test Lines	0+00 to 6+00	No	2.0" HMA Overlay[2]	-
		6+00 to End	No	Reconstruction[3]	-
Taxiway Q	2 Parallel Test Lines	0+00 to 6+00 8+00 to End	Yes	Preventive Maintenance	-
		6+00 to 8+00	No	Reconstruction[3]	-
Taxiway R	2 Parallel Test Lines	0+00 to 5+00	Yes	Preventive Maintenance	-
		5+00 to End	No	Reconstruction[3]	-
Taxiway S	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway S1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway S2	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway S3	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway S5	2 Parallel Test Lines	0+00 to End	No	5.5" HMA Overlay[2]	-
Taxiway T	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway U	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	
Taxiway V	10L	0+00 to End	No	Reconstruction[3]	
Taxiway V	10R	1+00 to End	Yes	Preventive Maintenance	-
		0+00 to 1+00	No	Reconstruction[3]	-
Taxiway W	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y2	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y3	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Terminal 1 Apron	4 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Terminal 2-4	4 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-

1) Refer to Appendix B for a schematic showing Station 0+00
2) Indicates thick HMA structural overlay required. A Project level evaluation is recommended to evaluate different major rehabilitation and/or reconstruction alternatives.
3) When the calculated overlay is greater than 10 inches, reconstruction is indicated.
4) No traffic is provided.
5) Remove and Repair or dig out stations are determined based on discrete HWD testing. Actual extend and locations must be determined visually prior to conduct any preventive maintenance activities.

DRAFT

Transverse joints were tested for transverse Load Transfer Efficiency (LTE). Overall, the tested slabs on ONT had good to fair load transfer efficiency. The airport features showing low transverse LTE (<70) values are: Taxiways CSA, and W, and Taxilane N1. Poor LTE leads to corner breaks and a significant reduction in pavement structural capacity. Due to the discrete nature of network level deflection testing, the actual location and extent of dowel bar retrofit or undersealing requirements need to be determined visually.

2. Introduction

From May 28th to June 8th, 2020 nondestructive load-deflection tests (NDT) were performed on Runways 8L/26R and 8R/26L along with several taxiways, taxilanes, taxiway connectors, and aprons at ONT Airport in Ontario, CA. The testing setup was based on the FAA Advisory Circular 150/5370-11B: "Use of Nondestructive Testing in the Evaluation of Airport Pavements" at the network level. Project-level investigations refer to studies that are conducted in support of pavement rehabilitation, reconstruction, and new construction designs. Network-level studies generally support the implementation and updates of pavement management systems. The frequency of the NDT is greater in a project-level study that typically include a limited number of pavement facilities. This is in contrast to a network-level study, which may include all airside pavements, all landside pavements, or both.

The purpose of these tests, and the associated analysis, is to determine the backcalculated layer moduli for each of the pavement layers of the evaluated airport features and to determine the LTE, PCN and pavement structural adequacy for a 20-year design period.

3. The Dynatest FWD/HWD Test System

The Dynatest Model 8082 Heavy Weight Deflectometer (HWD) Test System was used to generate the non-destructive testing (NDT) load-deflection data analyzed in this report. The Dynatest HWD generates a transient, impulse-type load of 20-30 msec duration, at any desired (peak) load level between 6,000 and 72,000-lbs, thereby approximating the effect of a 30-50 mph moving wheel load. For this project, target load levels of 30,000, 45,000, and 60,000-lb were applied. A brief description of the Dynatest FWD/HWD Test System is shown in **Appendix A**.

4. The ELMOD Computer Program

The HWD-generated load-deflection data were analyzed using an "analytical-empirical" methodology through a specially developed software package designed to do the task in the best and most efficient manner available. The system is "analytical" in the sense that actual, in-situ material properties and wheel load responses are derived through a reverse, layered analysis technique, as described below. It is still "empirical", however,

DRAFT

because the relationship between the load-related response of these mechanistic or analytical properties and future pavement performance are based upon past experience (observed performance) and associated research. The software package employed was the Dynatest ELMOD computer program.

ELMOD is an acronym for Evaluation of Layer Moduli and Overlay Design, and the program is used to backcalculate the mechanistic material properties of an axi-symmetric, semi-infinite pavement system (i.e. the elastic moduli or "E"-values of each structural layer in the pavement).

When the fundamental structural pavement properties (i.e., E-values) have been determined, the critical stresses and strains in the structure are calculated. Based on the derived E-values and critical stresses and strains for each individual HWD test point, the design life and needed overlay to bring the pavement up to its design life standard are calculated. The program is able to assign various user controlled seasonal adjustments to the derived E-values (e.g., a lower rainy season subgrade modulus and a varying AC modulus as a function of seasonal temperature), and then calculate the expected remaining service life of the pavement section. If the remaining service life is less than required, an overlay design is calculated based on cumulative damage "transfer functions" which are also user controlled. These transfer functions are primarily based on laboratory measured performance tests that have been correlated to field observed performance obtained from various pavements.

As indicated, the prediction of pavement performance (roughness or cracking) from the calculated pavement response (critical stresses and strains) is empirical. The empirical relationships between the derived mechanistic material properties and performance are, however, user controlled, i.e., they are variable inputs to ELMOD. The program, therefore, may be used for any specific local environmental conditions if these relationships are known.

It should be noted that, in general, most of the measured magnitudes of deflection are due to the response of the subgrade. It is therefore very important that the subgrade modulus is accurately determined. A small error in the subgrade modulus will lead to large errors in the overlying layers, including the asphalt or Portland cement concrete modulus. For this reason, it is necessary to consider any non-linearity of the subgrade, which can be done quite easily with the analytical-empirical method using the highly accurate deflection data obtained from the Dynatest HWD Test System.

Due to the large influence of the subgrade on the measured deflections, it is important that the deflections are measured at a load level similar to that resulting from heavy aircraft wheels, and that the deflections, especially those measured at large distances from the loading center (≥ ~3 ft), are measured very accurately. With the Dynatest HWD Test System, deflections are measured to a guaranteed absolute dynamic (under the FWD

DRAFT

loading conditions) accuracy of 2% ± 2 microns (0.08 mils) and a typical absolute accuracy of 1% ± 1 micron (0.04 mils).

Many other features of the ELMOD program are also significant and important in relation to the process of using HWD generated data to obtain bearing capacity assessments and rehabilitation designs. Some of the specific applications used for the pavement analyzed in this report are also addressed in the following section, "Analysis Approach".

5. Analysis Approach

5.1. HWD Test Lines

The stationing for this project was carried out in units of feet. Station 0+00 for all the features is shown in **Appendix B**. Testing was performed at 10-ft left and right of the Runway 8R/26L and Runway 8L/26R, Taxiways and Taxiway connectors centerlines. In the case of aprons/terminals, several parallel lines were tested. The test line offset was selected to ensure appropriate coverage of the area.

The HWD test interval was set at approximately 100, 200 and 400-ft intervals for Runways 8R/26L, and 8L/26R, and between 25- to 200-ft for Taxiways, and Taxiway connectors depending on the length of the feature. In the case of aprons/ramps the HWD interval was determined in accordance with FAA Circular "AC 150/5370-11B Table 6" for both rigid and flexible pavements. In addition, HWD test points were staggered between test lines to provide increased coverage over the features.

5.2. Pavement Layer Thicknesses

RS&H provided subsurface exploration data containing the airport features pavement thickness, and type information. The summary of data is presented in Appendix H. It is important to state that pavement thicknesses and types for some of the evaluated airport features were not available at this time. Therefore, RS&H approved the decision to use either the pavement thickness or types of the surrounding areas or to use the most frequently encountered pavement layer thicknesses and types observed at ONT.

In addition, Dynatest collected GPR data using an air and ground coupled antennas. The data obtained from the air and ground coupled antennas provides detailed thickness information for the top bound layers and the bottom unbound layers. The pavement layer thicknesses and types obtained from coring data were used to calibrate the GPR measurements.

GPR is used to determine the pavement thicknesses and types by means of emitting a series of radar waves to the pavement structure while the vehicle is either traveling or collecting HWD data. The resulting correlated dielectric constants are then filtered to

DRAFT

determine pavement thicknesses and types. The results must be calibrated through pavement cores at selected locations.

The Dynatest HWD is fully integrated with the GPR system so that each HWD station corresponds to the same reading from the GPR. Furthermore, pavement thicknesses are reported for every HWD tested station which increases the accuracy and quality of the pavement evaluation. In addition, by using the GPR technology, there is a significant reduction in the required number of pavement cores, which translates into savings for the Airport. Dynatest used the thicknesses obtained from subsurface exploration data to calibrate the layer thicknesses obtained from the GPR.

A total of 10 pavement cores and 6 geotechnical borings in addition to the preliminary as-built data were collected and used to perform the GPR data analysis. Figure 1 shows a GPR post-processed plot for a section of Runway 8L/26R 10R showing the interface between the Portland Cement Concrete (PCC) layer, the Cement Treated Base (CTB) layer, and the subgrade layer; and the corresponding core data used for calibration/verification. It is important to note that while pavement cores are at discrete locations, the GPR measurements were done continuously along the same HWD test lines so that each tested location would have a corresponding unique pavement structure. Table 4 shows the pavement layer information used in the analyses.

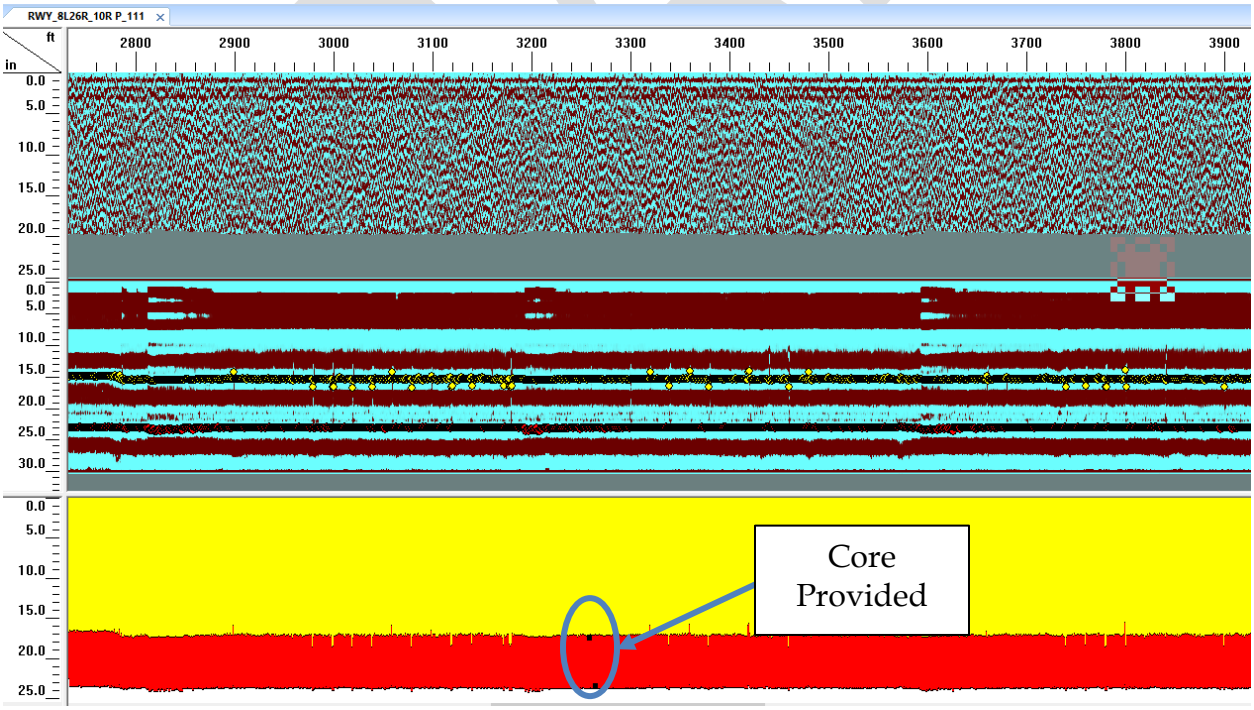


Figure 1. PCC and CTB Layer Thickness for Runway 8L/26R 10R Obtained from GPR

Table 4 – Layer Thicknesses used in the Analyses

Feature	From Station[1)]	To Station	AC (in)	PCC (in)	Base/Type (in)
Atlantic Aviation Apron	0+00	End	3.0	---	6.0/CTB
International Terminal Apron	0+00	End	5.0	---	3.0/AB
Runway 8L-26R	0+00	End	---	16.0	5.5/CTB
Runway 8R-26L	0+00	End	---	15.0	12.0/CTB
Taxilane H	0+00	End	4.0	---	4.0/AB
Taxilane N1	0+00	End	---	15.0	13.0/CTB
Taxiway CSA	0+00	End	---	7.5	---
Taxiway D	0+00	7+50	---	16.0	6.0/CTB
	7+50	End	---	16.0	13.0/CTB
Taxiway F	0+00	9+00	---	15.0	9.0/AB
	9+00	End	---	16.0	14.0/CTB
Taxiway G	0+00	End	5.5	--	6.0/CTB
Taxiway K	0+00	4+50	---	15.0	9.0/AB
	4+50	9+00	---	15.0	6.0/CTB
	9+00	End	---	15.0	9.0/CTB
Taxiway L	0+00	End	---	15.0	13.0/CTB
Taxiway N	0+00	End	---	16.0	14.0/CTB
Taxiway P	0+00	4+00	---	15.0	9.0/AB
	4+00	11+00	---	15.0	6.0/CTB
	11+00	End	---	15.0	12.0/CTB
Taxiway Q	0+00	5+00	---	15.0	9.0/AB
	5+00	End	---	17.0	6.0/AB
Taxiway R	0+00	End	---	17.0	6.0/CTB
Taxiway S	0+00	End	---	15.0	9.0/AB
Taxiway S1	0+00	End	4.0	---	4/AB
Taxiway S2	0+00	End	---	15.0	9.0/AB
Taxiway S3	0+00	End	3.0	---	3.0/AB
Taxiway S5	0+00	End	5.0	---	6.0/AB 8.0/SB
Taxiway T	0+00	End	---	15.0	9.0/AB
Taxiway U	0+00	4+00	---	17.0	6.0/CTB
	4+00	9+50	---	15.0	11.0/AB
	9+50	End	---	15.0	12.0/CTB
Taxiway V	0+00	End	---	17.0	6.0/CTB
Taxiway W	0+00	13+50	---	16.0	6.0/CTB
	13+50	18+50	---	17.0	6.0/CTB
	18+50	End	---	15.0	12.0/CTB
Taxiway Y	0+00	End	---	17.0	6.0/CTB

DRAFT

Feature	From Station[1)]	To Station	AC (in)	PCC (in)	Base/Type (in)
Taxiway Y1	0+00	End	---	17.0	6.0/CTB
Taxiway Y2	0+00	End	---	17.0	6.0/CTB
Taxiway Y3	0+00	End	---	17.0	6.0/CTB
Terminal 1 Apron	0+00	End	---	12.0	---
Terminal 2-4	0+00	End	---	15.5	14.0/CTB

1) Refer to Appendix B for a schematic showing Station 0+00.
2) AC = Asphalt Concrete, PCC = Portland Cement Concrete, AB = Aggregate Base, CTB = Cement Treated Base, and SB = Subbase.

5.3. Design Aircraft Mix

The Airport provided the number of traffic operations in ONT for the month of August 2018. The COMFAA program inputs include the type of aircraft and the annual departures for each type of aircraft. This program also includes a library of standard aircraft; however, it does not include all of the aircraft types provided by the client for this project. In addition, the COMFAA program limits the number of input aircraft to about 40, which requires grouping of the aircraft. For the purpose of PCN analysis and consequent pavement design, aircraft not included in the program library have been clustered into groups by similar weight, size, and wheel configuration, and a similar standard library aircraft used to characterize the grouping. Table 5 summarizes the grouped aircraft and the assumed aircraft used to represent the groupings in design.

Table 5 – ONT Annual Aircraft Departures Used in the Pavement Evaluation

Group No.	Design Aircraft	Design Weight, (lbs.)	2018 Annual Departures	2039 Annual Departures
1	Boeing 747-8	990,000	119	243
2	Boeing 747-400	877,000	294	608
3	Boeing 777-300ER	777,000	199	409
4	Boeing (Douglas) MD 11	658,000	2,833	5,836
5	Boeing 777-200	601,650	25	49
6	Boeing 767-300	458,000	2,464	5,077
7	Boeing 767	396,000	5,244	10,802
8	Boeing 757-300	273,500	2,303	4,743
9	Boeing 737 Max 8	188,200	18,692	38,494
10	Bombardier Global 7500	95,000	2,325	4,786
11	Bombardier CRJ-900	80,000	2,144	4,413
12	Bombardier Challenger 300	50,000	669	1,379
13	Dassault Falcon/Mystère 20	30,000	1,806	3,717
14	Boeing (Douglas) DC 3	25,000	3,960	8,152
Total Aircraft Annual Departures			43,077	88,708

DRAFT

In order, to determine pavement damage due to aircraft loading, the MTOW, landing gear configuration, and tire pressure of each aircraft were utilized to determine the feature's PCN and remaining life. Table 6 shows the aircraft mix gear configuration that was used to conduct the pavement evaluation for ONT Airport features.

Table 6 – Design Aircraft Mix Gear Configuration for ONT Airport

Aircraft	Maximum Takeoff Weight (lbs)	% Gross Weight on Gears	Tire Pressure (psi)	Design Annual Departures	No. of Gears
Boeing 747-8	990,000	94.40	221.0	179	4
Boeing 747-400	877,000	93.60	230.0	446	4
Boeing 777-300ER	777,000	92.44	221.0	301	6
Boeing (Douglas) MD 11	658,000	77.54	206.0	4,292	4
Boeing 777-200	601,650	91.80	205.0	37	6
Boeing 767-300	458,000	92.40	200.0	3,733	4
Boeing 767	396,000	93.94	215.0	7,945	4
Boeing 757-300	273,500	92.62	195.0	3,488	4
Boeing 737 Max 8	188,200	93.56	205.0	28,312	2
Bombardier Global 7500	95,000	95.00	188.0	3,520	2
Bombardier CRJ-900	80,000	95.00	175.0	3,246	2
Bombardier Challenger 300	50,000	95.00	145.0	1,013	2
Dassault Falcon/Mystère 20	30,000	95.00	208.0	2,735	2
Boeing (Douglas) DC 3	25,000	93.60	45.0	5,997	1

The ONT arrival and departures routes for the aircraft ground movements in the color-coded traffic distribution map provided by RS&H presented in Appendix G was utilized to develop the proposed design aircraft mix distribution for each feature at ONT, including runways, aprons, taxiways, and taxilanes. The following assumptions were used in the traffic analysis procedure:

1. The aircraft departures from 2018 fleet mix are accurate for use in the analysis.
2. According to the analysis of the existing fleet mix data, growth rate of 3.5% was considered in the future traffic analysis
3. Summary of traffic distribution for each feature is presented in Table 7.

DRAFT

Table 7 – Design Aircraft Mix Departure Distribution in Airport Structural Evaluation

ONT Proposed Aircraft Departures Distribution			
Tested Airport Feature	**% of Total**	**Tested Airport Feature**	**% of Total**
Atlantic Aviation Apron	Not Provided	Taxiway S	100
International Terminal Apron	80	Taxiway S1	100
Runway 8L-26R	100	Taxiway S2	100
Runway 8R-26L	100	Taxiway S3	100
Taxilane H	80	Taxiway S5	100
Taxilane N1	100	Taxiway T	60
Taxiway CSA	Not Provided	Taxiway U	100
Taxiway D	100	Taxiway V	100
Taxiway F	80	Taxiway W	100
Taxiway G	80	Taxiway Y	100
Taxiway K	80	Taxiway Y1	100
Taxiway L	60	Taxiway Y2	100
Taxiway N	100	Taxiway Y3	100
Taxiway P	60	Terminal 1 Apron	100
Taxiway Q	60	Terminal 2-4	100
Taxiway R	100	---	

6. Discussion of Results

6.1. General

Complete ELMOD analyses were performed using measured HWD test loads and deflections for all of the data. A summary of the relevant results is presented in this section.

Deflection testing was staggered between the lines to increase the coverage on the Runway, Taxiways, Taxiway Connectors, and Aprons. Transverse and longitudinal joint LTE testing was also performed at network-level intervals. LTE results are presented later in this report. Test loads were determined based on the proposed design aircraft mix. Figure 1 shows the airport features tested. In addition, HWD testing was conducted between 9 am and 6 pm, and the air temperature ranged from 66 to 93°F, while the surface temperature ranged from 71 to 111°F.

Table 8 shows the statistics for all normalized center deflections that were evaluated on ONT Airport. Figures 2 and 3 show the load-normalized center deflections for each of the lines evaluated on Runways 8R /26L and 8L/26R. Similar plots for the remaining features are presented in **Appendix C**. Further inspection of Runway 8L/26R shows a variation of the deflection from Station 0+00 to 21+00 which the deflections are considerably higher. This observation is in very good agreement with the ACN/PCN results and pavement structural adequacy evaluation presented in SECTIONS 6.4 and 7.3 of this

DRAFT

report. The deflections along Runway 8R/26L are fairly uniform with the average of 10.6 mils.

It is important to state that higher the load-normalized center deflections the higher the chances the pavement will be structurally inadequate and thus, it will be more prone to damage and subsequent failure.

DRAFT

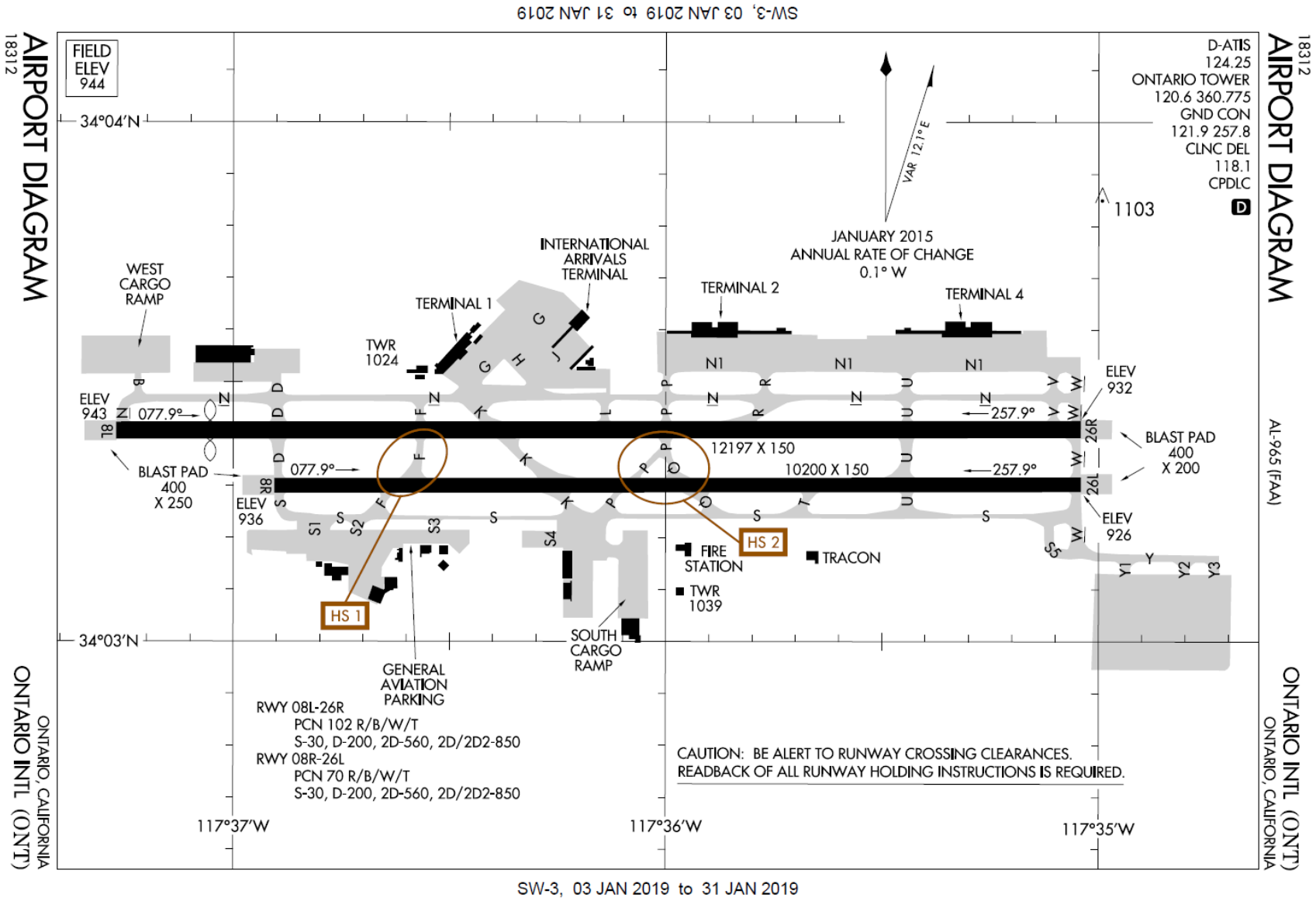


Figure 2 – ONT Airport Features Tested

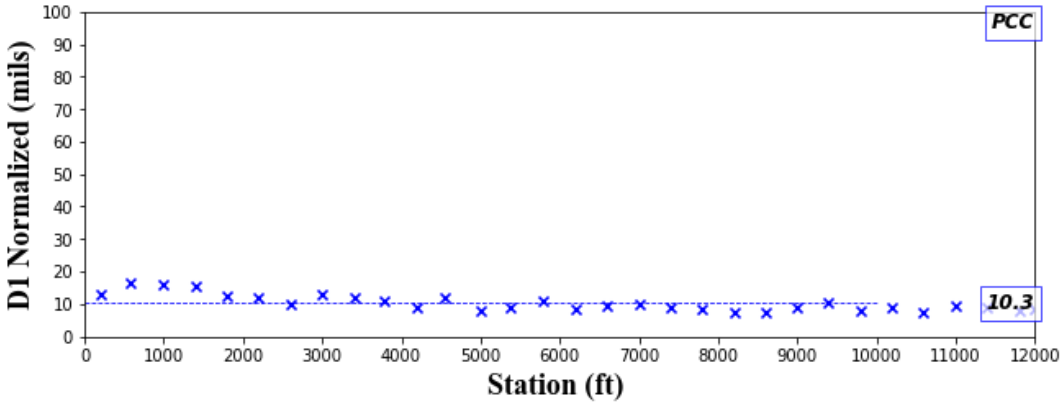


Figure 3 – Normalized Center Deflections for Runway 8L/26R

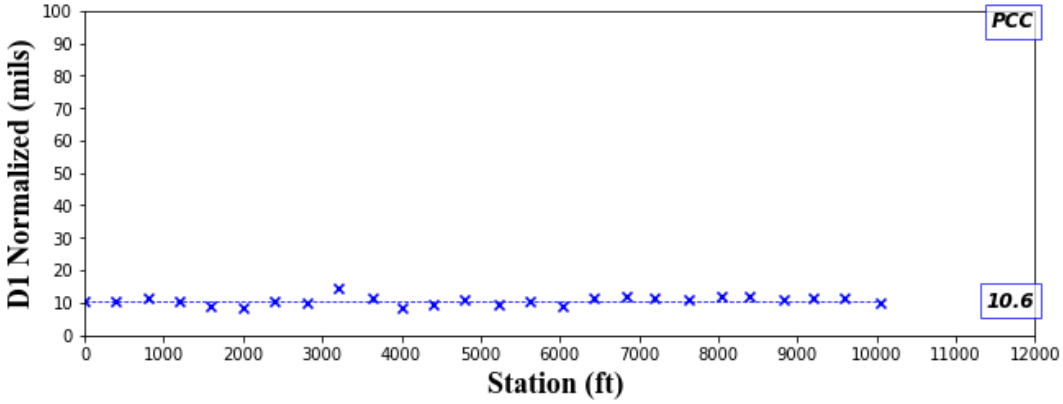


Figure 4 – Normalized Center Deflections for Runway 8R/26L

From the statistical analysis shown in Table 8, it is clear that all of the PCC sections at ONT show the average normalized center deflections less than 20 mils. However, there are some sections that show overall higher average normalized center deflections (>50mils). This is evident specifically for all asphalt pavements including Aprons and Taxilane H.

Table 8 – HWD Load Normalized Center Deflection Statistics

Feature	Station (ft.) [1)]	Normalized Center Deflections (mils) [2)]		
		Average	Standard Deviation	84th Percentile
Atlantic Aviation Apron_R1	0+00 to End	47.6	14.4	62
Atlantic Aviation Apron_R2	0+00 to End	42.4	14.4	56.8
Atlantic Aviation Apron_R3	0+00 to End	51.9	11.6	63.5
International Terminal Apron_R1	0+00 to End	57.3	7.8	65.1

Feature	Station (ft.) [1]	Normalized Center Deflections (mils) [2]		
		Average	Standard Deviation	84th Percentile
International Terminal Apron_R2	0+00 to End	47.6	4.3	51.9
International Terminal Apron_R3	0+00 to End	46.0	10.5	56.5
Runway 8L/26R_10L	0+00 to 21+00	14.3	1.9	16.2
	21+00 to End	10.3	2.5	12.8
Runway 8L/26R_10R	0+00 to 21+00	13.5	3.3	16.8
	21+00 to End	9.4	2.6	12
Runway 8R/26L_10L	21+00 to End	10.6	1.3	11.9
Runway 8R/26L_10R	0+00 to End	11.6	1.6	13.2
Terminal 1 Apron_R1	0+00 to End	24.6	5.6	30.2
Terminal 1 Apron_R2	0+00 to End	21.2	2.1	23.3
Terminal 1 Apron_R3	0+00 to End	25.6	7.8	33.4
Terminal 1 Apron_R4	0+00 to End	22.0	3.8	25.8
Terminal 2_4_R1	0+00 to End	12.5	3.1	15.6
Terminal 2_4_R2	0+00 to End	13.3	3.2	16.5
Terminal 2_4_R3	0+00 to End	11.9	1.6	13.5
Terminal 2_4_R4	0+00 to End	11.5	1.3	12.8
Taxiway CSA_10L	0+00 to End	39.2	5.9	45.1
Taxiway CSA_10R	0+00 to End	41.1	4.5	45.6
Taxiway D_10L	0+00 to End	11.4	2.2	13.6
Taxiway D_10R	0+00 to End	13.0	3.3	16.3
Taxiway F_10L	0+00 to End	14.8	3.6	18.4
Taxiway F_10R	0+00 to End	13.3	3.5	16.8
Taxiway G_10L	0+00 to End	78.9	14.7	93.6
Taxiway G_10R	0+00 to End	81.9	16	97.9
Taxiway K_10L	0+00 to End	14.2	3.8	18
Taxiway K_10R	0+00 to End	13.1	3.1	16.2
Taxiway L_10L	0+00 to End	13.2	2	15.2
Taxiway L_10R	0+00 to End	11.0	1.9	12.9
Taxiway N_10L	0+00 to End	15.2	4.1	19.3
Taxiway N_10R	0+00 to End	14.0	2.7	16.7
Taxiway P_10L	0+00 to End	12.4	2.5	14.9
Taxiway P_10R	0+00 to End	12.7	2.9	15.6
Taxiway Q_10L	0+00 to End	12.3	0.9	13.2
Taxiway Q_10R	0+00 to End	12.7	2.2	14.9
Taxiway R_10L	0+00 to End	9.9	2.5	12.4
Taxiway R_10R	0+00 to End	13.7	5.5	19.2
Taxiway S_10L	0+00 to End	14.2	1.9	16.1
Taxiway S_10R	0+00 to End	14.0	3.1	17.1

DRAFT

Feature	Station (ft.) [1]	Normalized Center Deflections (mils) [2]		
		Average	Standard Deviation	84th Percentile
Taxiway S1_10L	0+00 to End	91.6	7	98.6
Taxiway S1_10R	0+00 to End	92.1	4.4	96.5
Taxiway S2_10L	0+00 to End	19.1	2.6	21.7
Taxiway S2_10R	0+00 to End	18.8	1.6	20.4
Taxiway S3_10L	0+00 to End	110.8	3.8	114.6
Taxiway S3_10R	0+00 to End	113.1	4.2	117.3
Taxiway S5_10L	0+00 to End	45.1	4.3	49.4
Taxiway S5_10R	0+00 to End	45.2	4.3	49.5
Taxiway T_10L	0+00 to End	13.7	2.1	15.8
Taxiway T_10R	0+00 to End	13.6	3.1	16.7
Taxiway U_10L	0+00 to End	12.9	6.1	19
Taxiway U_10R	0+00 to End	13.9	2.7	16.6
Taxiway V_10L	0+00 to End	18.0	4.1	22.1
Taxiway V_10R	0+00 to End	13.8	6.2	20
Taxiway W_10L	0+00 to End	13.5	4.1	17.6
Taxiway W_10R	0+00 to End	12.2	1.5	13.7
Taxiway Y_10L	0+00 to End	11.6	0.7	12.3
Taxiway Y_10R	0+00 to End	12.0	0.6	12.6
Taxiway Y1_10L	0+00 to End	12.6	1.7	14.3
Taxiway Y1_10R	0+00 to End	11.8	1.7	13.5
Taxiway Y2_10L	0+00 to End	12.4	0.8	13.2
Taxiway Y2_10R	0+00 to End	13.9	1.5	15.4
Taxiway Y3_10L	0+00 to End	12.3	1.7	14
Taxiway Y3_10R	0+00 to End	13.1	0.7	13.8
Taxilane H_10L	0+00 to End	50.7	8.2	58.9
Taxilane H_10R	0+00 to End	46.3	8.9	55.2
Taxilane N1_10L	0+00 to End	14.2	2.8	17
Taxilane N1_10R	0+00 to End	10.7	1.4	12.1

1) Refer to Appendix B for a schematic showing Station 0+00.
2) Center deflections were normalized at 60,000-lb. for PCC and 20,000-lb for asphalt pavements.

6.2. Layer Moduli

All layer moduli were backcalculated for each deflection basin using ELMOD, and are summarized in

Table 9. The backcalculated layer moduli for Runways 8R/26L and 7L/25R are shown graphically in Figure 5 and 6. The backcalculated layer moduli for all the features are presented in **Appendix D**. The modulus of subgrade reaction, $k_{Backcalc}$, and the

subgrade/support layer moduli were obtained through the backcalculation process and the resulting 84th percentile k values for each PCC pavement section and the subgrade/support layer modulus for each asphalt pavement section were used to determine the pavement structural adequacy. In addition, the improved, k_{Imp}, and the correlated California Bearing Ration (CBR) were used to determine the subgrade ACN and PCN codes. It is important to mention that the k_{Imp} was obtained in accordance with the FAA Circular AC 150/5335-5C: "Standardized Method of Reporting Airport Pavement Strength – PCN", on which the modulus of subgrade reaction is computed as the k-value directly beneath the concrete layer.

From the results, the Taxiway CSA, G, P, S1, S2, S3, and S5, Taxilane H, and International Terminal Apron show low 84th percentile subgrade layer moduli (<20 ksi), indicating potential support bearing capacity problems in those sections. This results are in very good agreement with the load-normalized center deflections and the ACN/PCN and pavement structural adequacy results shown in SECTIONS 6.4 and 7.3.

Table 9 – Backcalculated Layer Moduli

Feature	Station 1) (ft.)	Type 2)	Average Subgrade Modulus, psi 3)			CBR	$k_{FAA\ Eq}$ 4)
			Average	St dev factor	84th %		
Runway 8L/26R_10L	0+00 to 21+75	Layer 1: PCC	4,128	1.2	3,352	---	232
		Layer 2: CTB	246	1.2	198		
		Layer 3: Subgrade	28	1.3	22		
Runway 8L/26R_10L	21+75 to End	Layer 1: PCC	4,542	1.4	3,199	---	296
		Layer 2: CTB	242	1.3	193		
		Layer 3: Subgrade	36	1.2	30		
Runway 8L/26R_10R	0+00 to 17+00	Layer 1: PCC	4,014	1.3	3,152	---	232
		Layer 2: CTB	259	1.3	207		
		Layer 3: Subgrade	32	1.5	22		
Runway 8L/26R_10R	17+00 to End	Layer 1: PCC	6,402	1.2	5,267	---	384
		Layer 2: CTB	237	1.2	191		
		Layer 3: Subgrade	47	1.1	42		
Runway 8R /26L_10L	0+00 to End	Layer 1: PCC	6,014	1.3	4,516	---	311
		Layer 2: CTB	74	3.4	22		
		Layer 3: Subgrade	40	1.2	32		
Runway 8R /26L_10R	0+00 to End	Layer 1: PCC	5,699	1.3	4,362	---	296
		Layer 2: CTB	67	1.2	57		
		Layer 3: Subgrade	37	1.2	30		
Taxilane N1_10L	0+00 to End	Layer 1: PCC	2,963	1.3	2,279	---	207
		Layer 2: CTB	181	1.2	151		
		Layer 3: Subgrade	27	1.4	19		

Feature	Station [1] (ft.)	Type [2]	Average Subgrade Modulus, psi [3]			CBR	$k_{FAA\ Eq}$ [4]
			Average	St dev factor	84th %		
Taxilane N1_10R	0+00 to End	Layer 1: PCC	3,713	1.4	2,652	---	311
		Layer 2: CTB	241	1.2	201		
		Layer 3: Subgrade	38	1.2	32		
Taxiway CSA_10L	0+00 to End	Layer 1: PCC	6,724	1.3	5,172	---	90
		Layer 2: Subgrade	8.5	1.4	6.1		
Taxiway CSA_10R	0+00 to End	Layer 1: PCC	6,139	1.4	4,385	---	75
		Layer 2: Subgrade	6.7	1.35	5.0		
Taxiway D_10L	0+00 to End	Layer 1: PCC	3,847	1.3	2,977	---	335
		Layer 2: CTB	218	1.2	180		
		Layer 3: Subgrade	42	1.2	35		
Taxiway D_10R	0+00 to End	Layer 1: PCC	3,057	1.5	2,054	---	265
		Layer 2: CTB	219	1.2	185		
		Layer 3: Subgrade	35	1.4	26		
Taxiway F_10L	0+00 to End	Layer 1: PCC	3,178	1.1	2,792	---	325
		Layer 2: CTB	208	1	199		
		Layer 3: Subgrade	38	1.1	34		
Taxiway F_10R	0+00 to End	Layer 1: PCC	3,448	1.4	2,402	---	265
		Layer 2: CTB	247	1.2	205		
		Layer 3: Subgrade	36	1.4	26		
Taxiway G	0+00 to End	Layer 1: AC	304	1.9	160	6.5	---
		Layer 2: AB	278	1.9	146		
		Layer 3: Subgrade	13	1.3	10		
Taxiway K_10L	0+00 to End	Layer 1: AC	2,304	1.1	2,033	---	180
		Layer 2: CTB	211	1.3	165		
		Layer 3: Subgrade	19	1.2	16		
Taxiway K_10R	0+00 to End	Layer 1: AC	3,900	1.3	2,921	---	319
		Layer 2: CTB	186	1.1	172		
		Layer 3: Subgrade	39	1.2	33		
Taxiway L_10L	0+00 to End	Layer 1: PCC	3,057	1.3	2,370	---	250
		Layer 2: CTB	217	1.1	190		
		Layer 3: Subgrade	29	1.2	24		
Taxiway L_10R	0+00 to End	Layer 1: PCC	4,806	1.4	3,487	---	288
		Layer 2: CTB	240	1.2	207		
		Layer 3: Subgrade	36	1.2	29		
Taxiway N_10L	0+00 to End	Layer 1: PCC	3,581	1.6	2,308	---	296
		Layer 2: CTB	183	1.2	152		
		Layer 3: Subgrade	34	1.1	30		

DRAFT

Feature	Station [1] (ft.)	Type [2]	Average Subgrade Modulus, psi [3]			CBR	$k_{FAA\ Eq}$ [4]
			Average	St dev factor	84th %		
Taxiway N_10R	0+00 to End	Layer 1: PCC	2,658	1.5	1,825	---	250
		Layer 2: CTB	210	1.2	174		
		Layer 3: Subgrade	29	1.2	24		
Taxiway P_10L	0+00 to End	Layer 1: PCC	2,540	1.7	1,505	---	240
		Layer 2: CTB	322	1.8	182		
		Layer 3: Subgrade	35	1.5	24		
Taxiway P_10R	0+00 to End	Layer 1: PCC	3,557	1.4	2,600	---	207
		Layer 2: CTB	217	1.4	151		
		Layer 3: Subgrade	31	1.7	19		
Taxiway Q_10L	0+00 to 4+00	Layer 1: PCC	5,028	1.1	4,670	---	265
		Layer 2: AB	59	1.3	47		
		Layer 3: Subgrade	30	1.1	28		
Taxiway Q_10L	4+00 to End	Layer 1: PCC	4,041	1.2	3,409	---	300
		Layer 2: AB	244	1.1	229		
		Layer 3: Subgrade	33	1.1	31		
Taxiway Q_10R	0+00 to 4+00	Layer 1: PCC	4,258	1.3	3,344	---	265
		Layer 2: AB	57	1.2	48		
		Layer 3: Subgrade	28	1.1	26		
Taxiway Q_10R	4+00 to End	Layer 1: PCC	3,883	1.3	2,900	---	319
		Layer 2: AB	245	1.2	209		
		Layer 3: Subgrade	35	1.1	33		
Taxiway R_10L	0+00 to End	Layer 1: PCC	4,907	1.2	4,221	---	447
		Layer 2: CTB	256	1.1	236		
		Layer 3: Subgrade	58	1.1	51		
Taxiway R_10R	0+00 to End	Layer 1: PCC	4,023	1.3	3,086	---	250
		Layer 2: CTB	231	1.1	203		
		Layer 3: Subgrade	29	1.2	24		
Taxiway S_10L	0+00 to End	Layer 1: PCC	4,283	1.4	3,077	---	256
		Layer 2: AB	61	1.2	51		
		Layer 3: Subgrade	29	1.2	25		
Taxiway S_10R	0+00 to End	Layer 1: PCC	5,646	1.1	5,251	---	280
		Layer 2: AB	64	1.2	54		
		Layer 3: Subgrade	32	1.1	28		
Taxiway S1_10L	0+00 to End	Layer 1: AC	625	1.6	402	12.5	---
		Layer 2: AB	55	1.1	50		
		Layer 3: Subgrade	23	1.2	19		

DRAFT

Feature	Station [1] (ft.)	Type [2]	Average Subgrade Modulus, psi [3]			CBR	$k_{FAA\ Eq}$ [4]
			Average	St dev factor	84th %		
Taxiway S1_10R	0+00 to End	Layer 1: AC	1,116	1.6	699	12.5	---
		Layer 2: AB	56	1.1	49		
		Layer 3: Subgrade	21	1.1	19		
Taxiway S2_10L	0+00 to End	Layer 1: PCC	2,760	1.5	1,860	---	207
		Layer 2: AB	66	1.3	50		
		Layer 3: Subgrade	24	1.3	19		
Taxiway S2_10R	0+00 to End	Layer 1: PCC	3,075	1.3	2,285		207
		Layer 2: AB	65	1.2	54		
		Layer 3: Subgrade	22	1.2	19		
Taxiway S3_10L	0+00 to End	Layer 1: AC	934	1.7	566	10.5	---
		Layer 2: AB	43	1.3	35		
		Layer 3: Subgrade	20	1.3	16		
Taxiway S3_10R	0+00 to End	Layer 1: AC	1,065	1.3	850	10.5	---
		Layer 2: AB	44	1.1	38		
		Layer 3: Subgrade	18	1	17		
Taxiway S5_10L	0+00 to End	Layer 1: AC	749	1.4	535	10	---
		Layer 2: AB	161	1.2	134		
		Layer 3: Subgrade	18	1.2	15		
Taxiway S5_10R	0+00 to End	Layer 1: AC	690	1.4	492	10.5	---
		Layer 2: AB	162	1.1	147		
		Layer 3: Subgrade	19	1.2	16		
Taxiway T_10L	0+00 to End	Layer 1: PCC	4294	1.1	4060	---	265
		Layer 2: AB	66	1.2	56		
		Layer 3: Subgrade	34	1.3	26		
Taxiway T_10R	0+00 to End	Layer 1: PCC	4,488	1.6	2,888	---	240
		Layer 2: AB	59	1.2	51		
		Layer 3: Subgrade	30	1.3	23		
Taxiway U_10L	0+00 to End	Layer 1: PCC	3,438	1.2	2,896	---	240
		Layer 2: CTB	228	1.2	190		
		Layer 3: Subgrade	27	1.2	23		
Taxiway U_10R	0+00 to End	Layer 1: PCC	2,558	1.1	2,256	---	216
		Layer 2: CTB	175	1.9	92		
		Layer 3: Subgrade	30	1.5	20		
Taxiway V_10L	0+00 to End	Layer 1: PCC	2,642	1.3	2,098	---	216
		Layer 2: CTB	170	1.5	115		
		Layer 3: Subgrade	22	1.1	20		

DRAFT

Feature	Station [1] (ft.)	Type [2]	Average Subgrade Modulus, psi [3]			CBR	$k_{FAA\ Eq}$ [4]
			Average	St dev factor	84th %		
Taxiway V_10R	0+00 to End	Layer 1: PCC	3,322	1.8	1,797		240
		Layer 2: CTB	220	1.2	189		
		Layer 3: Subgrade	33	1.4	23		
Taxiway W_10L	0+00 to End	Layer 1: PCC	4,628	1.2	3,930	---	310
		Layer 2: CTB	247	1.2	206		
		Layer 3: Subgrade	37	1.2	32		
Taxiway W_10R	0+00 to End	Layer 1: PCC	3,777	1.1	3,370	---	280
		Layer 2: CTB	273	1.3	205		
		Layer 3: Subgrade	35	1.2	28		
Taxiway Y_10L	0+00 to End	Layer 1: PCC	3,131	1.2	2,536	---	310
		Layer 2: AB	256	1.3	199		
		Layer 3: Subgrade	36	1.1	32		
Taxiway Y_10L	0+00 to End	Layer 1: PCC	3,339	1.1	3,001	---	280
		Layer 2: AB	254	1.3	200		
		Layer 3: Subgrade	31	1.1	28		
Taxiway Y1_10L	0+00 to End	Layer 1: PCC	3,149	1.2	2,609	---	270
		Layer 2: CTB	220	1.1	194		
		Layer 3: Subgrade	34	1.3	27		
Taxiway Y1_10R	0+00 to End	Layer 1: PCC	3,673	1.3	2,926	---	265
		Layer 2: CTB	269	1.3	213		
		Layer 3: Subgrade	33	1.3	26		
Taxiway Y2_10L	0+00 to End	Layer 1: PCC	3,422	1.1	2,982	---	290
		Layer 2: CTB	279	1.3	218		
		Layer 3: Subgrade	31	1.1	29		
Taxiway Y2_10R	0+00 to End	Layer 1: PCC	2,891	1.1	2,540	---	240
		Layer 2: CTB	254	1.2	206		
		Layer 3: Subgrade	27	1.1	23		
Taxiway Y3_10L	0+00 to End	Layer 1: PCC	3,362	1.2	2,872	---	250
		Layer 2: CTB	263	1.3	195		
		Layer 3: Subgrade	30	1.2	24		
Taxiway Y3_10R	0+00 to End	Layer 1: PCC	3,175	1.1	2,776	---	265
		Layer 2: CTB	219	1.1	199		
		Layer 3: Subgrade	30	1.1	26		
Taxilane H_10L	0+00 to End	Layer 1: AC	578	1.5	385	3.5	---
		Layer 2: AB	43	1.1	40		
		Layer 3: Subgrade	7	1.3	5		

DRAFT

Feature	Station [1] (ft.)	Type [2]	Average Subgrade Modulus, psi [3]			CBR	$k_{FAA\ Eq}$ [4]
			Average	St dev factor	84th %		
Taxilane H_10R	0+00 to End	Layer 1: AC	470	1.3	361	4.0	---
		Layer 2: AB	41	1.1	37		
		Layer 3: Subgrade	8	1.4	6.0		
Terminal 2-4_R1	0+00 to End	Layer 1: PCC	3,277	1.4	2,340	---	280
		Layer 2: CTB	211	1.5	141.2		
		Layer 3: Subgrade	33	1.2	28		
Terminal 2-4_R2	0+00 to End	Layer 1: PCC	3,247	1.3	2,498	---	240
		Layer 2: CTB	187	1.2	156		
		Layer 3: Subgrade	30	1.3	23		
Terminal 2-4_R3	0+00 to End	Layer 1: PCC	4,614	1.3	3,566	---	362
		Layer 2: CTB	254	1.2	221		
		Layer 3: Subgrade	46	1.2	39		
Terminal 2-4_R4	0+00 to End	Layer 1: PCC	5,197	1.2	4,198	---	362
		Layer 2: CTB	254	1.2	214		
		Layer 3: Subgrade	45	1.2	39		
International Terminal Apron_R1	0+00 to End	Layer 1: AC	494	1.7	290	3.5	---
		Layer 2: AB	43	1.2	35		
		Layer 3: Subgrade	6	1.3	5		
International Terminal Apron_R2	0+00 to End	Layer 1: AC	651	1.4	465	4.5	---
		Layer 2: AB	41	1.1	37		
		Layer 3: Subgrade	8.5	1.3	6.5		
International Terminal Apron_R3	0+00 to End	Layer 1: AC	542	2	285	4.0	---
		Layer 2: AB	42	1	38		
		Layer 3: Subgrade	8	1	6		

1) Refer to Appendix B for a schematic showing Station 0+00.
2) AC = Asphalt Concrete, PCC= Portland Cement Concrete, AB = Aggregate Base, CTB = Cement Treated Base, and Subgrade = Support
3) Based on a log-normal distribution.
4) The equation in AC 150/5320-6F section 2.4.5 was used to convert the subgrade modulus to k-value.

DRAFT

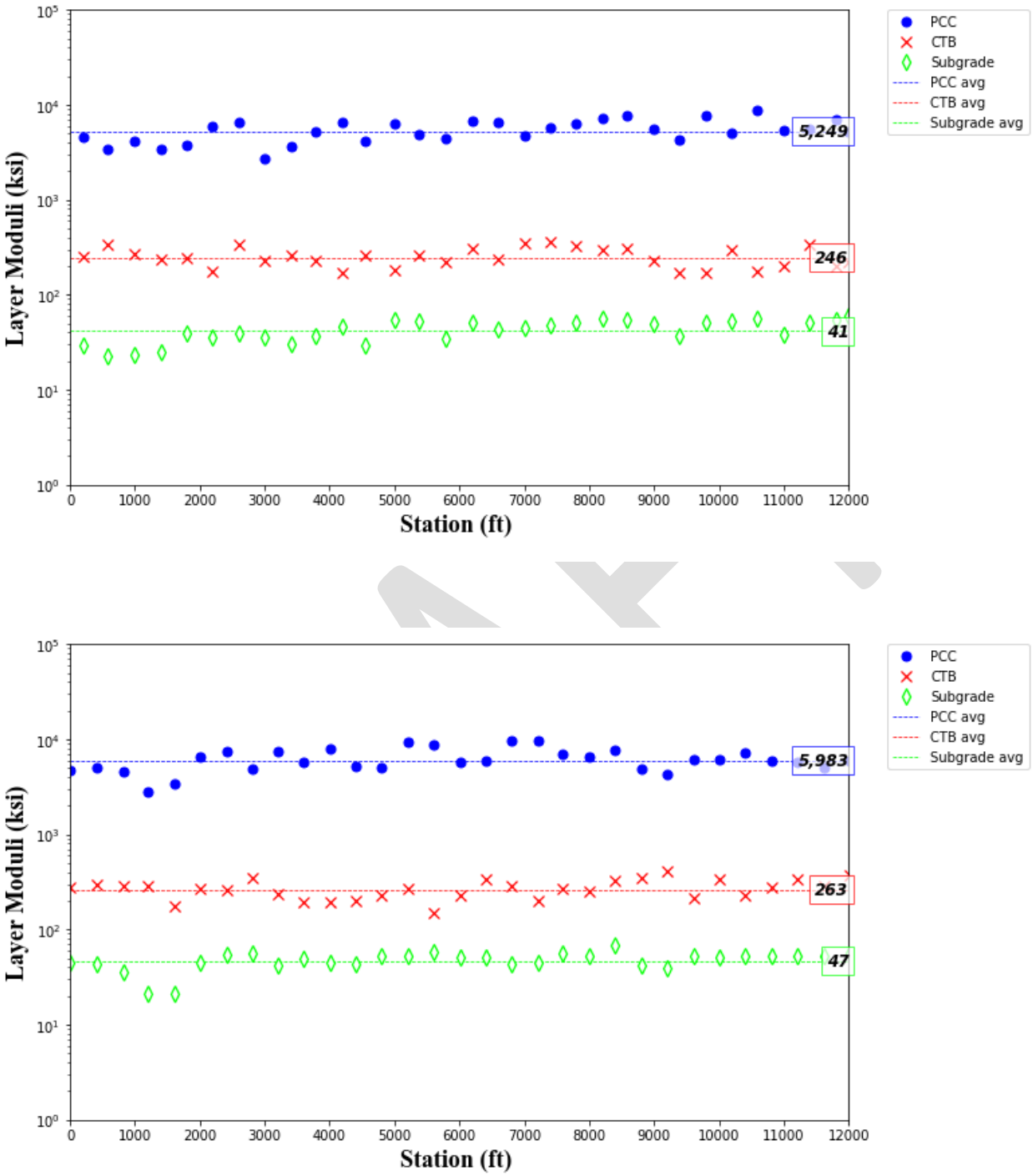


Figure 5 – Runway 8L/26R Layer Moduli (A) 10L, and (B) 10R

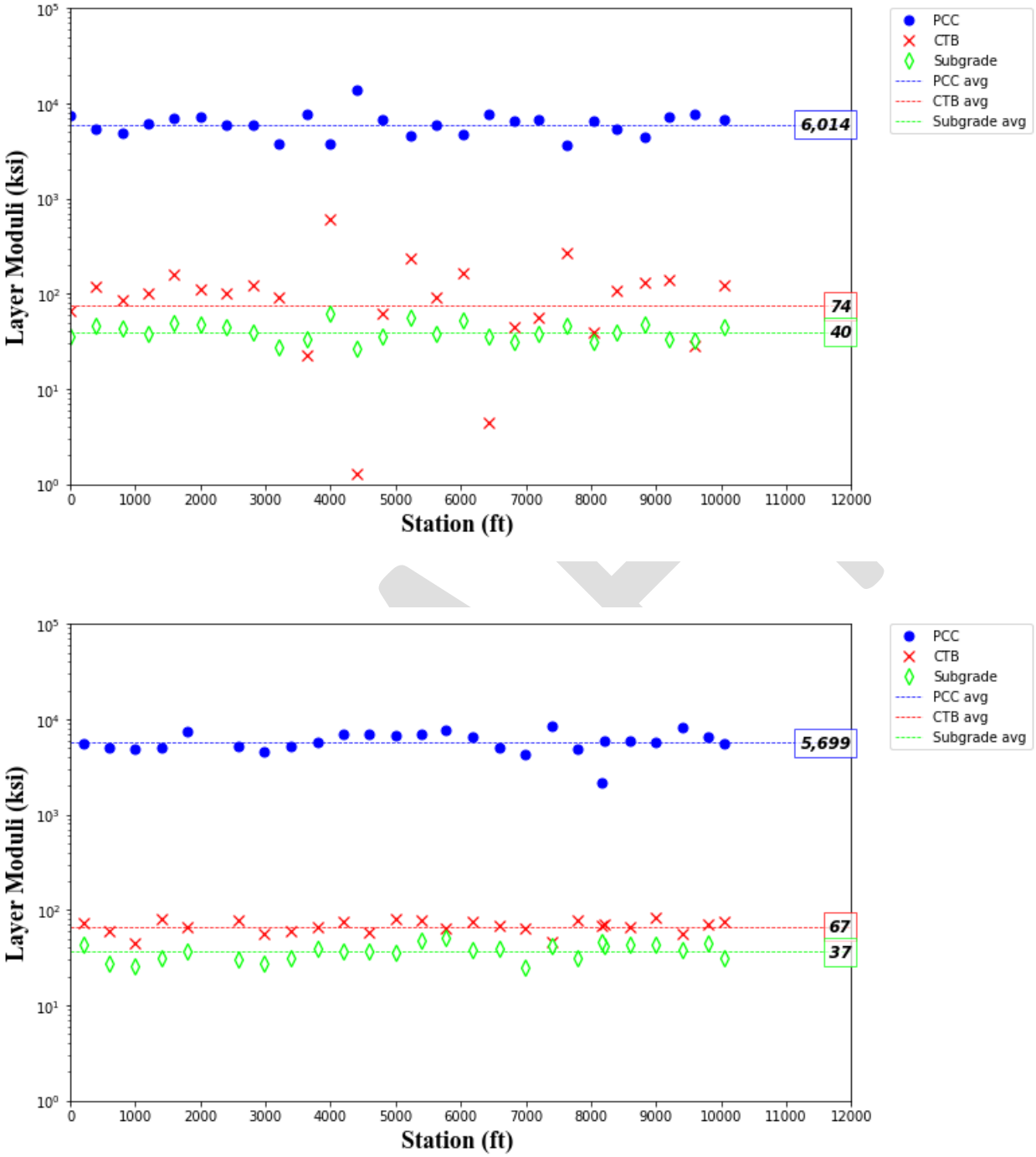


Figure 6 – Runway 8R/26L Layer Moduli (A) 10L, and (B) 10R

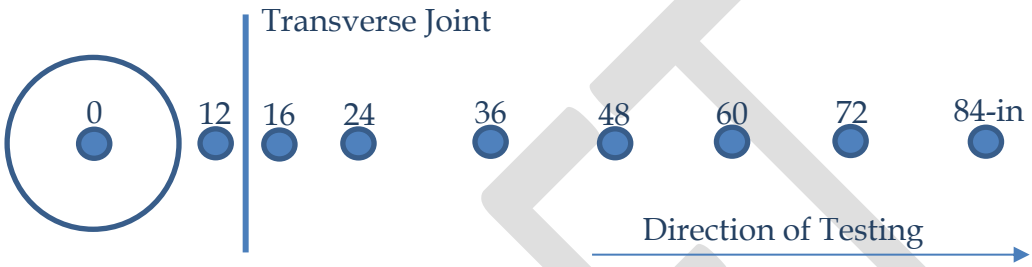
6.3. Transverse Load Transfer Efficiency Evaluation

The load transfer efficiency is reported for each tested PCC joint. The LTE was calculated using the Westergaard equation which makes use of the deflections from two geophones

positioned at each side of the joint, and a bending factor from the mid-slab test using the deflections from the same geophones.

$$\% \text{ LTE} = \frac{2 \times D_{J2}}{D_{J1} + D_{J2}} \times \frac{D_{M1}}{D_{M2}} \times 100$$

D refers to deflection, J and M to joint and mid-slab, and 1 and 2 to first and second geophone chosen for the joint calculation. The geophones at 12-in and 16-in were used in this case for the transverse joints load transfer efficiency evaluation.



FAA AC 150/5370-11B considers joints with LTE of 70% or greater as acceptable, 50 to 70% as fair, and less than 50% as poor. Low LTE may lead to excessive stress concentrations in the concrete, voids underneath the slab, and ultimately corner breaks. The joints with poor LTE should be inspected and monitored in the field. It should be noted that joint evaluation analysis results are highly dependent on the time of day at which NDT was performed due to temperature and moisture differentials between the top and the bottom of the slab which cause curling and warping of the slab.

Table 10 show the LTE results for the evaluated test lines for each evaluated rigid pavement airport feature. Overall, the tested slabs on ONT had good to fair load transfer efficiency, however, some slabs did show low transverse LTE values. The airport features showing the low transverse LTE (<70) values are: Taxiways CSA, and W, and Taxilane N1. Poor LTE leads to corner breaks and a significant reduction in pavement structural capacity.

Table 10 – Joint Load Transfer Efficiency— Transverse Direction

Feature	Test Line	Station (ft) [1)]	Transverse Joint Load Transfer Efficiency		
			Average	Standard Deviation	84th Percentile
Runway 8L/26R	10-ft Left 10-ft Right	0+00 to End	91.0%	12.5%	78.5%
Runway 8R/26L	10-ft Left 10-ft Right	0+00 to End	93.1%	13.6%	79.5%
Terminal 1 Apron	4 Parallel Test Lines	0+00 to End	97.5%	6.4%	91.1%

Feature	Test Line	Station (ft) [1]	Transverse Joint Load Transfer Efficiency		
			Average	Standard Deviation	84th Percentile
Terminal 2_4	4 Parallel Test Lines	0+00 to End	99.4%	2.3%	97.1%
Taxiway CSA	10-ft Left 10-ft Right	0+00 to End	65.6%	18.1%	47.5%
Taxiway D	10-ft Left 10-ft Right	0+00 to End	96.3%	6.9%	89.4%
Taxiway F	10-ft Left 10-ft Right	0+00 to End	94.8%	5.4%	89.4%
Taxiway K	10-ft Left 10-ft Right	0+00 to End	95.8%	7.9%	87.9%
Taxiway L	10-ft Left 10-ft Right	0+00 to End	92.6%	6.2%	86.4%
Taxiway N	10-ft Left 10-ft Right	0+00 to End	95.5%	11.1%	84.4%
Taxiway P	10-ft Left 10-ft Right	0+00 to End	90.3%	16.0%	74.3%
Taxiway Q	10-ft Left 10-ft Right	0+00 to End	92.3%	11.1%	81.2%
Taxiway R	10-ft Left 10-ft Right	0+00 to End	100.0%	0.0%	100.0%
Taxiway S	10-ft Left 10-ft Right	0+00 to End	99.2%	2.9%	96.3%
Taxiway S2	10-ft Left 10-ft Right	0+00 to End	93.8%	4.2%	89.6%
Taxiway T	10-ft Left 10-ft Right	0+00 to End	94.3%	4.0%	90.3%
Taxiway U	10-ft Left 10-ft Right	0+00 to End	93.5%	11.8%	81.7%
Taxiway V	10-ft Left 10-ft Right	0+00 to End	97.4%	2.5%	94.9%
Taxiway W	10-ft Left 10-ft Right	0+00 to End	79.0%	22.4%	56.6%
Taxiway Y	10-ft Left 10-ft Right	0+00 to End	96.9%	3.8%	93.1%
Taxiway Y1	10-ft Left 10-ft Right	1+10 to End	99.7%	0.5%	99.2%
Taxiway Y2	10-ft Left 10-ft Right	0+00 to End	98.5%	3.4%	95.1%
Taxiway Y3	10-ft Left 10-ft Right	0+00 to End	97.8%	4.4%	93.4%
Taxilane N1	10-ft Left 10-ft Right	0+00 to End	80.5%	20.9%	59.6%

1) Refer to Appendix B for a schematic showing Station 0+00.

DRAFT

6.4. Structural Evaluation

The features were evaluated using the ELMOD computer program. The analysis is based on structural responses and are controlled by the M-E pavement evaluation parameters presented in Section 6.2, as well as the traffic data presented in Section 5.3, and pavement layer thickness information presented in Section 5.2. For rigid pavement design, ELMOD uses the maximum horizontal stress at the bottom edge of the PCC slab as the predictor of pavement structural life. The maximum horizontal stress for design is determined using an edge loading condition. ELMOD provides the required thickness of the rigid pavement slab needed to support a given airplane traffic mix.

A structural overlay is needed when the theoretical remaining life of the pavement is less than the 20-year design period. Structural AC overlay requirements for all of the evaluated features in ONT are shown in Table 11 for the design aircraft traffic. The plots of required overlay thickness are presented in Appendix E. It is important to state that an AC overlay is not necessarily the best rehabilitation alternative, however in this case this approach has been selected to demonstrate that when an AC overlay is required to withstand the combined action of traffic and environment for the 20-year analysis period, then an indication of structural inadequacy is present.

Table 11 –Structural Overlay & Maintenance for the Proposed Aircraft Mix

Feature	Test Line	Station (ft.) [1]	Structurally Adequate Yes/No	Structural Overlay	Remove and Repair Location[5]
Atlantic Aviation Apron [4]	3 Parallel Test Lines	0+00 to End	-	-	-
International Terminal Apron	3 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Runway 8L-26R	2 Parallel Test Lines	0+00 to 35+00	No	Reconstruction[3]	-
		35+00 to End	Yes	Preventive Maintenance	-
Runway 8R-26L	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	Sta 45+00 Sta 65+00
Taxilane H	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxilane N1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway CSA[4]	-	-	-	-	-
Taxiway D	2 Parallel Test Lines	0+00 to 9+00	No	Reconstruction[3]	-
		9+00 to End	Yes	6.0" HMA Overlay[2]	-
Taxiway F	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	Sta 9+50 Sta 11+50
Taxiway G	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway K	2 Parallel Test Lines	0+00 to 5+50	Yes	Preventive Maintenance	-
		5+50 to End	No	Reconstruction[3]	-

Feature	Test Line	Station (ft.) [1]	Structurally Adequate Yes/No	Structural Overlay	Remove and Repair Location[5]
Taxiway L	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway N	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway P	2 Parallel Test Lines	0+00 to 6+00	No	2.0" HMA Overlay[2]	-
		6+00 to End	No	Reconstruction[3]	-
Taxiway Q	2 Parallel Test Lines	0+00 to 6+00 8+00 to End	Yes	Preventive Maintenance	-
		6+00 to 8+00	No	Reconstruction[3]	-
Taxiway R	2 Parallel Test Lines	0+00 to 5+00	Yes	Preventive Maintenance	-
		5+00 to End	No	Reconstruction[3]	-
Taxiway S	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway S1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway S2	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway S3	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway S5	2 Parallel Test Lines	0+00 to End	No	5.5" HMA Overlay[2]	-
Taxiway T	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway U	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	
Taxiway V	10L	0+00 to End	No	Reconstruction[3]	
Taxiway V	10R	1+00 to End	Yes	Preventive Maintenance	-
		0+00 to 1+00	No	Reconstruction[3]	-
Taxiway W	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y2	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y3	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Terminal 1 Apron	4 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Terminal 2-4	4 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-

1) Refer to Appendix B for a schematic showing Station 0+00
2) Indicates thick HMA structural overlay required. A Project level evaluation is recommended to evaluate different major rehabilitation and/or reconstruction alternatives.
3) When the calculated overlay is greater than 15 inches, reconstruction is indicated.
4) No traffic is provided.
5) Remove and Repair or dig out stations are determined based on discrete HWD testing. Actual extend and locations must be determined visually prior to conduct any preventive maintenance activities.

Preventive maintenance consists of applying a surface treatment that reduces the surface deterioration rate, extends pavement life, and/or prevent pavement distress propagation. In the case of rigid pavements, a void undersealing campaign is recommended to ensure adequate slab support, to prevent corner breaks and to improve LTE. A project-level study with the HWD is recommended to determine the most-cost

DRAFT

effective pavement rehabilitation/reconstruction alternatives, to identify all slabs needing undersealing, and to verify the effectiveness of any treatment to improve the overall pavement structural capacity and remaining life.

7. Aircraft Classification Number-Pavement Classification Number (ACN-PCN)

7.1. Background

In 2014, the FAA instituted a requirement that Part 139-certified airports be assigned PCN data. The PCN is required because the United States is a member state of the International Civil Aviation Organization (ICAO), the international regulatory body for air traffic. ICAO adopted the Aircraft Classification Number (ACN)—Pavement Classification Number (ACN-PCN) method to allow any airport a standardized method for reporting the effect of aircraft that use the facility, as well as the load carrying capacity of the pavement (ICAO, 1999).

By definition, the ACN is a number that expresses the relative effect of an aircraft at a given configuration on a pavement structure for a specified standard subgrade strength. Conversely, the PCN is defined as a number that expresses the load carrying capacity of a pavement for unrestricted operations. Hence, the ACN-PCN system is structured so that a pavement with a particular PCN value can support unlimited repetitions of an aircraft that has an ACN equal to or less than the pavement's PCN value.
In the ACN/PCN method, the PCN, pavement type, subgrade strength category, tire pressure category, and evaluation method are all reported together. A code system has been implemented to allow an abbreviated presentation of the necessary information.

The pavement type is abbreviated "R" for rigid (Portland cement concrete [PCC]) and "F" for flexible (asphalt concrete [AC]) pavements. Four subgrade categories, A, B, C, and D, indicate high, medium, low, and ultralow subgrade strengths, respectively. The four tire pressure categories, W, X, Y, and Z, indicate high, medium, low, and very low tire pressures, respectively. The evaluation methods are T for a technical evaluation and U for an evaluation based on the type and weight of the aircraft that commonly use the airfield. For example, the PCN code 90/F/C/W/T indicates that the PCN number is 90, that the pavement is flexible, that there is a low-strength subgrade, that high-pressure tires are allowed, and that a technical evaluation was performed to determine the PCN rating.

According to this worldwide standard, aircraft can safely operate on a pavement if its ACN is less than or equal to the pavement load bearing capacity or PCN. An aircraft having an ACN equal to or less than the PCN can operate without weight restrictions on a pavement.

DRAFT

It should be noted that the ICAO documentation makes it clear that the ACN/PCN method is not a design/evaluation method and that the PCN is simply the ACN of the most damaging aircraft that can use the pavement on a regular basis (regular being defined by the operator). In addition, an ACN over PCN ratio greater than 1.1 is typically considered to be problematic.

ACN/PCN Ratio	Recommendation
< 1.0	Unlimited Passes
1.0-1.1	Continue with Operations but watch for distresses
1.1-1.4	Limited to 10 Passes
> 1.4	Emergencies Only

7.2. ACN

The ACN is defined by ICAO (ICAO Doc 9157, Part 3, 1.1.3.2 d).

The concept of a mathematically derived single wheel load has been employed in the ACN-PCN method as a means to define the landing gear/pavement interaction without specifying pavement thickness as an ACN parameter. This is done by equating the thickness given by the mathematical model for an aircraft landing gear to the thickness for a single wheel at a standard tire pressure of 1.25 MPa (181 psi). The single wheel load so obtained is then used without further reference to thickness; this is so because the essential significance is attached to the fact of having equal thicknesses, implying "same applied stress to the pavement", rather than the magnitude of the thickness. The foregoing is in accord with the objective of the ACN-PCN method to evaluate the relative loading effect of an aircraft on a pavement. Boussinesq's equations are used for flexible pavements and Westergaard's solution for a plate on a Winkler foundation for rigid pavements.

The ACN is two times the derived single wheel load in 1,000 kg. The ACN is calculated by the aircraft manufacturer for 4 subgrade categories for flexible pavements: A: CBR $\geq$ 13, B: 8 < CBR < 13, C: 4 < CBR $\leq$ 8 and D: CBR $\leq$ 4; and also 4 subgrade categories for rigid pavements: A: k $\geq$ 442 pci, B: 221 < k < 442, C: 92 < k $\leq$ 221 and D: k $\leq$ 92. The ACN is specific to a particular aircraft and does not depend on the number of operations or on the pavement structure (apart from the subgrade category). Table 12 and Table 13 show the ACN corresponding to the design aircraft mix for the flexible and rigid pavements, respectively.

DRAFT

Table 12 – Flexible Pavement ACN

Aircraft	MTOW [1]	Flexible Pavement ACN [2]			
		A	B	C	D
Boeing 747-8	990,000	63.2	70.6	88.1	111.2
Boeing 747-400	877,000	56.7	63.4	77.8	99.8
Boeing 777-300ER	777,000	63.8	71.3	89.3	120.3
Boeing (Douglas) MD 11	658,000	64.7	71.5	86.7	115.5
Boeing 777-200	547,000	43.8	48.9	59.3	83.5
Boeing 767-300	458,000	55.7	62.4	77.3	99.1
Boeing 767	396,000	47.7	52.6	64	84.7
Boeing 757-300	273,500	33.2	37.1	45.7	58.8
Boeing 737 Max 8	188,200	46.7	49.8	55.1	60.0
Bombardier Global 7500	95,000	27.3	29.4	30.9	32.1
Bombardier CRJ-900	80,000	24.0	25.4	26.4	27.2
Bombardier Challenger 300	50,000	11.6	12.4	14.1	15.5
Dassault Falcon/Mystère 20	30,000	7.5	8.0	8.8	9.7
Boeing (Douglas) DC 3	25,000	3.9	5.5	7.5	9.2

1) Maximum Takeoff Weight (lbs)
2) A, B, C and D are the subgrade code designations. Maximum ACNs for each subgrade category are shown in red font.

Table 13 – Rigid Pavement ACN

Aircraft	MTOW [1]	Rigid Pavement ACN [2]			
		A	B	C	D
Boeing 747-8	990,000	64.7	76.8	90.2	102.1
Boeing 747-400	877,000	59.1	69.8	81.7	92.5
Boeing 777-300ER	777,000	66.1	85.7	109.7	131.9
Boeing (Douglas) MD 11	658,000	61.8	73.4	87.6	101.1
Boeing 777-200	601,650	43.9	55.3	71.9	88.7
Boeing 767-300	458,000	55.5	66.5	78.7	89.8
Boeing 767	396,000	48.3	57.2	67.5	77.0
Boeing 757-300	273,500	35.2	42.0	49.1	55.4
Boeing 737 Max 8	188,200	53.8	56.5	59.0	61.1
Bombardier Global 7500	95,000	31.6	32.6	33.5	34.3
Bombardier CRJ-900	80,000	27.3	28.1	28.8	29.3
Bombardier Challenger 300	50,000	13.5	14.2	14.9	15.4
Dassault Falcon/Mystère 20	30,000	9.3	9.6	9.9	10.1
Boeing (Douglas) DC 3	25,000	6.0	6.5	6.9	7.2

1) Maximum Takeoff Weight (lbs)
2) A, B, C and D are the subgrade code designations. Maximum ACNs for each subgrade category are shown in red font.

From the results, it is clear that the highest ACN for both the flexible pavement and rigid pavement subgrade categories is the Boeing 777-300ER aircraft.

DRAFT

7.3. PCN Evaluation

The layer moduli of the subgrade (for flexible pavements) and the modulus of subgrade reaction, k-value, (for rigid pavements) was backcalculated using ELMOD. The resulting 84th percentile subgrade layer moduli or the improved modulus of subgrade reaction, k-Imp, were used as part of the COMFAA calculations to determine the airport feature subgrade category. The required COMFAA input was calculated using the FAA support Excel file "COMFAA-30-SUPPORT-AC5335-5C.xlsm". Table 14 summarizes the COMFAA ACN/PCN codes for every feature.

Table 14 – PCN Codes for Different Features in ONT

Feature	From Station	To Station	PCN Code	ACN Code	ACN/PCN
Runway 8L-26R (P1)	0+00	21+75	43/R/B/W/T	57/R/B	1.3
Runway 8L-26R (P2)	21+75	End	53/R/B/W/T	57/R/B	1.1
Runway 8R-26L	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxilane N1	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway D	0+00	End	49/R/B/W/T	57/R/B	1.2
Taxiway F	0+00	End	42/R/B/W/T	57/R/B	1.4
Taxiway G	0+00	End	9/F/B/X/T	62/F/B	6.9
Taxiway K	0+00	End	43/R/B/W/T	57/R/B	1.3
Taxiway L	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway N	0+00	End	46/R/A/W/T	54/R/A	1.2
Taxiway P	0+00	End	48/R/A/W/T	54/R/A	1.1
Taxiway Q	0+00	End	44/R/B/W/T	57/R/B	1.3
Taxiway R	0+00	End	62/R/B/W/T	57/R/B	0.9
Taxiway S	0+00	End	44/R/B/W/T	57/R/B	1.3
Taxiway S1	0+00	End	5/F/B/X/T	53/F/B	10.6
Taxiway S2	0+00	End	40/R/B/W/T	57/R/B	1.4
Taxiway S3	0+00	End	<Min[1)]	62/F/B	---
Taxiway S5	0+00	End	37/F/B/X/T	77/F/B	2.1
Taxiway T	0+00	End	46/R/B/W/T	57/R/B	1.2
Taxiway U	0+00	End	49/R/B/W/T	57/R/B	1.2
Taxiway V	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway W	0+00	End	53/R/B/W/T	57/R/B	1.1
Taxiway Y	0+00	End	60/R/B/W/T	57/R/B	1.0
Taxiway Y1	0+00	End	56/R/B/W/T	57/R/B	1.0
Taxiway Y2	0+00	End	55/R/B/W/T	57/R/B	1.0
Taxiway Y3	0+00	End	56/R/B/W/T	57/R/B	1.0
Taxilane H	0+00	End	<Min[1)]	59/F/D	---
Terminal 2-4	0+00	End	38/R/B/W/T	57/R/B	1.5

Feature	From Station	To Station	PCN Code	ACN Code	ACN/PCN
International Terminal Apron	0+00	End	<Min[1)]	59/F/D	---

1) Taxilane H, Taxiway S3 and International Terminal Apron do not have the minimum thickness required by FAA.

Table 14 shows the PCN codes calculated using COMFAA for the existing pavement structures. The PCN values are associated with the traffic used in the evaluation, and any change in traffic during the evaluation period will change the PCN (e.g. an increase in traffic will decrease the PCN and a decrease in traffic will increase the PCN). In addition, Table 4 shows the ACN/PCN ratio for each feature. The results show that the ACN/PCN for the evaluated aircraft is greater than 1.1 for Runways 8L-26R and 8R-26L, Taxiways D, F, G, K, L, N, Q, S, S1, S2, S3, S5, T, U, and V, Taxilanes N1 and H, Terminal 2 through 4, and International Terminal Apron. Typically, an ACN/PCN ratio greater than 1.1 is considered to be problematic for the proposed aircraft mix.

8. Limited Distress Survey

A limited distress survey was conducted on all tested lanes through digital photographs that were automatically collected at 25-ft intervals while testing. A description of the overall pavement surface condition for all features in ONT is presented Appendix F.

9. General Remarks

The above analyses were based on structural responses and were controlled by the HWD measured deflections, proposed design aircraft traffic data, and pavement layer thickness information. Pavement layer thickness and types were provided by RS&H, while the proposed aircraft traffic mix was developed by Dynatest and it was reviewed and approved by RS&H. It is important to state that due to the amount of airport features evaluated, some of the pavement layer thickness, type information, and traffic data were not available at this time. Thus, Dynatest used engineering judgement to assign the required pavement structural information of either the pavement thickness or types of the surrounding areas or to use the most frequently encountered pavement layer thicknesses and types observed at ONT.

Several assumptions were made to derive the proposed design aircraft mix and airport traffic distribution. The presented results are highly dependent on this information and thus this limitation must be taken into account when deriving conclusions based on this report.

The structural analysis and associated results provided in this report should be used with caution since a network-level evaluation approach was used to derive the results. Due to the discrete nature of deflection testing, actual location and extent of repair requirements need to be determined visually prior to any rehabilitation, where

DRAFT

applicable. In addition, a project-level evaluation is recommended to determine the most cost-effective pavement rehabilitation/reconstruction alternatives for the features that are not structurally adequate.

10. Disclaimer

All preceding analyses were based on the HWD test results obtained in the field, the proposed aircraft mix, the provided pavement thicknesses and types, as well as other input and analysis assumptions as outlined herein. Dynatest has made every attempt to base their procedures on sound methodology. However, circumstances beyond the control of Dynatest could result in alterations to the above results, which may be completely justifiable. The type of analysis performed on the deflection data is highly sensitive to layer thicknesses, and design aircraft mix; variations from the values provided could have a significant impact on the results presented in this report.

Report prepared by: Philip I. Tohme, MSc, PE
Senior Engineer

Amir H. Norouzi, PhD, PE
Project Engineer

Sara Pournoman, MSc, PE
Staff Engineer

Report reviewed by: Alvaro, PhD, PE
Principal Engineer

DRAFT

Appendix A - Dynatest FWD/HWD Test System

Dynatest FWD/HWD Test Systems

Dynatest, the original commercial developer of the Falling Weight Deflectometer (FWD) technology, is the world's largest supplier of FWD equipment. This highly accurate, well supported, reliable and continuously refined Dynatest product line is a proven load/ deflection measurement solution for engineers worldwide.

The Dynatest FWD technology additionally provides a measurement foundation for the proprietary Dynatest "analytical-empirical" pavement engineering methodology, a system of advanced automated pavement measurement, analysis and management engineering services and products available only through Dynatest.

Why a Falling Weight Deflectometer (FWD)?

The **Dynatest Model 8000 FWD** makes it possible to treat pavement structures in the same manner as other civil engineering structures by using mechanistically based design methods.

Selecting the type of rehabilitation to be implemented on a given pavement is of considerable economic significance. To reach that decision without an adequate knowledge of the structural condition of the pavement may have very costly consequences.

The use of a Dynatest FWD enables the engineer to determine a deflection basin caused by a controlled load with accuracy and resolution superior to other existing test methods. The FWD produces a dynamic impulse load that simulates a moving wheel load, rather than a static, semi-static or vibratory load. These developments allow the use of mechanistic approaches to analyse FWD data.



FALLING WEIGHT DEFLECTOMETER

Heavy Weight Deflectometer (HWD)

Dynatest was also the first to introduce a heavier loading FWD, the Dynatest Model 8081 HWD. With an expanded loading range, simulating heavy aircraft such as the Boeing 747 (one wheel), the HWD can properly introduce anticipated load/deflection measurements on even heavy pavements such as airfields and very thick highway pavements. The wider loading range also provides the consultant with a load/ deflection instrument appropriate for both roads and airfields as required.



HEAVY WEIGHT DEFLECTOMETER

Dynatest FWD/HWD Test Systems

FWD Data Reduction

FWD/HWD generated data, combined with layer thickness, can be confidently used to obtain the "in-situ" resilient E-moduli of a pavement structure. This information can in turn be used in a structural analysis to determine the bearing capacity, estimate expected life, and calculate an overlay requirement, if applicable (over a desired design life).

Software Products for Structural Analysis and Design

For routine analysis purposes, **Dynatest** has developed a software system, ELMOD 6, for both flexible and rigid pavements.

This software application allows extremely rapid data reduction and analysis of FWD/HWD measurements, calculating the layer E-moduli for a typical drop sequence in one second or less. Seasonally adjusted E-moduli, residual life, and required overlay (if applicable) are also calculated within seconds.

For analysis of airfield pavements, **Dynatest** offers the PCN module, which calculates PCN-values in accordance with the ACN/PCN method, as described in the ICAO design manuals.

FWDWin for Windows™

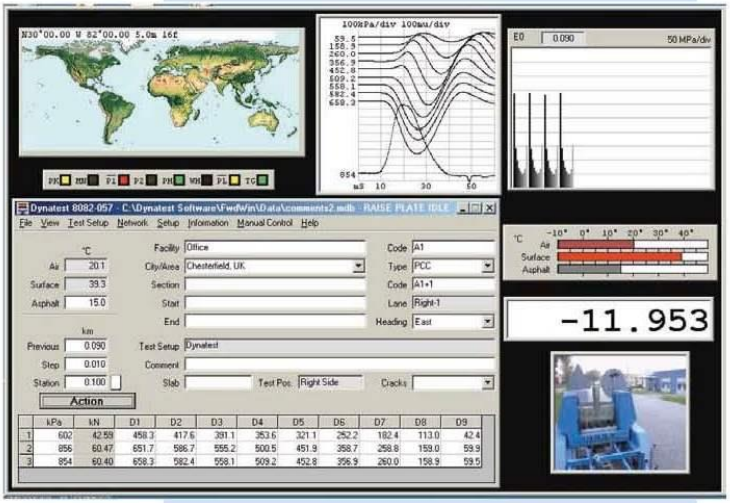
Support for multiple languages.

Data Files:

- Data is stored in Access(tm) (.mdb) databases for ease of processing.

The program can simultaneously generate various formats:

- .fwd, *.f20, *.f25, *.PDDX Pavement Deflection Data eXchange (PDDX by AASHTO) , *.XML eXtensible Markup Language (XML by W3C) .
- 15 Active Sensor Capability (hardware required).
- Surface modulus plots can be graphed real time along road sections under test.
- Real Time Backcalculation.
- Network Database.



Advantages

- A non-destructive test device.
- One man operational.
- Accurate and fast (up to 60 test points/hr).
- Wide loading range.
  FWD: (7-120 kN) or (1,500-27,000 lbf).
  HWD: (30-320 kN) or (6,500-71,800 lbf).
- Designed for multi-purpose pavement applications, ranging from unpaved roads to airfields.
- Excellent repeatability.
- Ideal for mechanistic/analytical design approaches.

Requirements

Windows® XP

Appendix B – Airport Feature Stationing

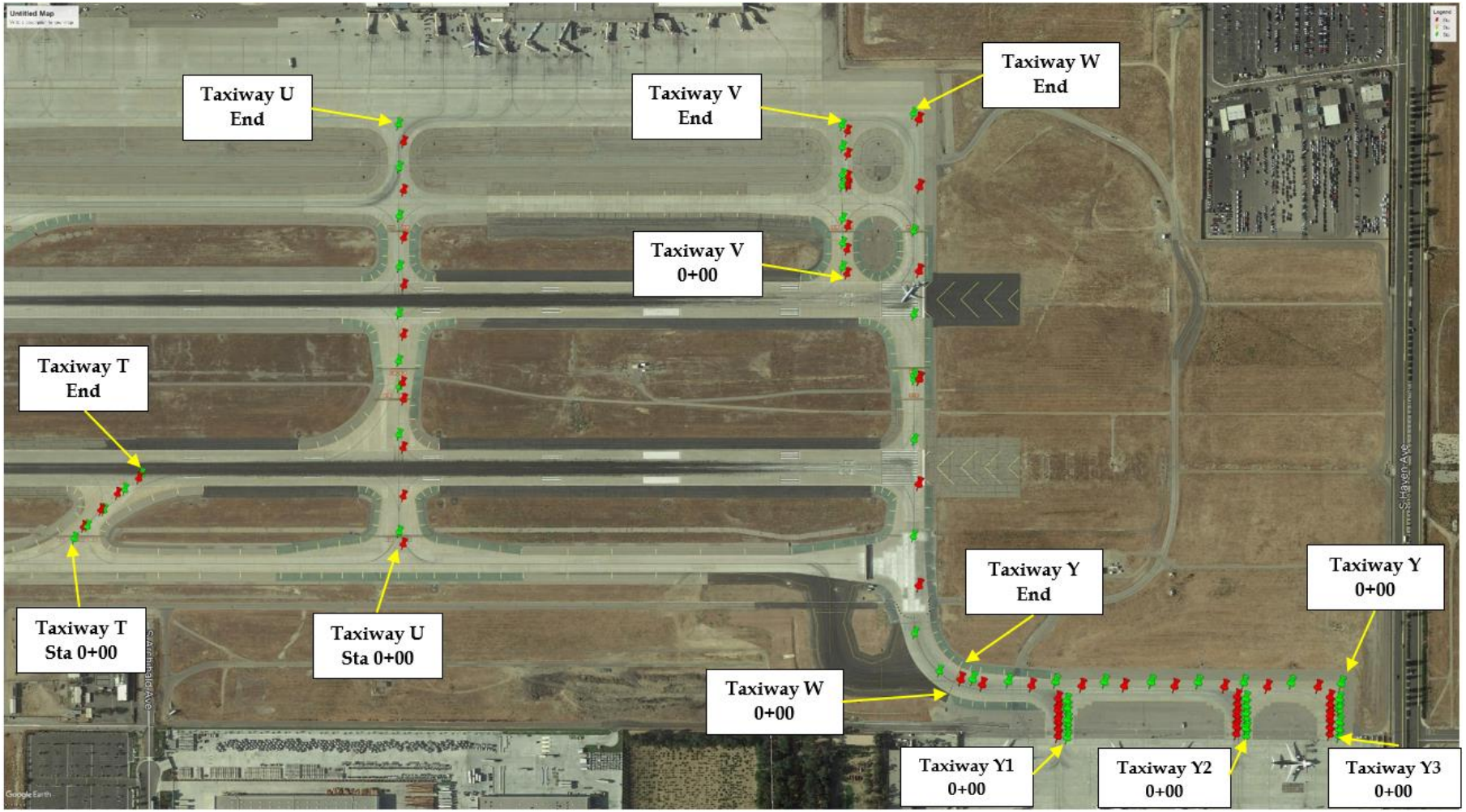


Figure B-1. Reference HWD Stationing for Taxiway T, U, V, Y, Y1, Y2, and Y3.

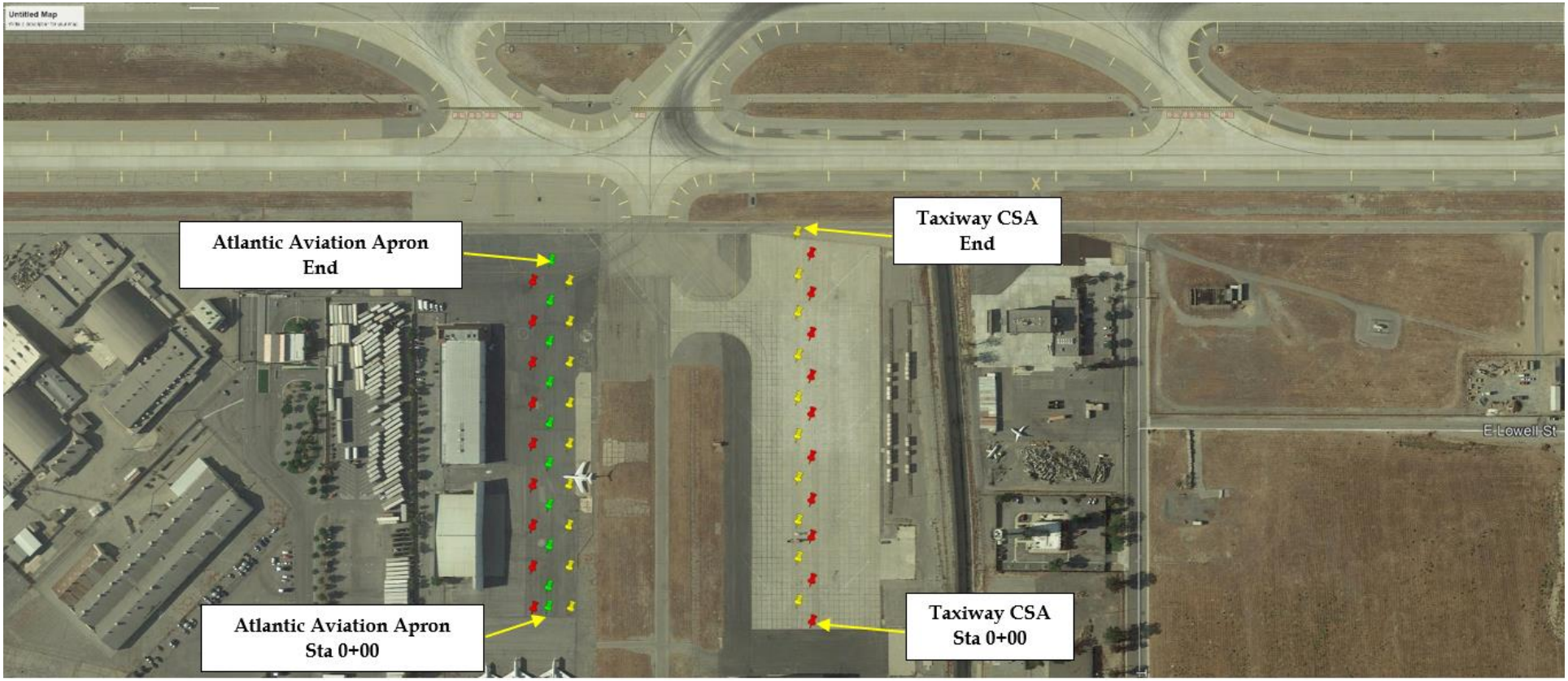


Figure B-2. Reference HWD Stationing for Taxiway CSA and Atlantic Aviation Apron.

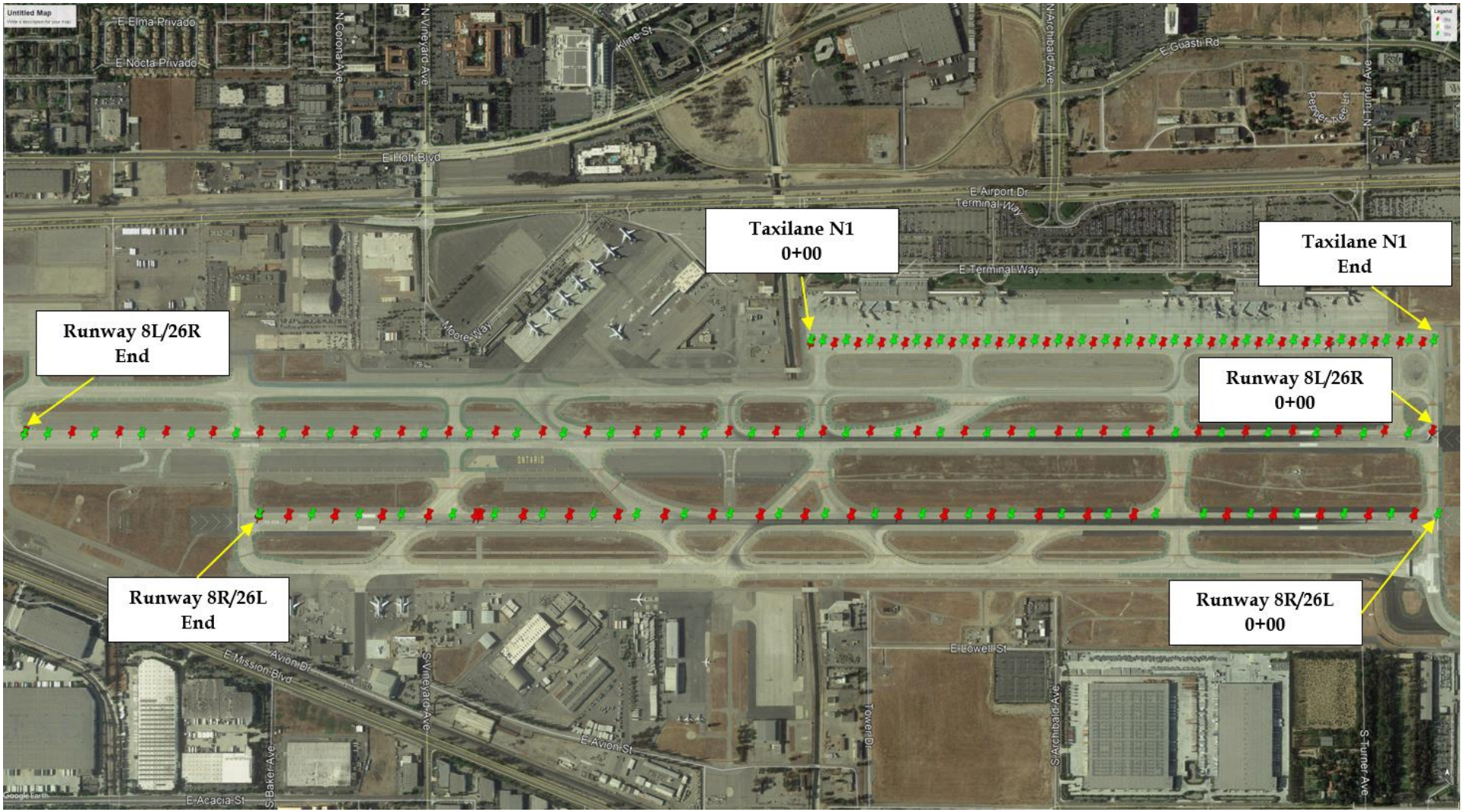


Figure B-3. Reference HWD Stationing for Runways 8L/26R and 8R/26L, and Taxilane N1.

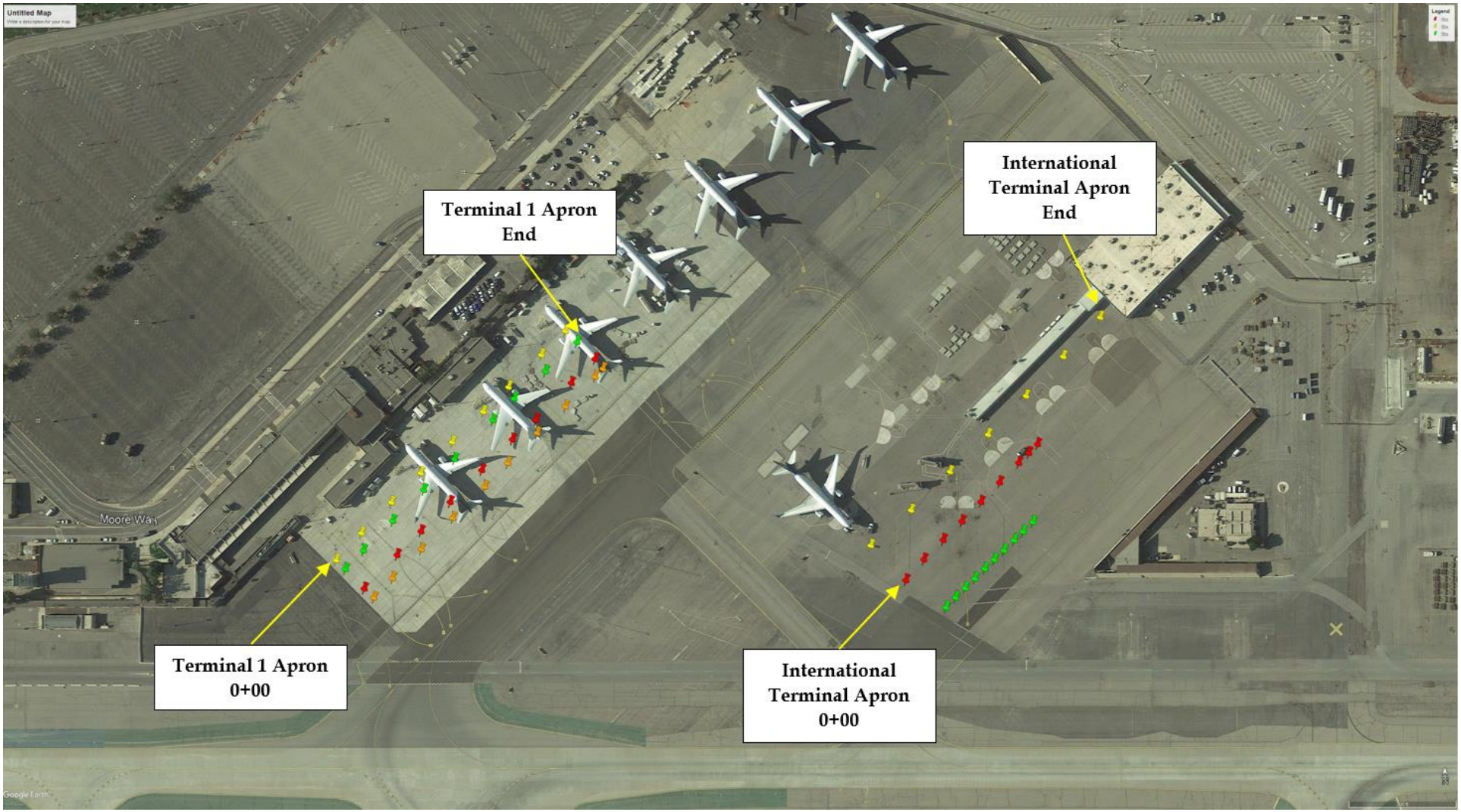


Figure B-4. Reference HWD Stationing for Terminal 1 Apron and International Terminal Apron.

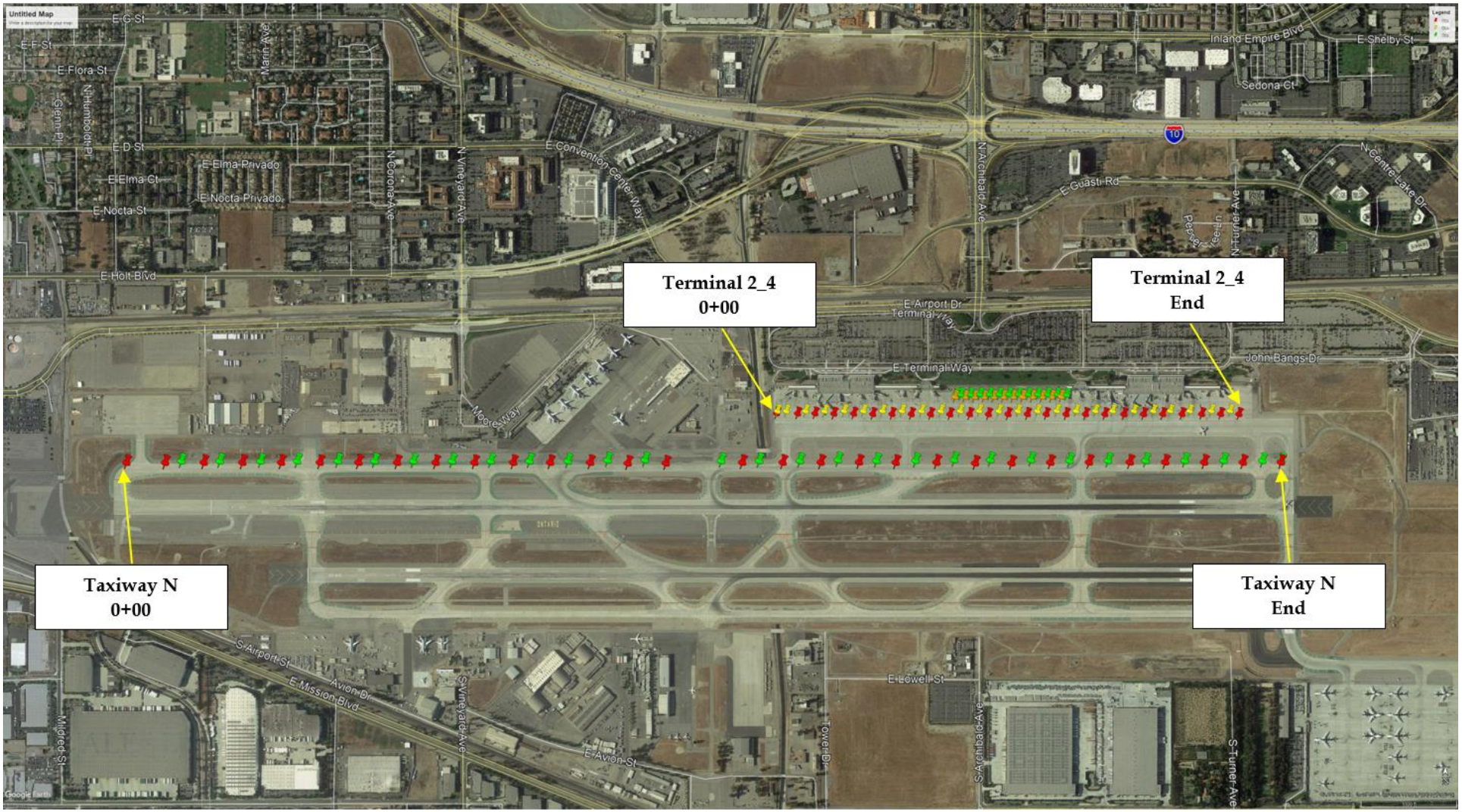


Figure B-5. Reference HWD Stationing for Taxiway N and Terminal 2_4.

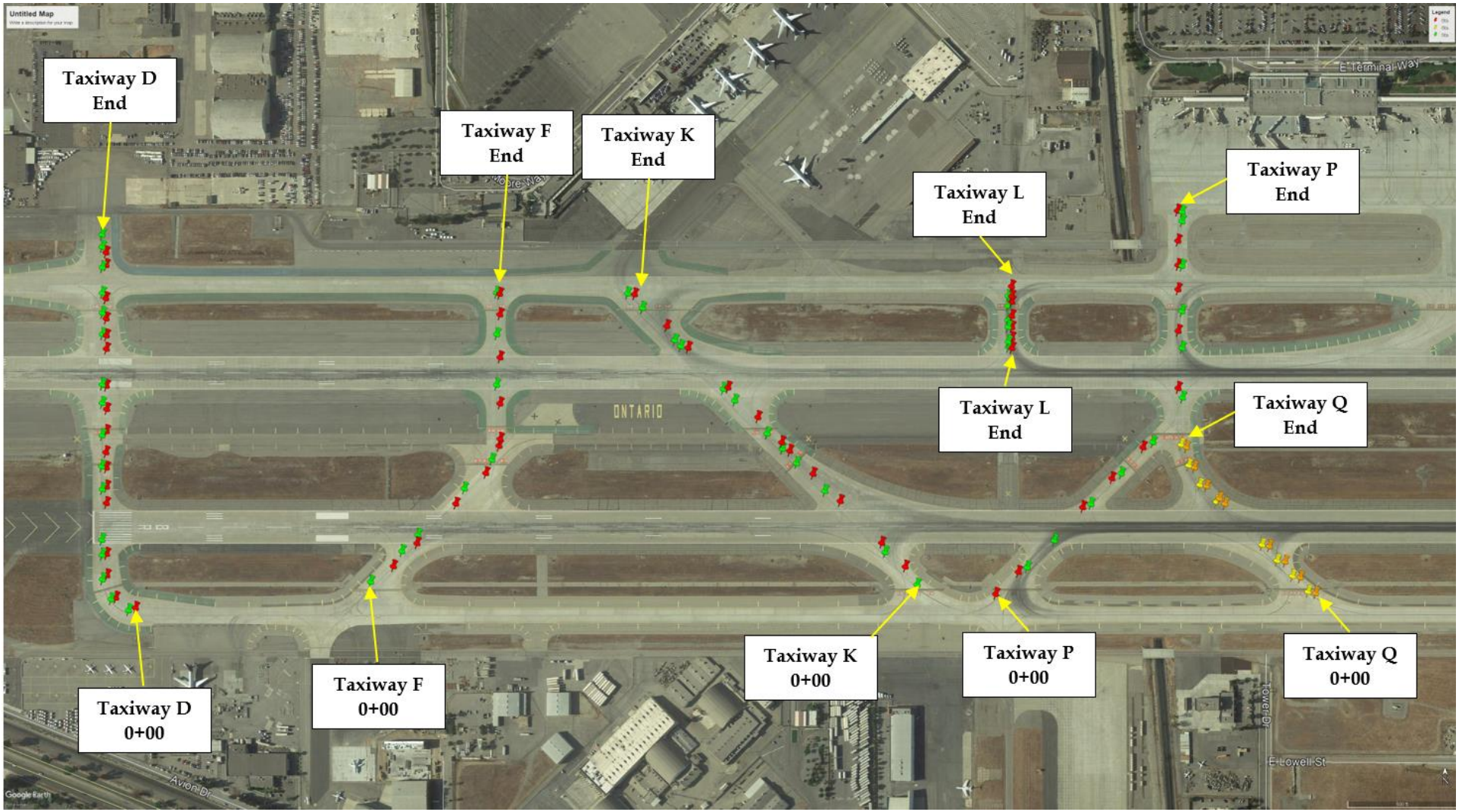


Figure B-6. Reference HWD Stationing for Taxiway D, F, K, L, P, and Q.

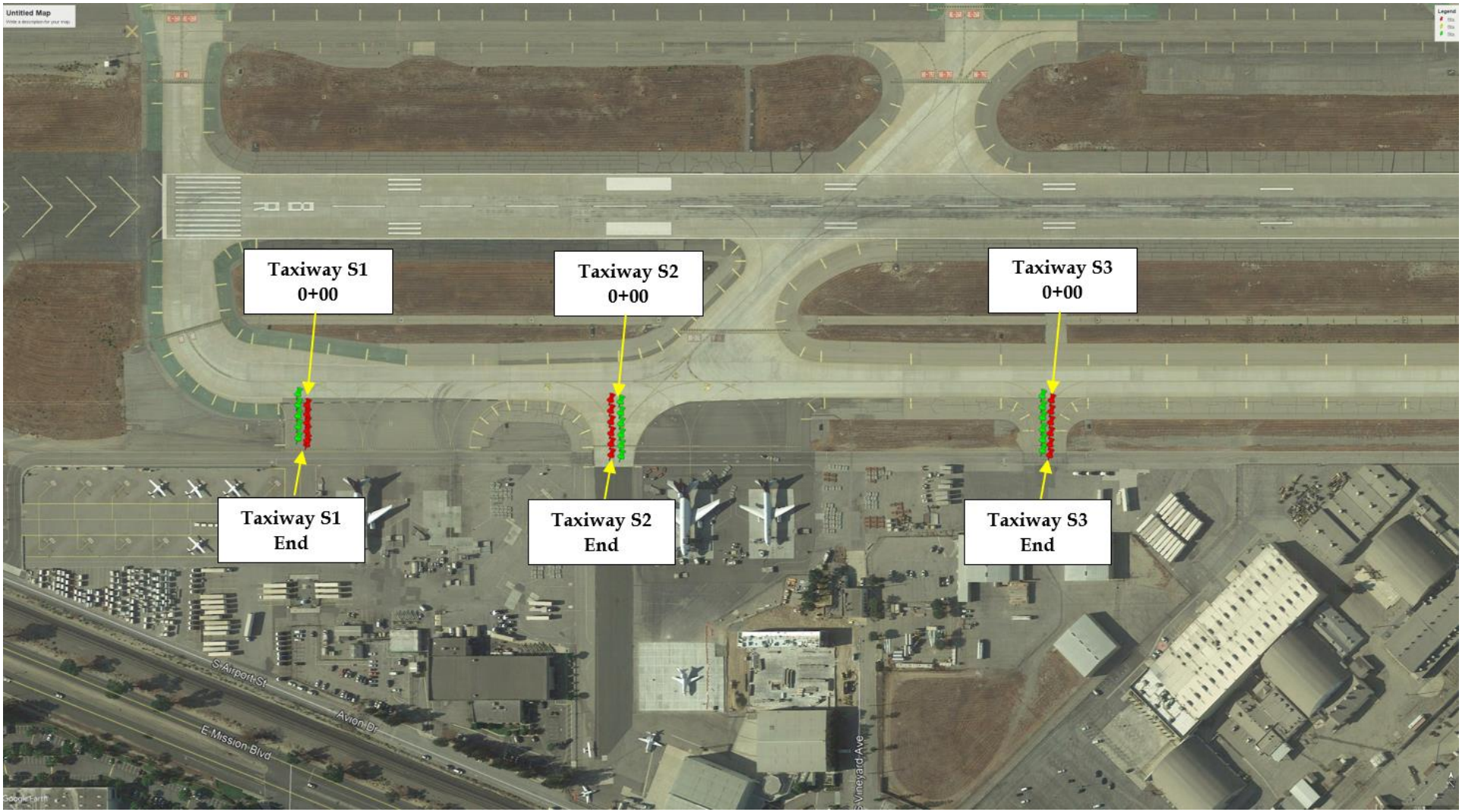


Figure B-7. Reference HWD Stationing for Taxiway S1, S2, and S3.

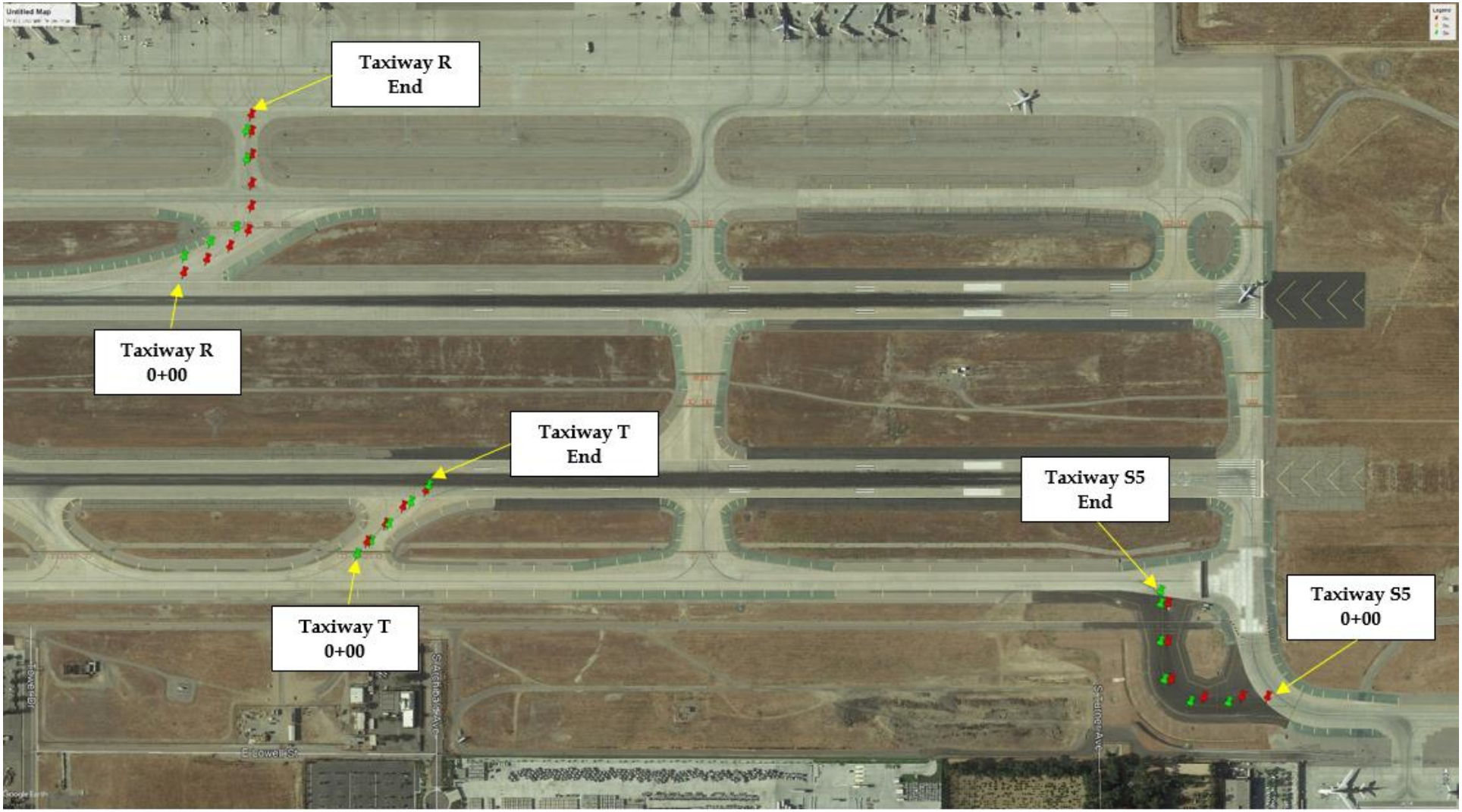


Figure B-8. Reference HWD Stationing for Taxiway R, T, and S5.

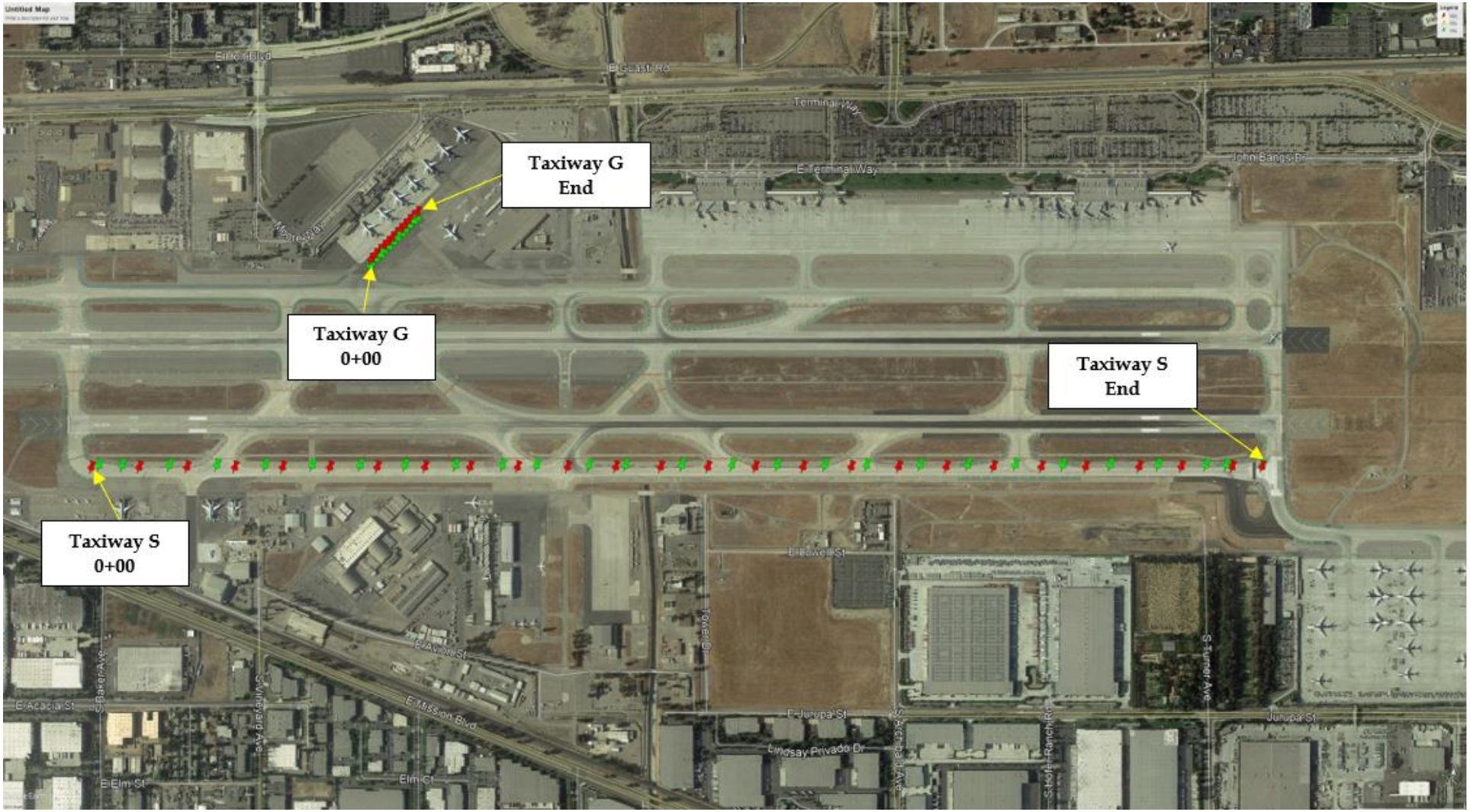


Figure B-9. Reference HWD Stationing for Taxiway S and G.

Appendix C – Normalized Center Deflections

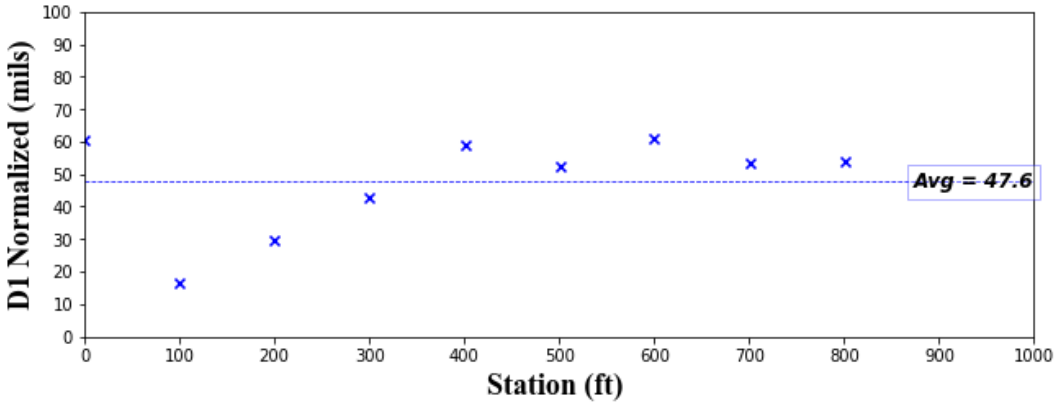


Figure C-1. ATLANTIC AVIATION APRON R1

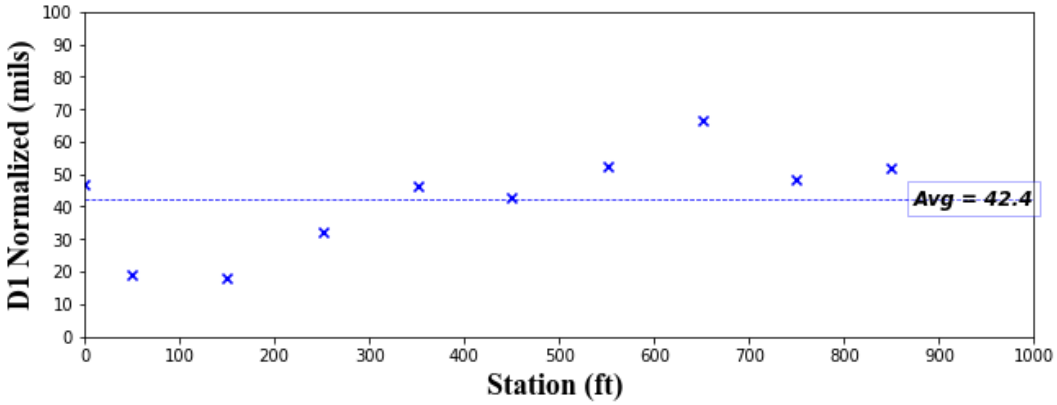


Figure C-2. ATLANTIC AVIATION APRON R2

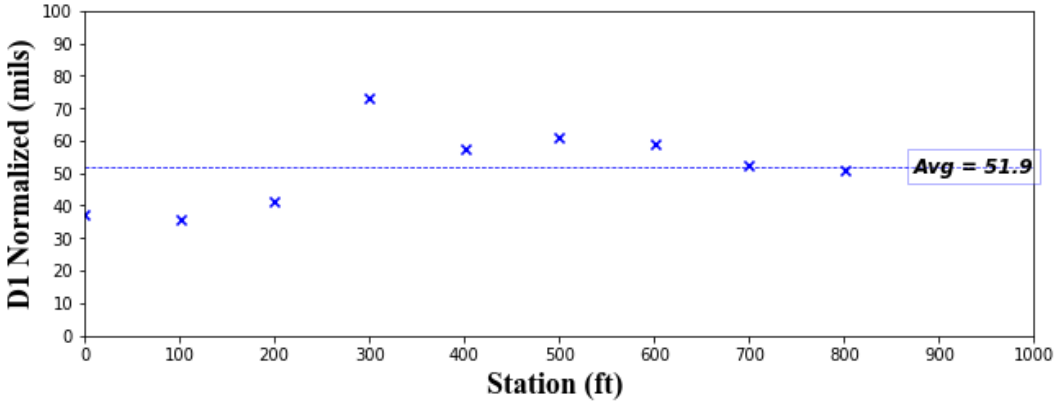


Figure C-3. ATLANTIC AVIATION APRON R3

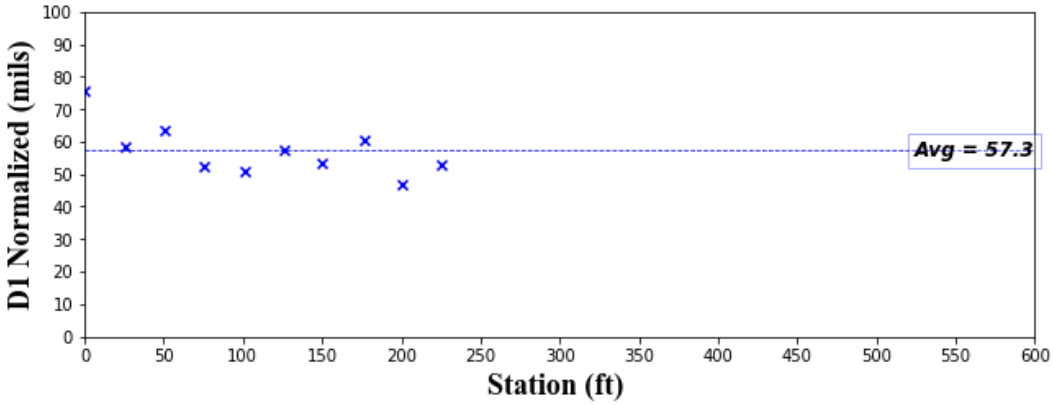


Figure C-4. INT TERMINAL APRON R1

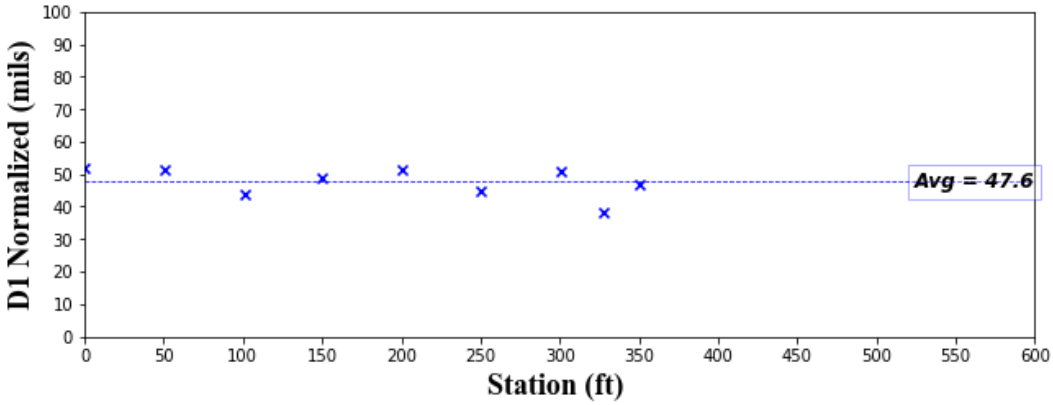


Figure C-5. INT TERMINAL APRON R2

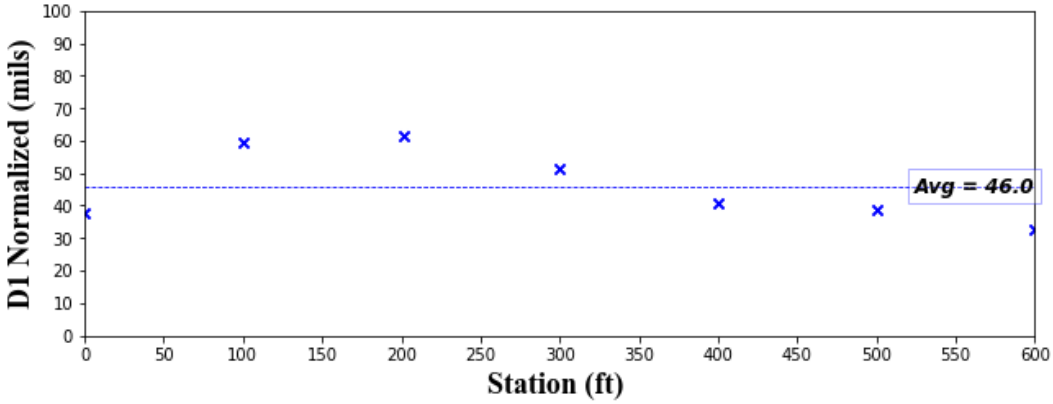


Figure C-6. INT TERMINAL APRON R3

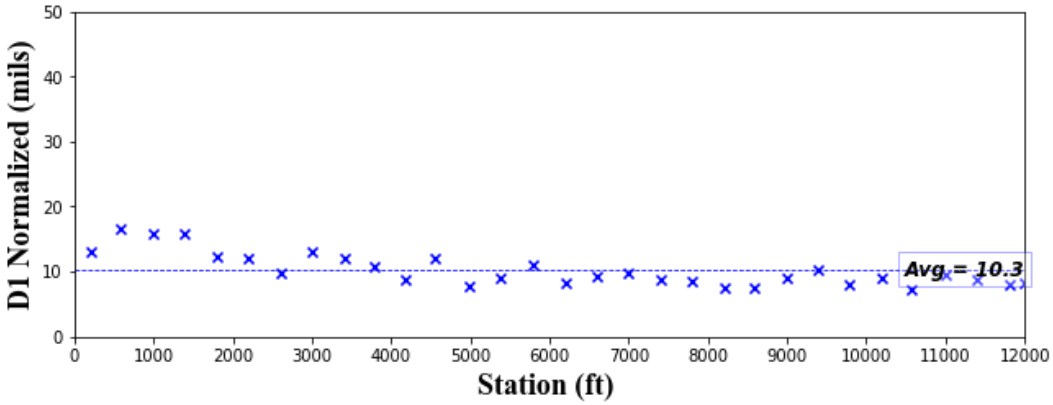


Figure C-7. RWY 8L26R 10L

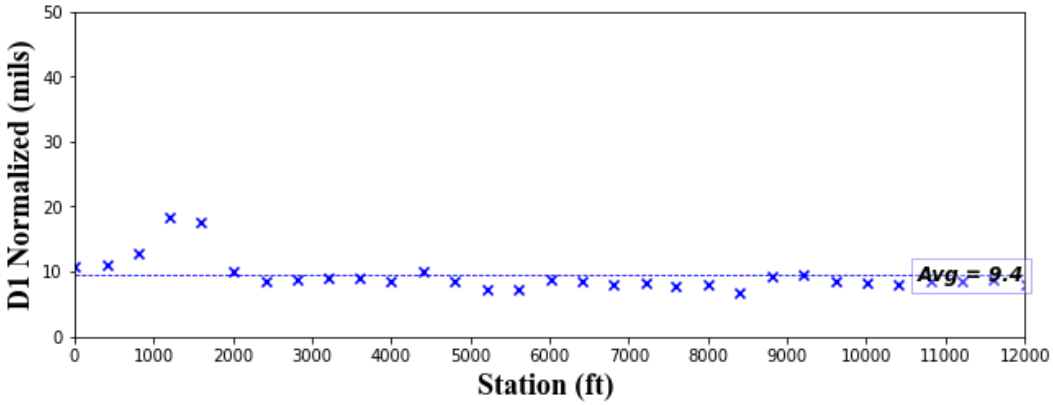


Figure C-8. RWY 8L26R 10R

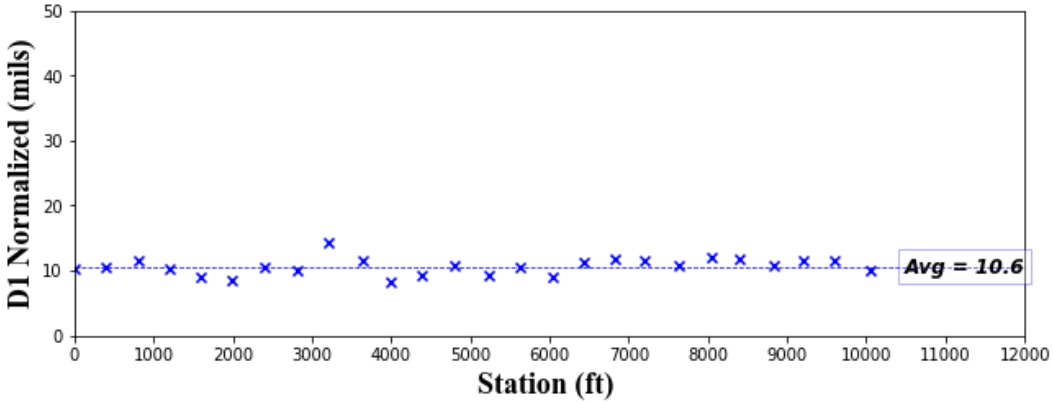


Figure C-9. RWY 8R26L 10L

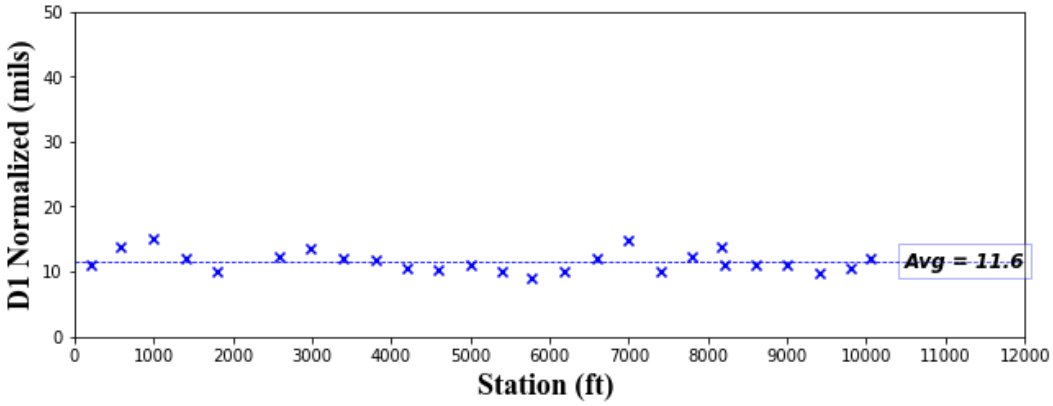


Figure C-10. RWY 8R26L 10R

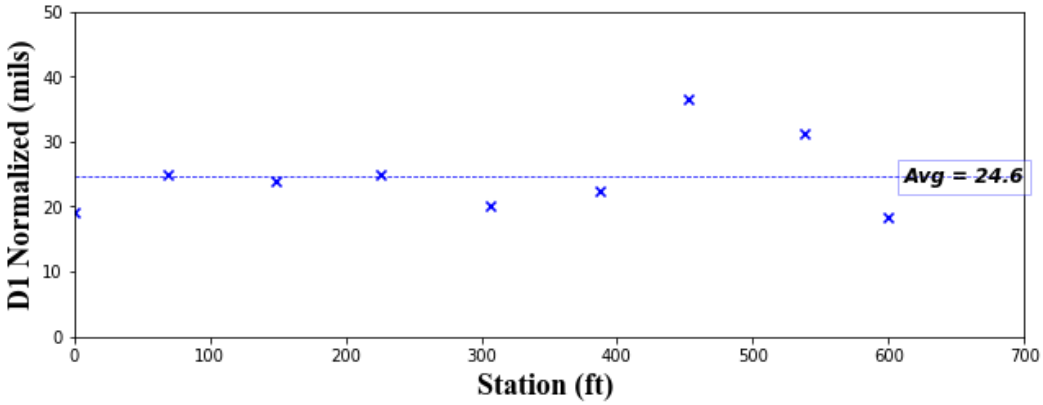


Figure C-11. TERMINAL1 APRON R1

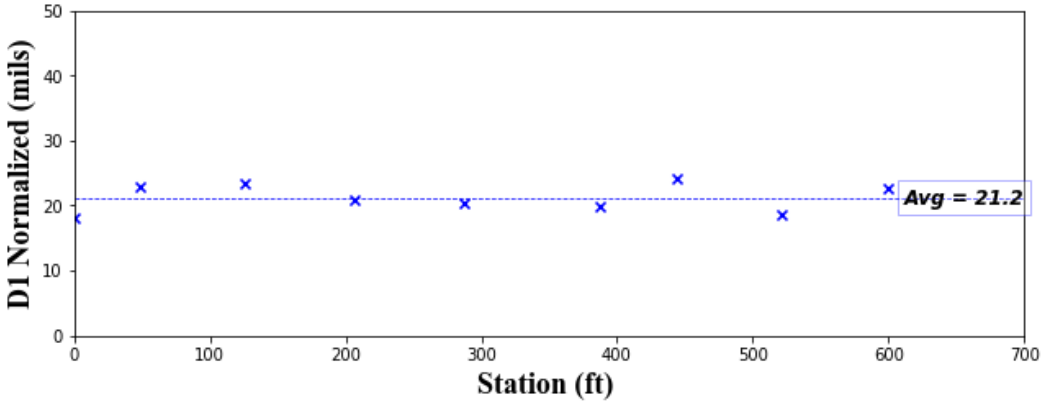


Figure C-12. TERMINAL1 APRON R2

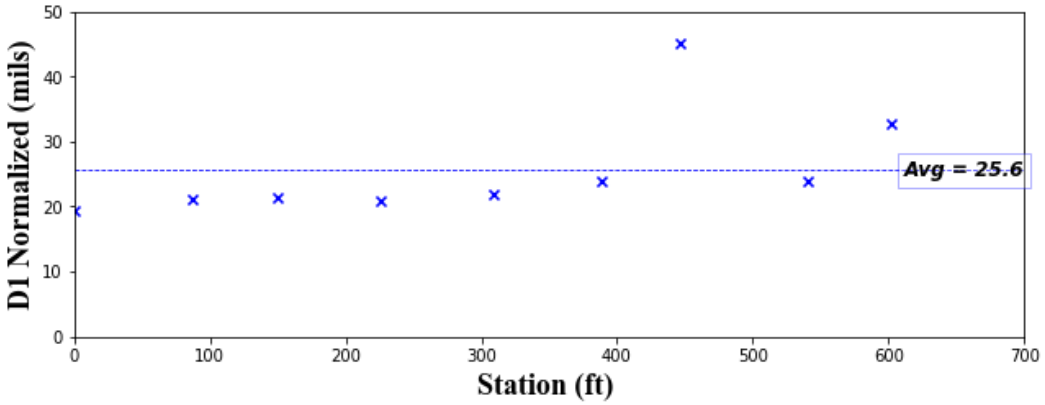


Figure C-13. TERMINAL1 APRON R3

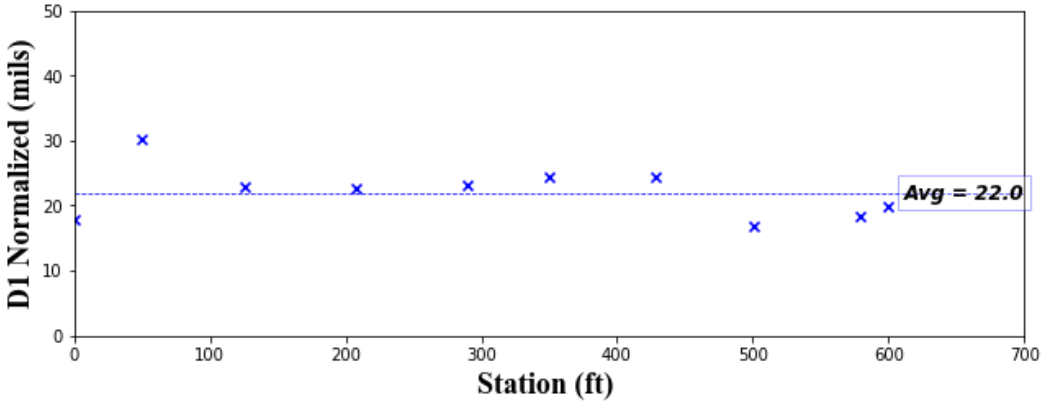


Figure C-14. TERMINAL1 APRON R4

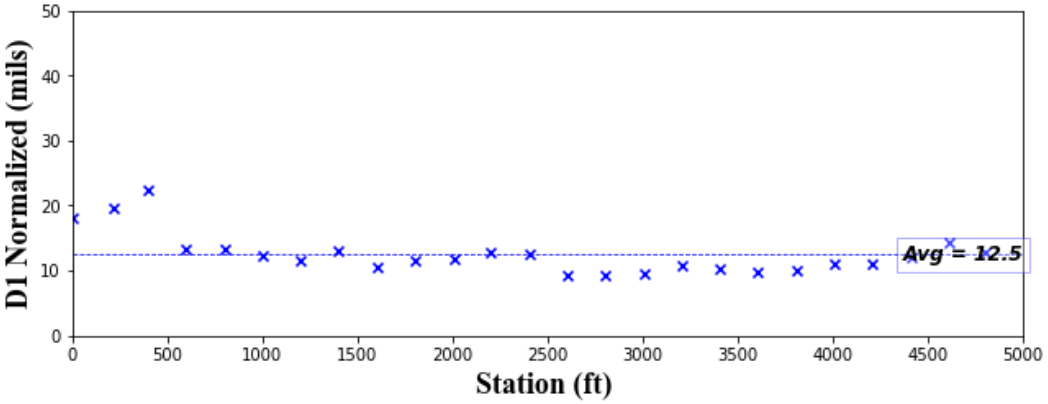


Figure C-15. TERMINAL2 4 R1

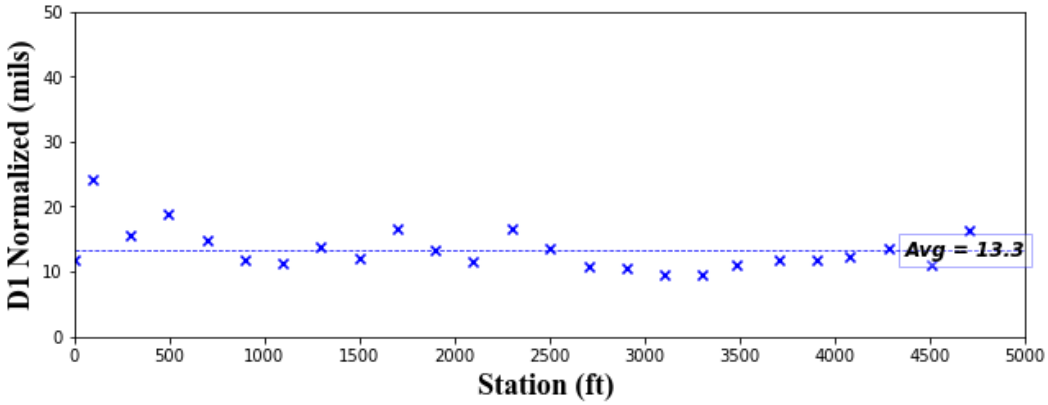


Figure C-16. TERMINAL2 4 R2

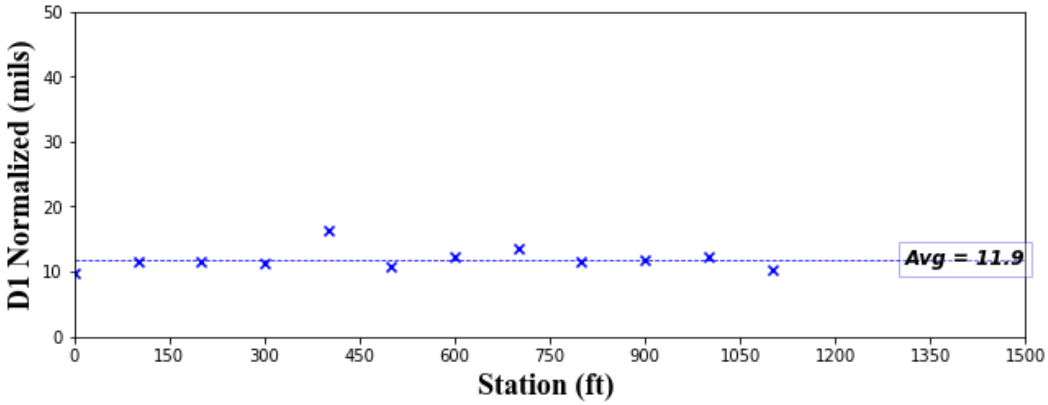


Figure C-17. TERMINAL2 4 R3

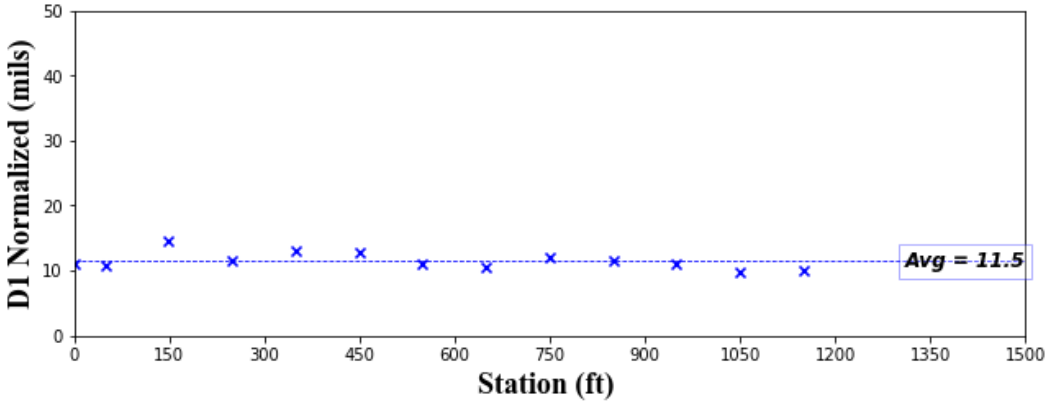


Figure C-18. TERMINAL2 4 R4

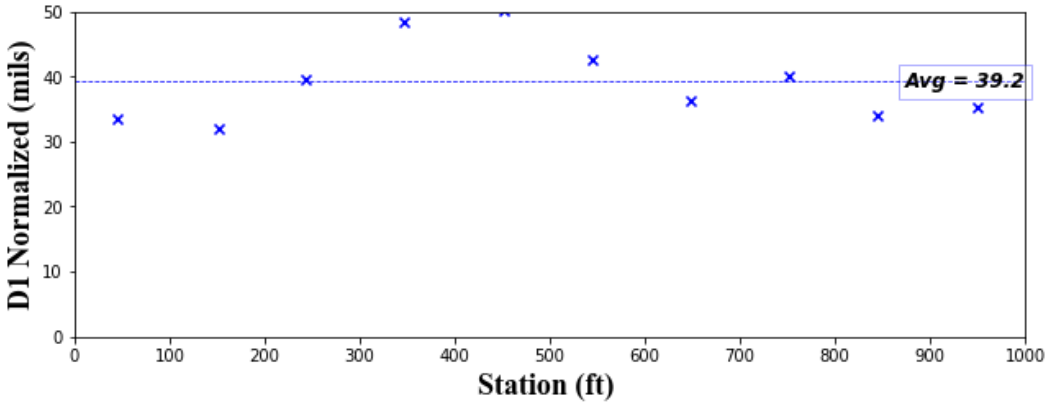


Figure C-19. TWY CSA 10L

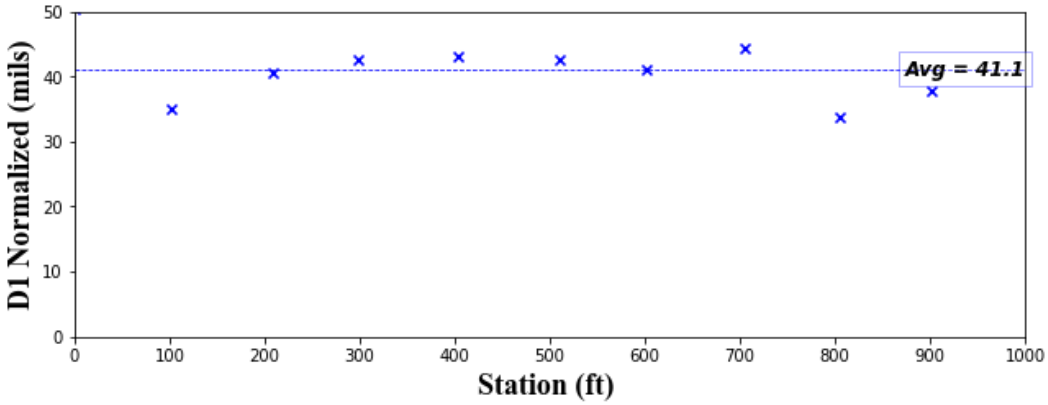


Figure C-20. TWY CSA 10R

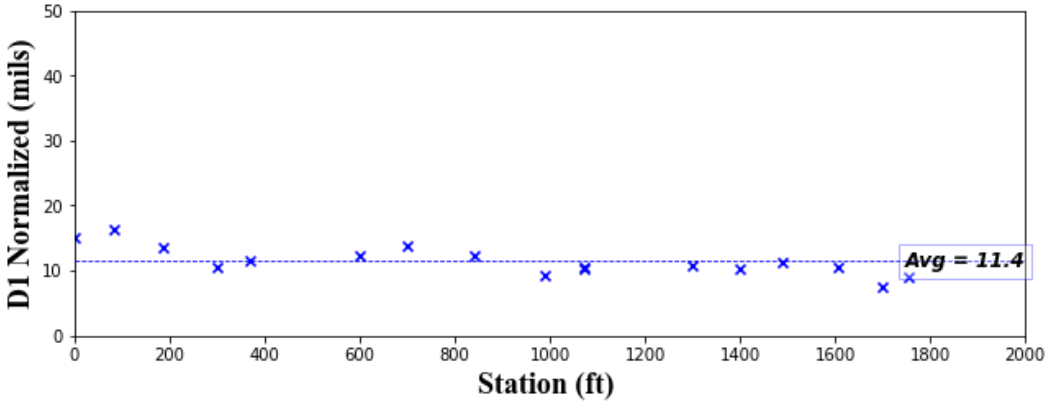


Figure C-21. TWY D 10L

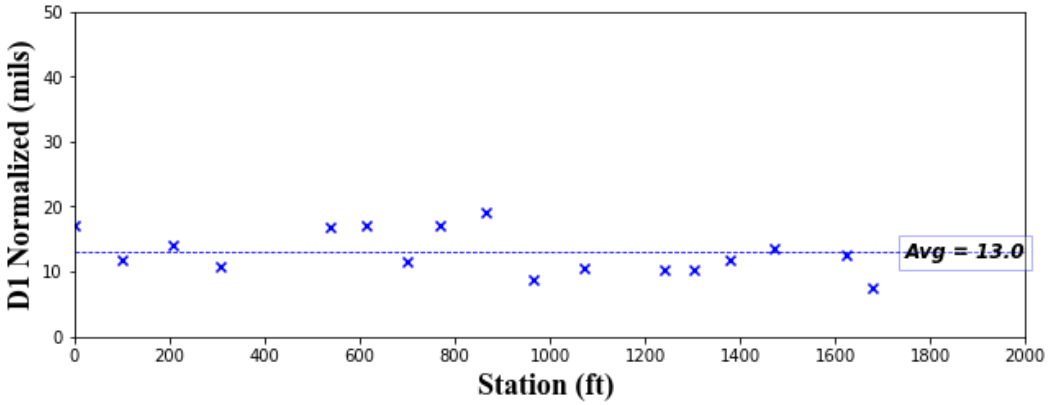


Figure C-22. TWY D 10R

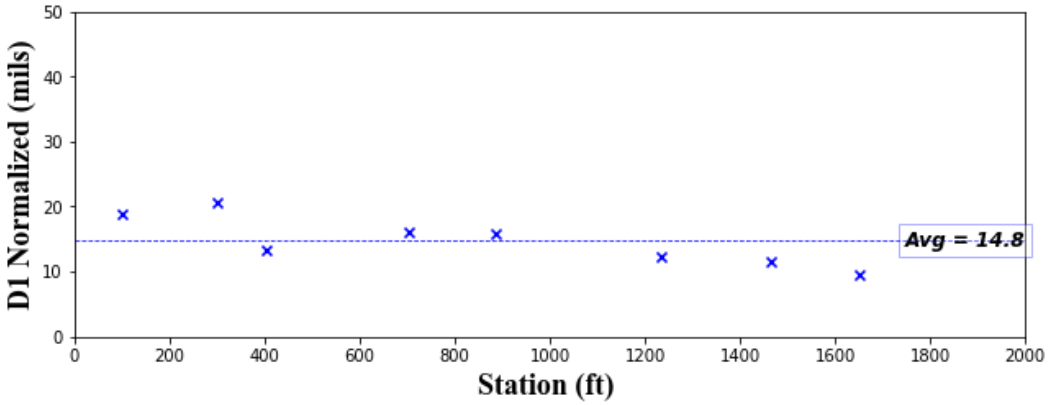


Figure C-23. TWY F 10L

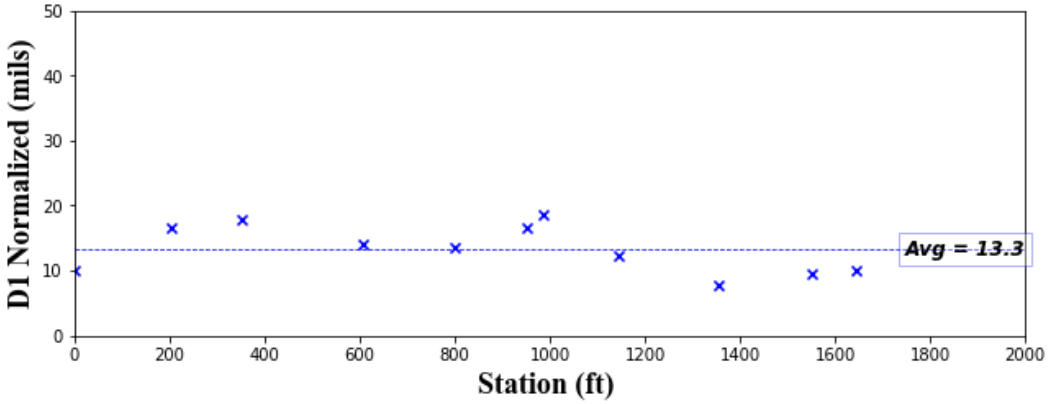


Figure C-24. TWY F 10R

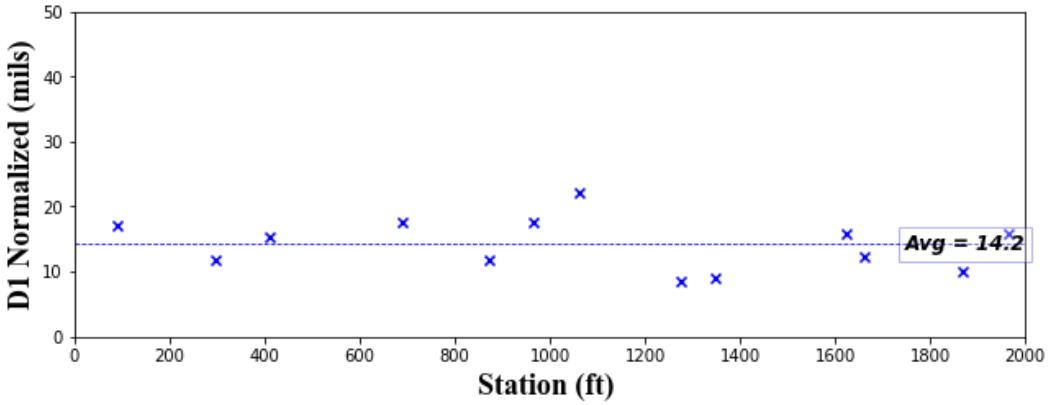


Figure C-25. TWY K 10L

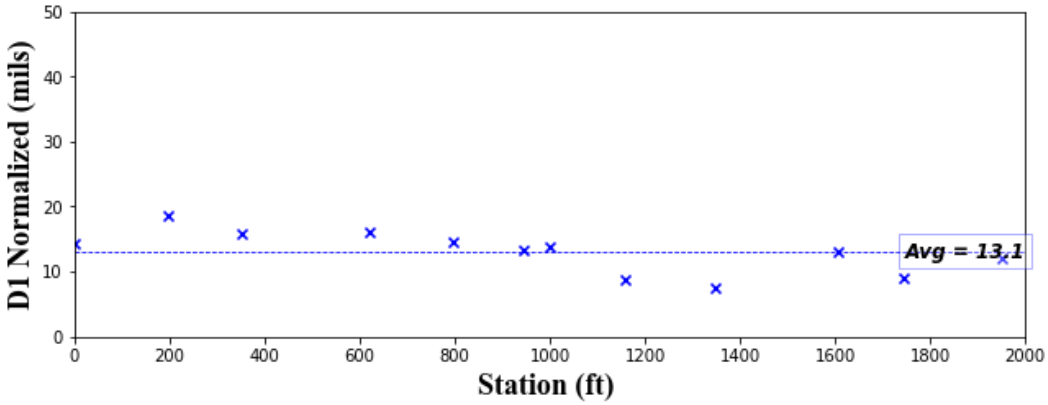


Figure C-26. TWY K 10R

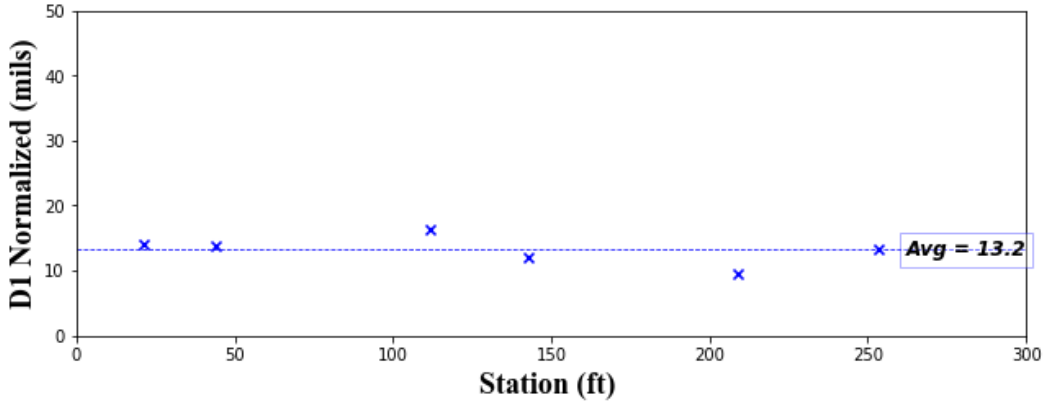


Figure C-27. TWY L 10L

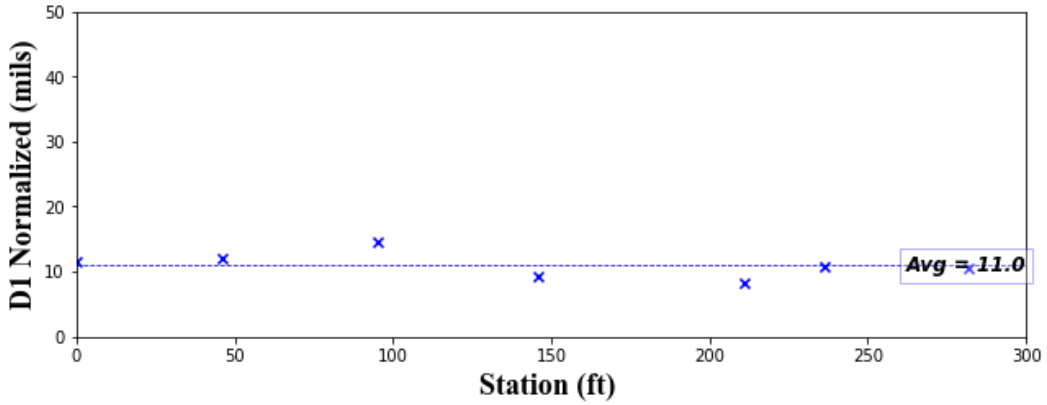


Figure C-28. TWY L 10R

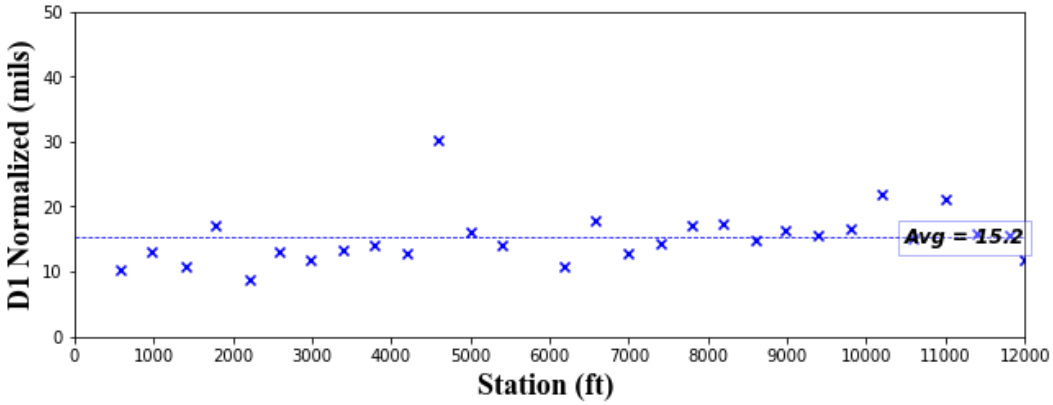


Figure C-29. TWY N 10L

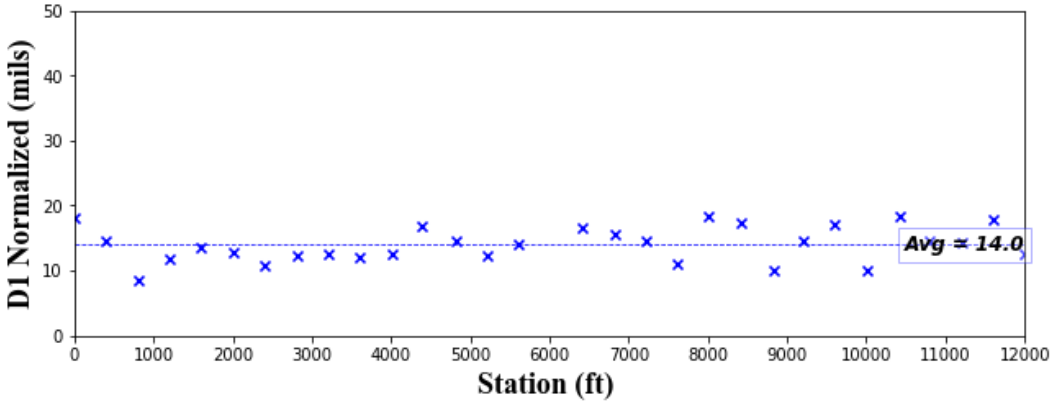


Figure C-30. TWY N 10R

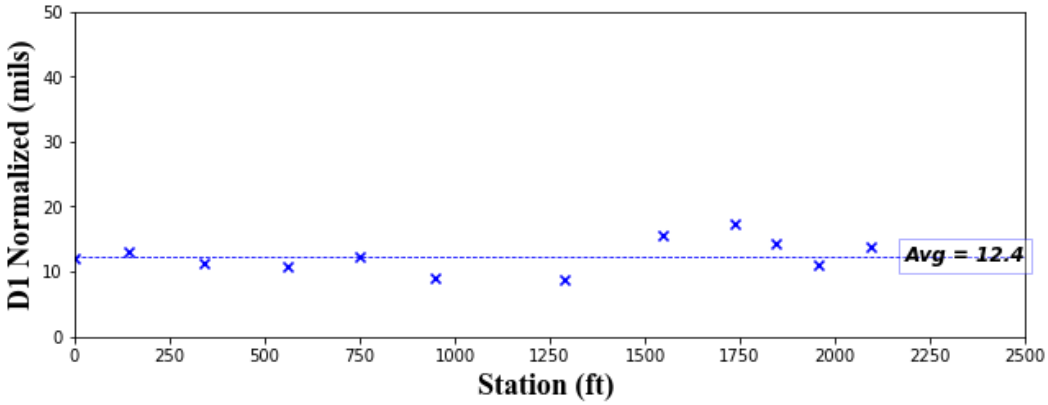


Figure C-31. TWY P 10L

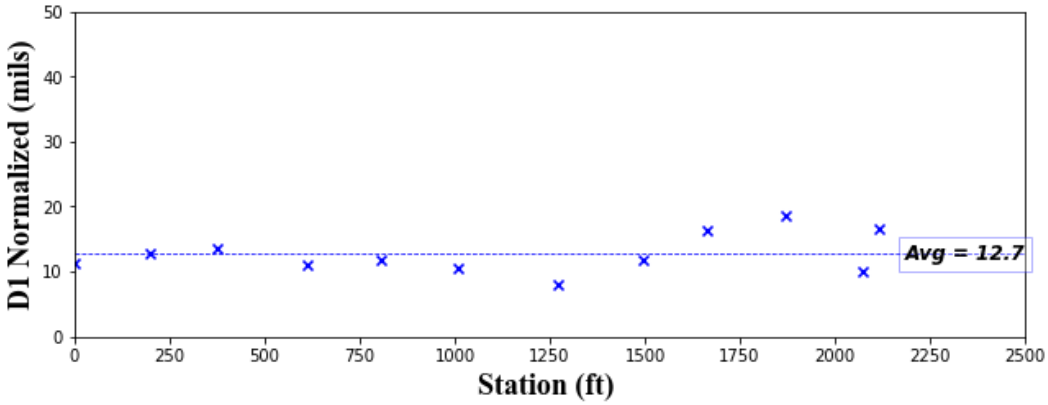


Figure C-32. TWY P 10R

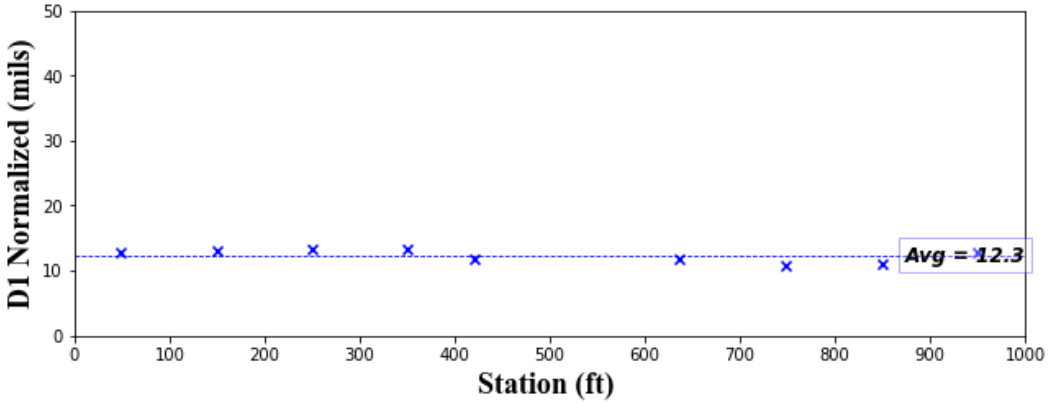


Figure C-33. TWY Q 10L

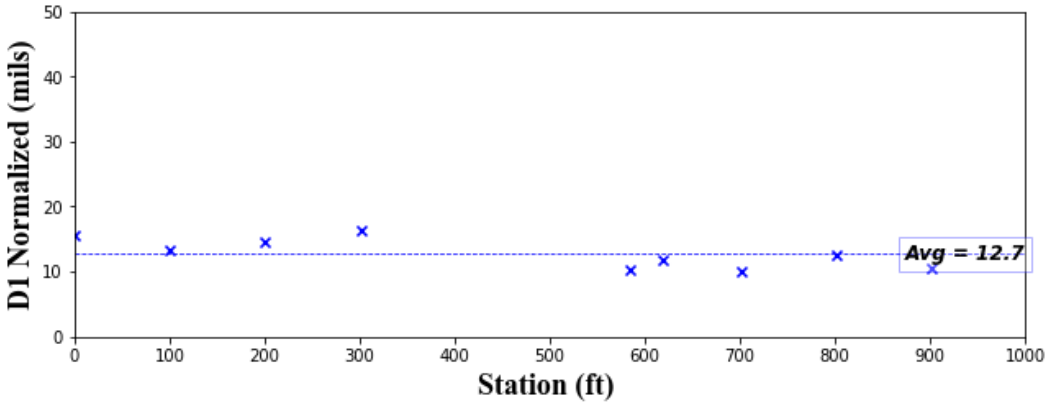


Figure C-34. TWY Q 10R

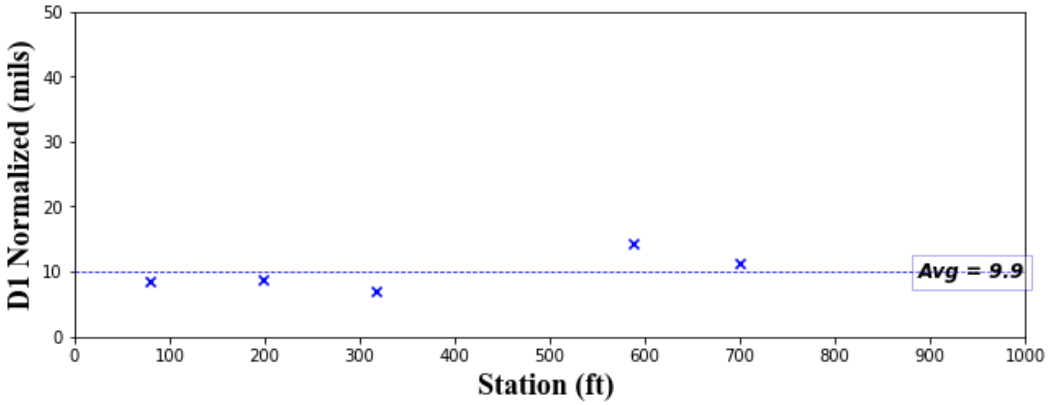


Figure C-35. TWY R 10L

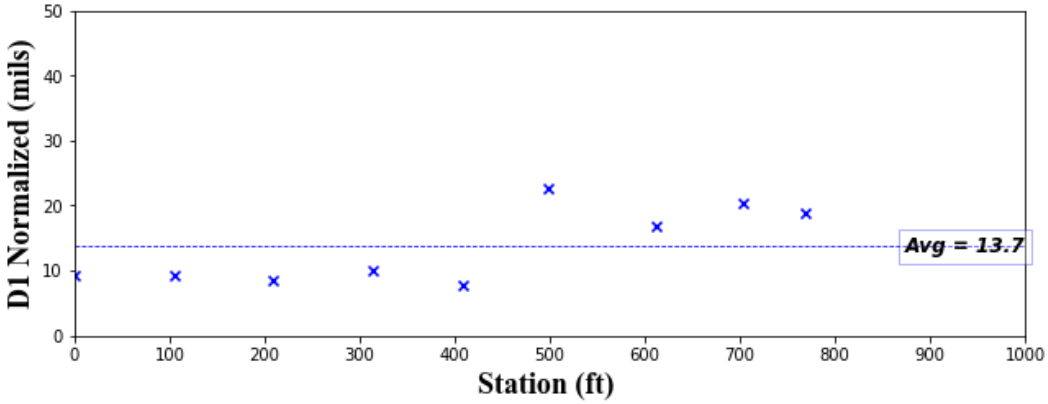


Figure C-36. TWY R 10R

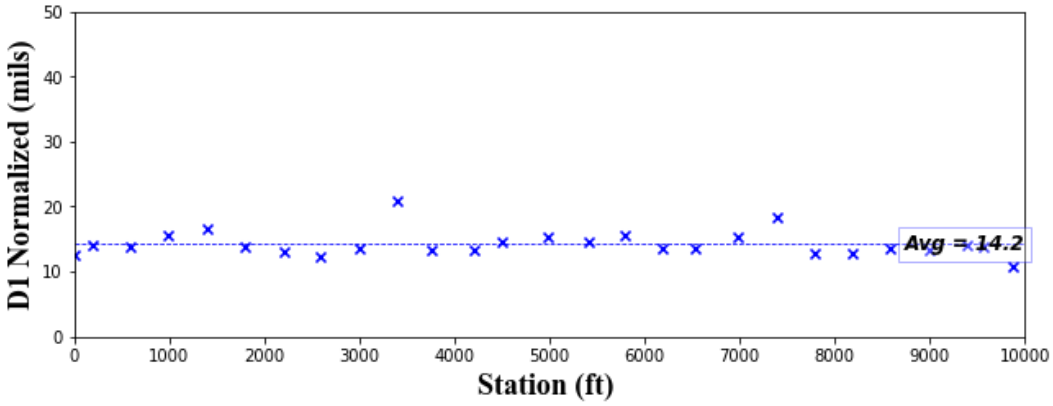


Figure C-37. TWY S 10L

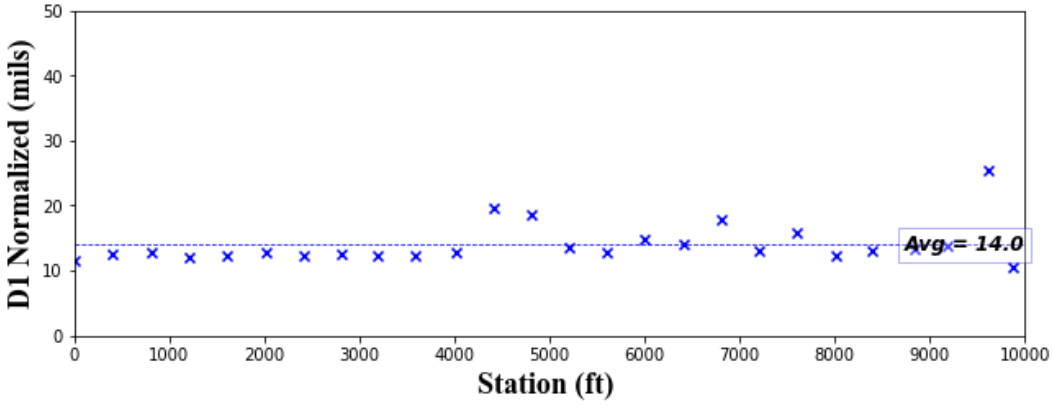


Figure C-38. TWY S 10R

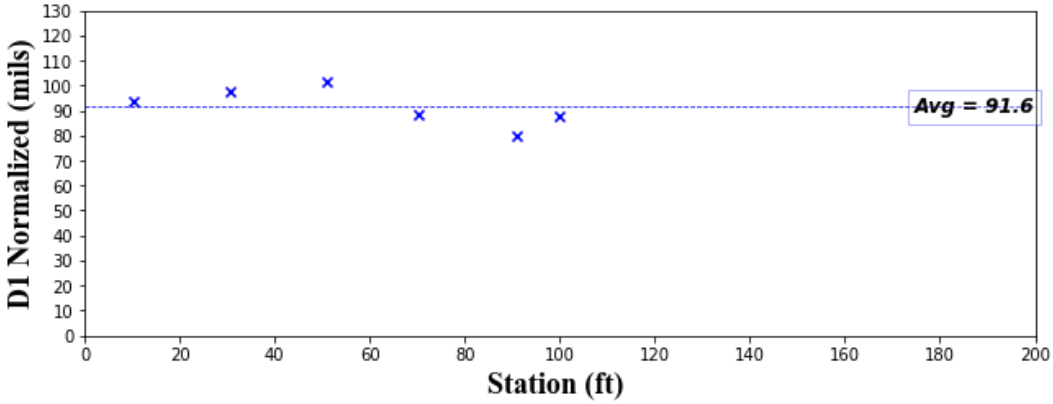


Figure C-39. TWY S1 10L

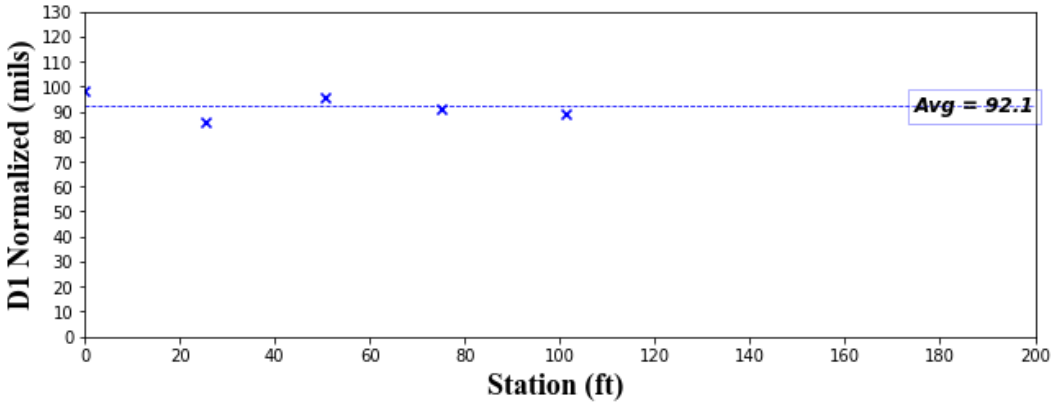


Figure C-40. TWY S1 10R

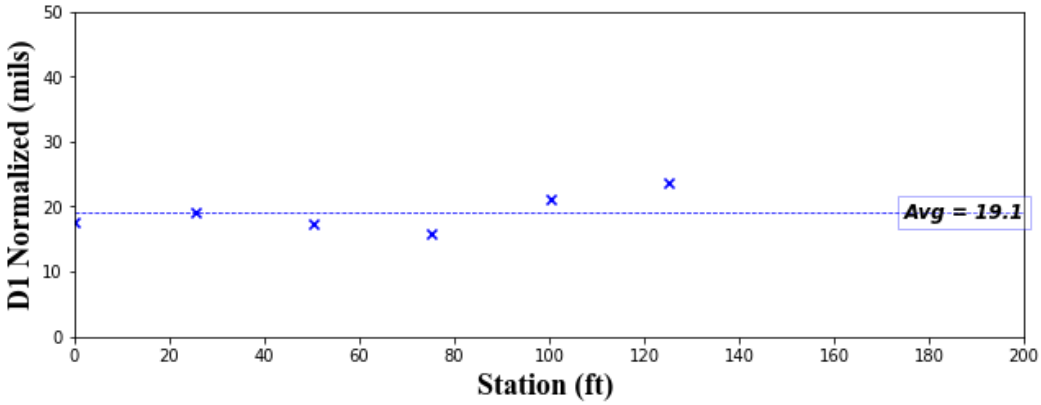


Figure C-41. TWY S2 10L

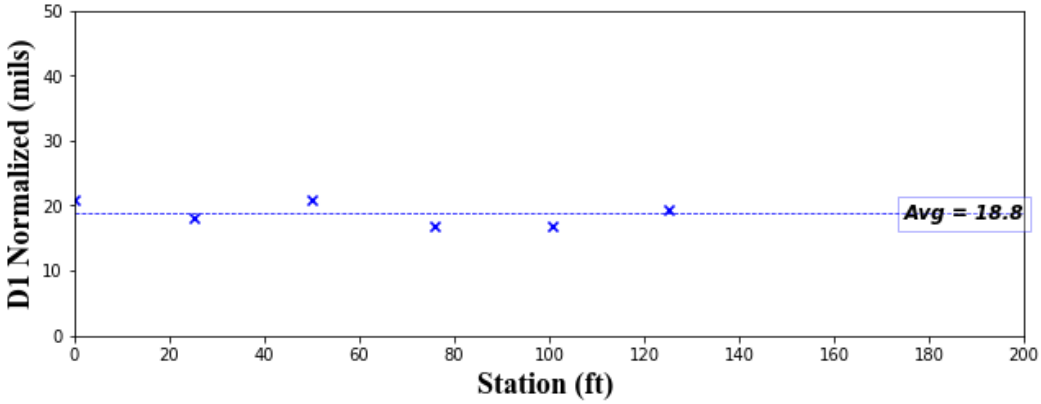


Figure C-42. TWY S2 10R

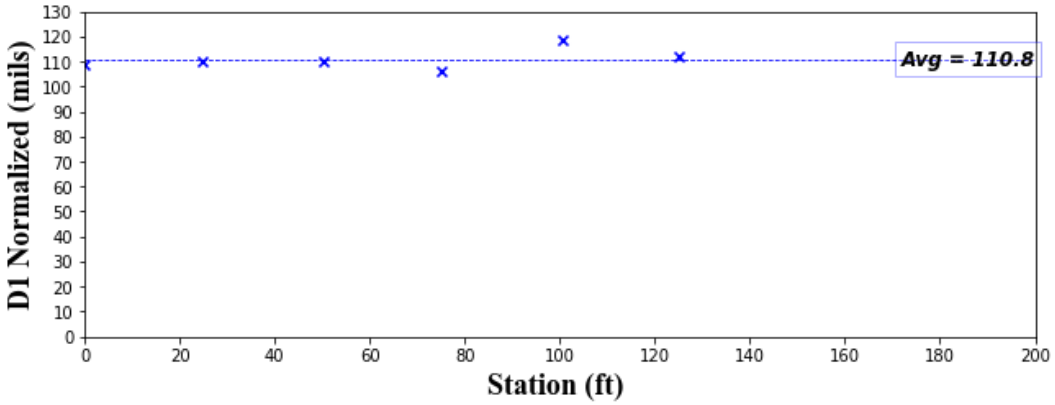


Figure C-43. TWY S3 10L

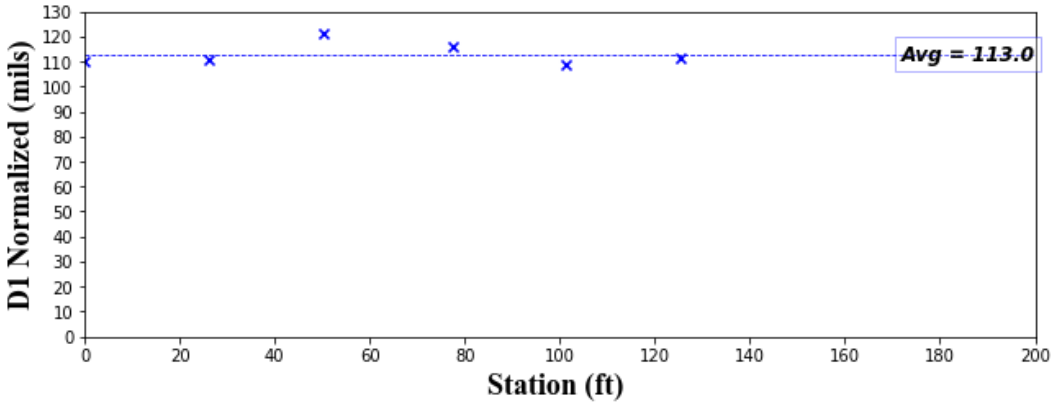


Figure C-44. TWY S3 10R

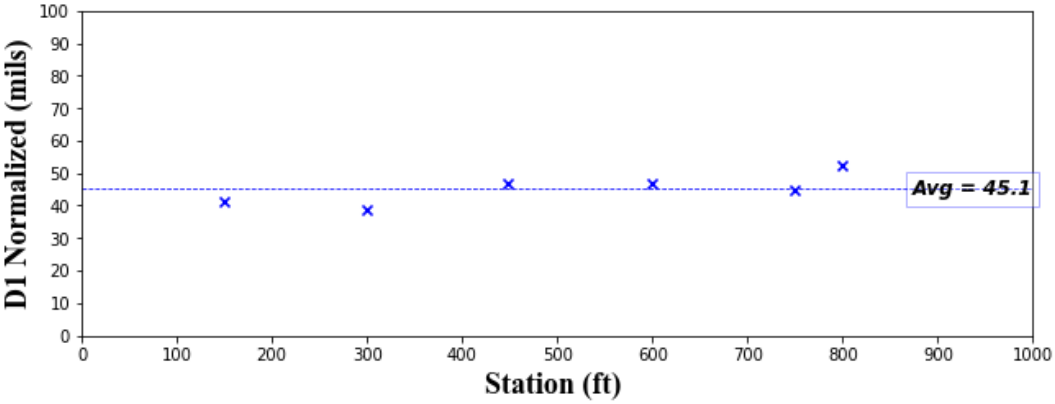


Figure C-45. TWY S5 10L

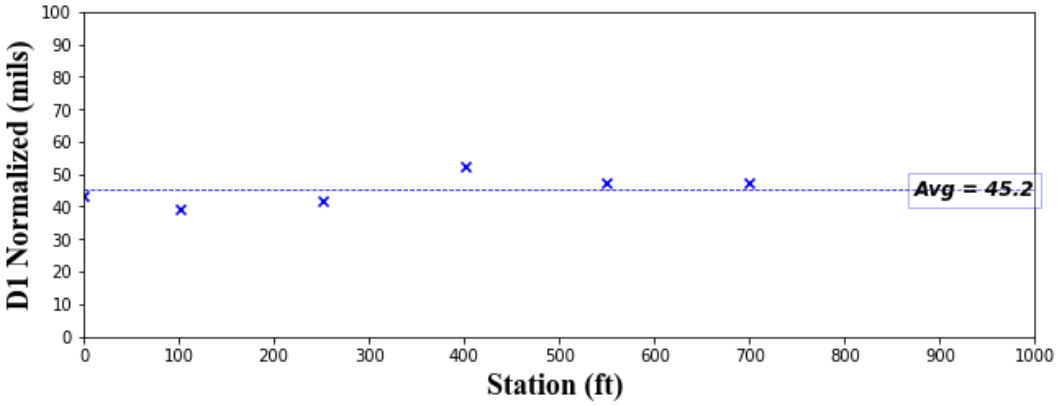


Figure C-46. TWY S5 10R

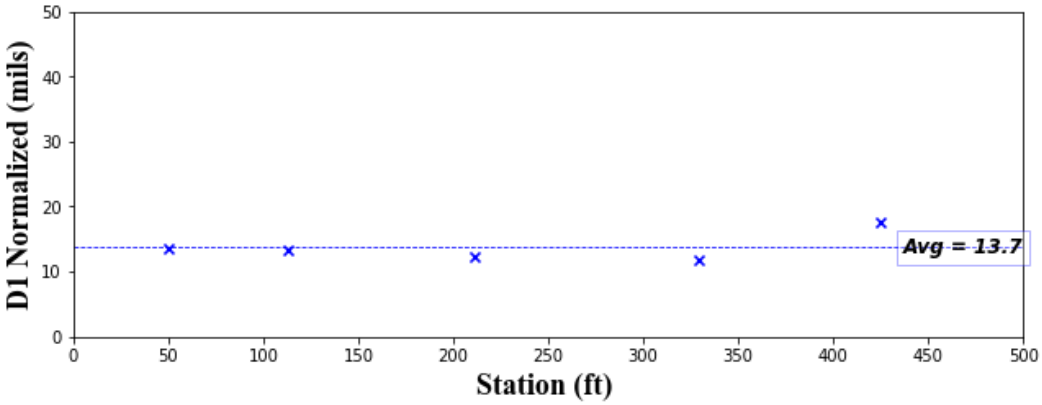


Figure C-47. TWY T 10L

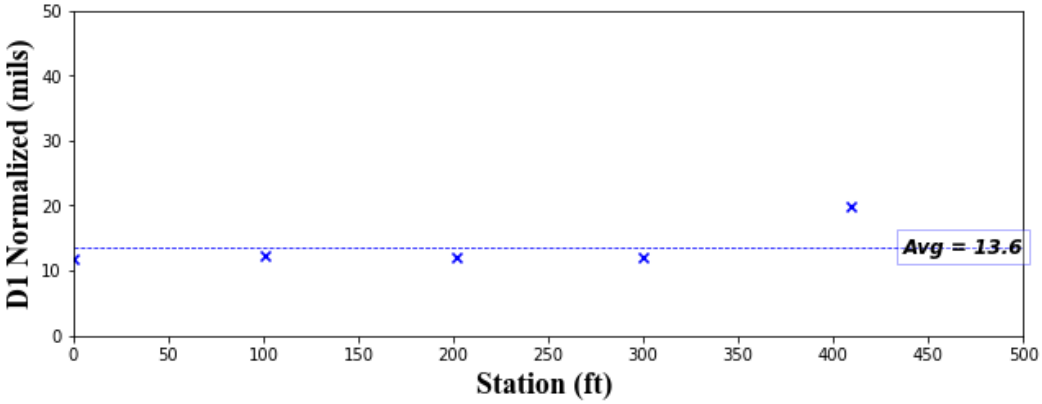


Figure C-48. TWY T 10R

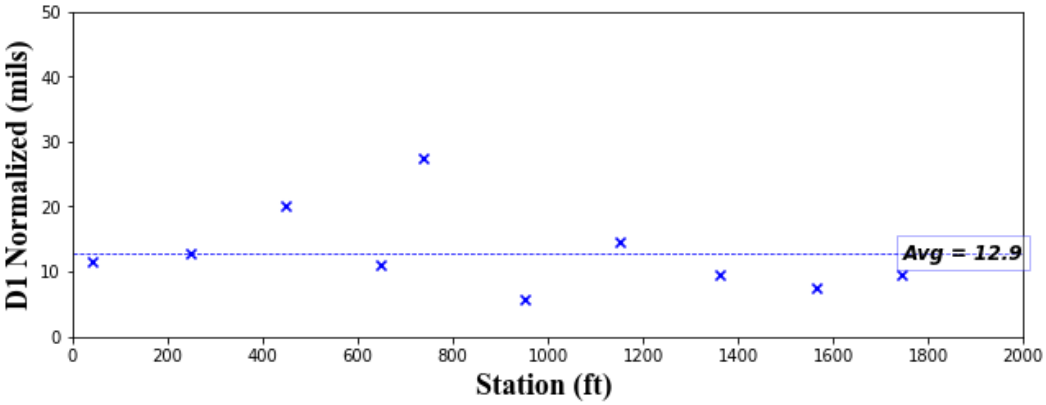


Figure C-49. TWY U 10L

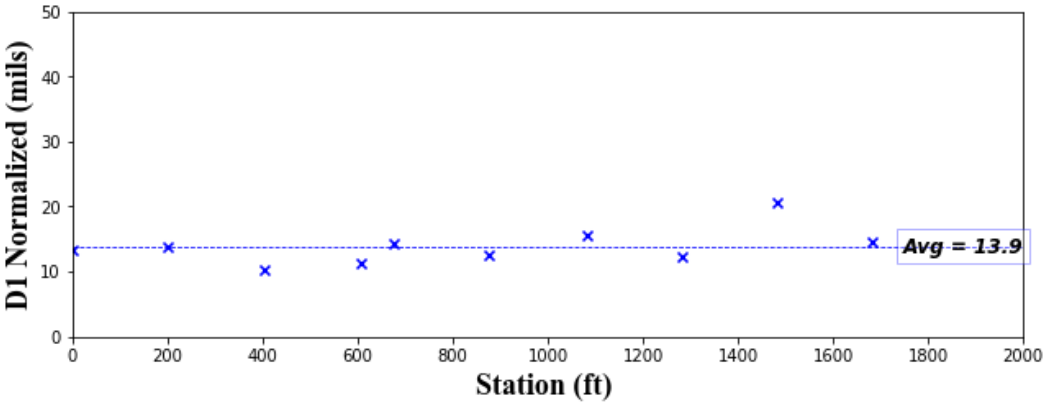


Figure C-50. TWY U 10R

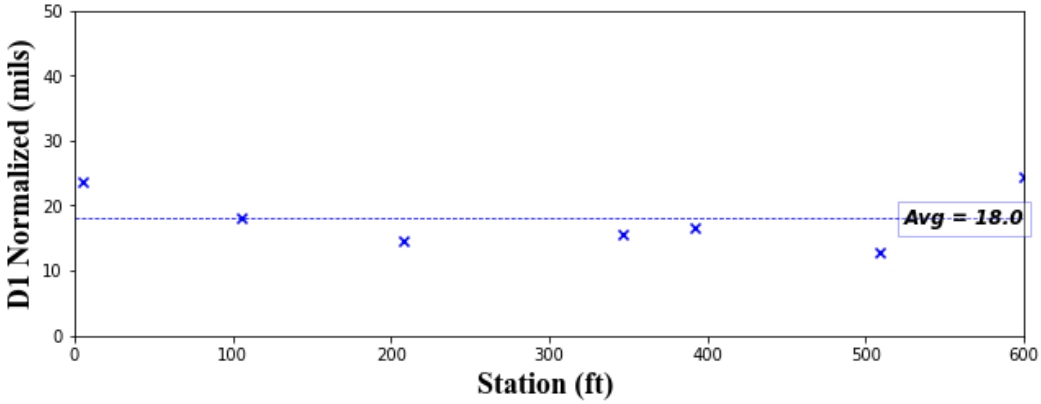


Figure C-51. TWY V 10L

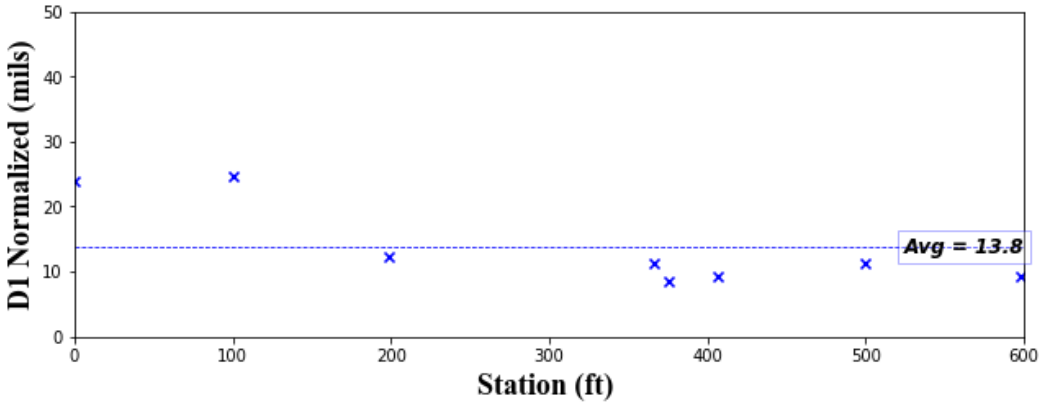


Figure C-52. TWY V 10R

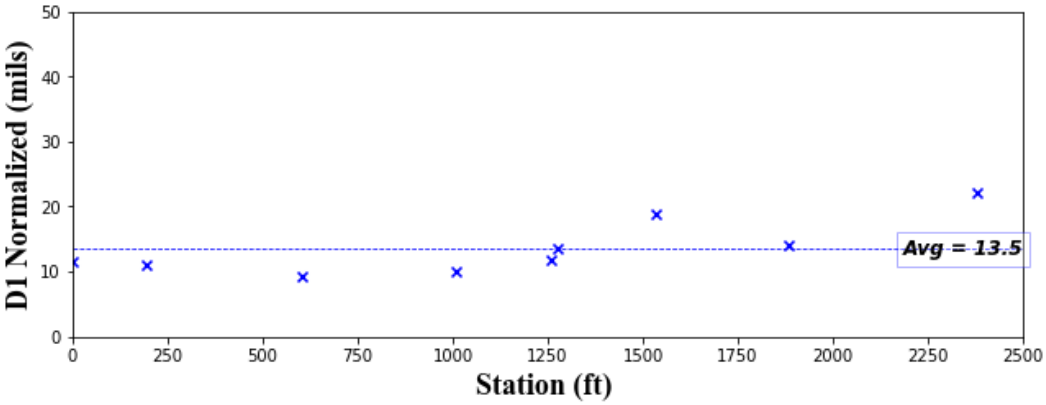


Figure C-53. TWY W 10L

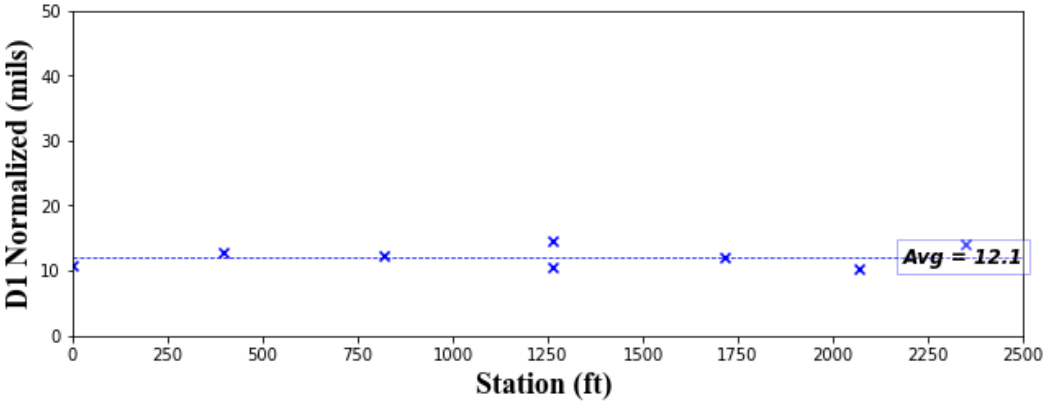


Figure C-54. TWY W 10R

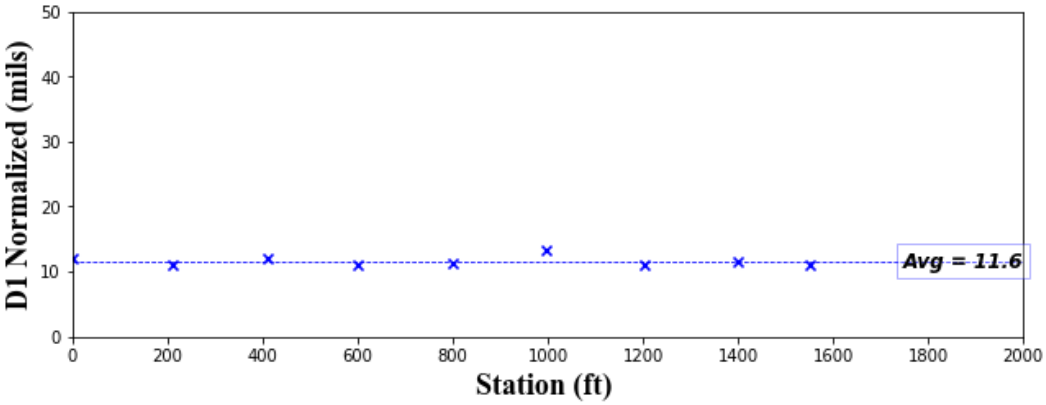


Figure C-55. TWY Y 10L

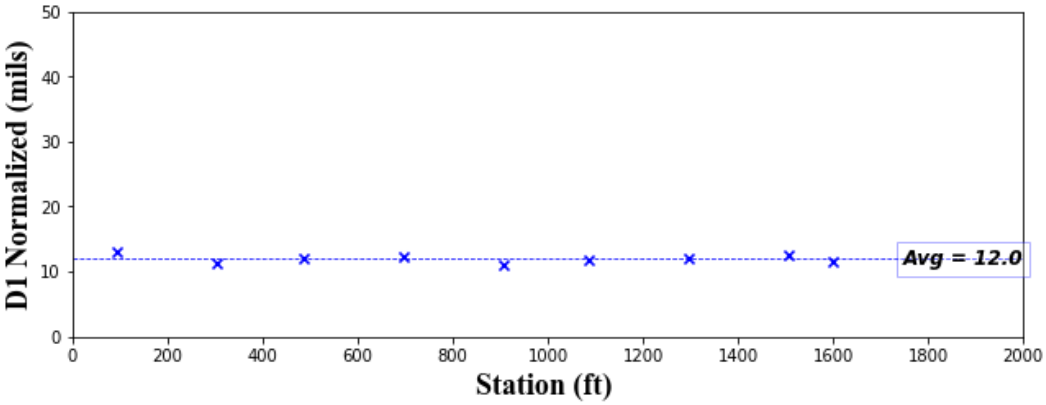


Figure C-56. TWY Y 10R

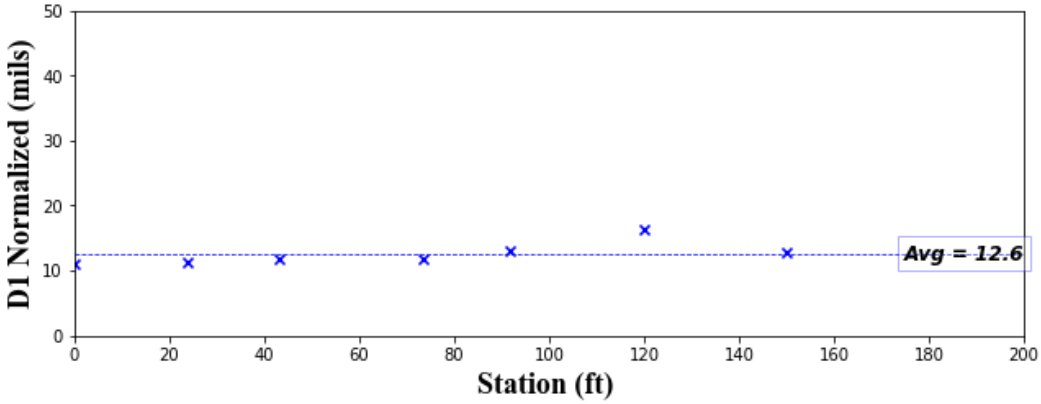


Figure C-57. TWY Y1 10L

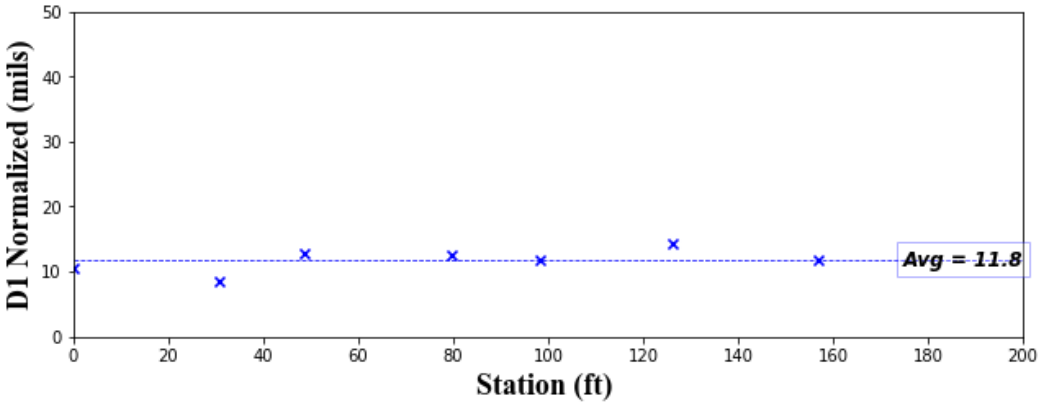


Figure C-58. TWY Y1 10R

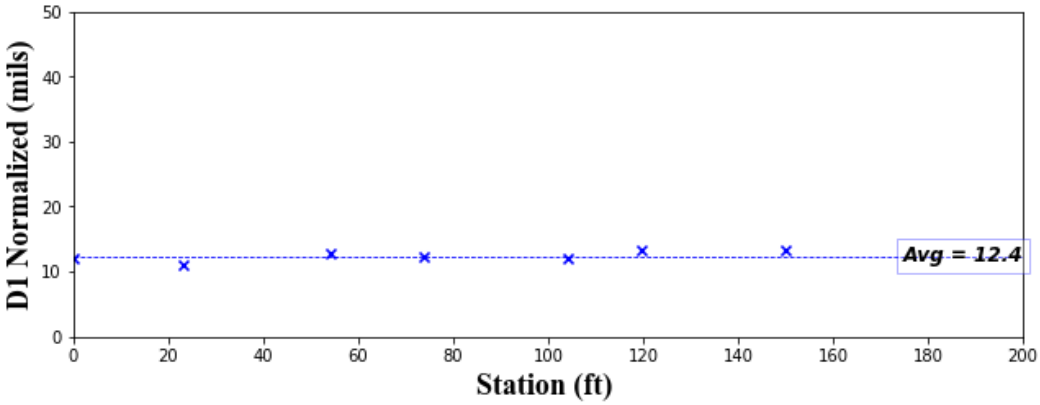


Figure C-59. TWY Y2 10L

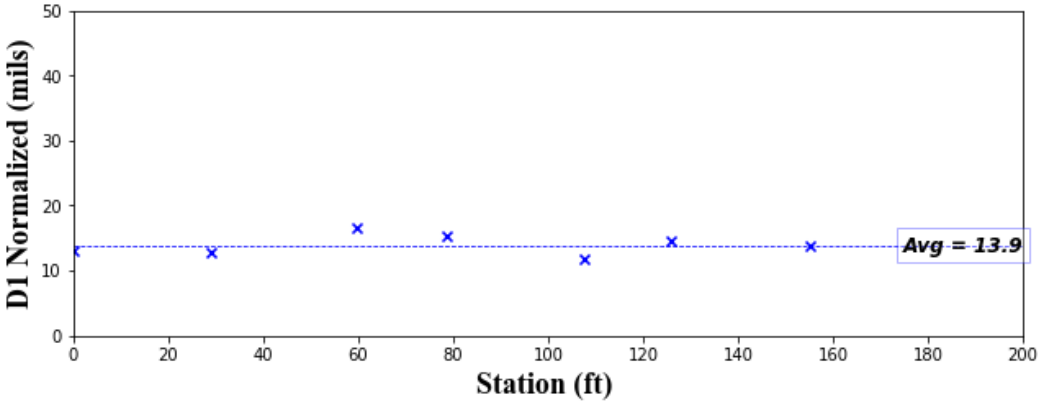


Figure C-60. TWY Y2 10R

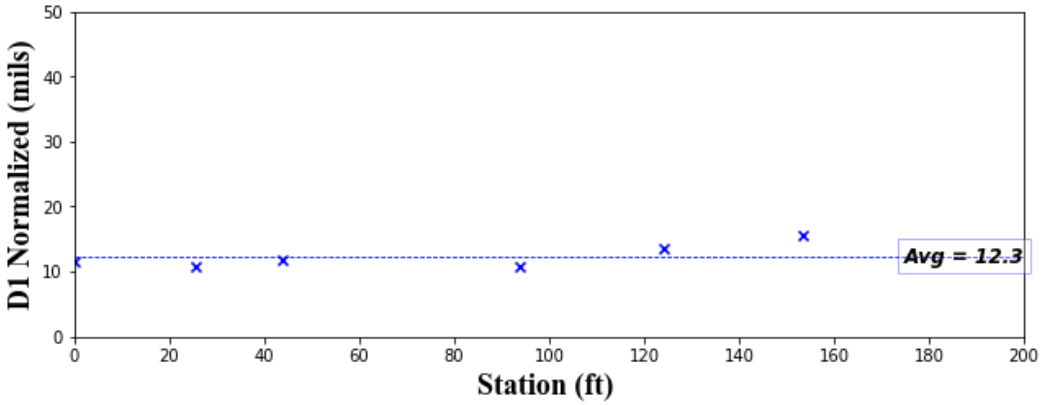


Figure C-61. TWY Y3 10L

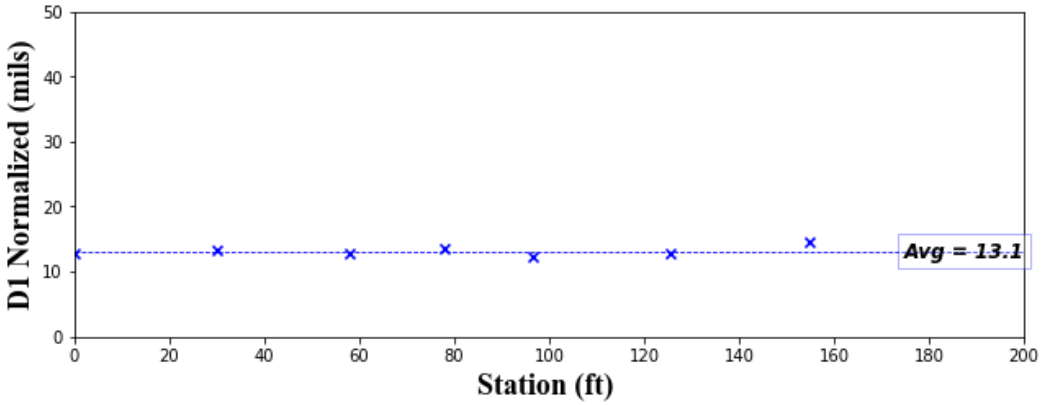


Figure C-62. TWY Y3 10R

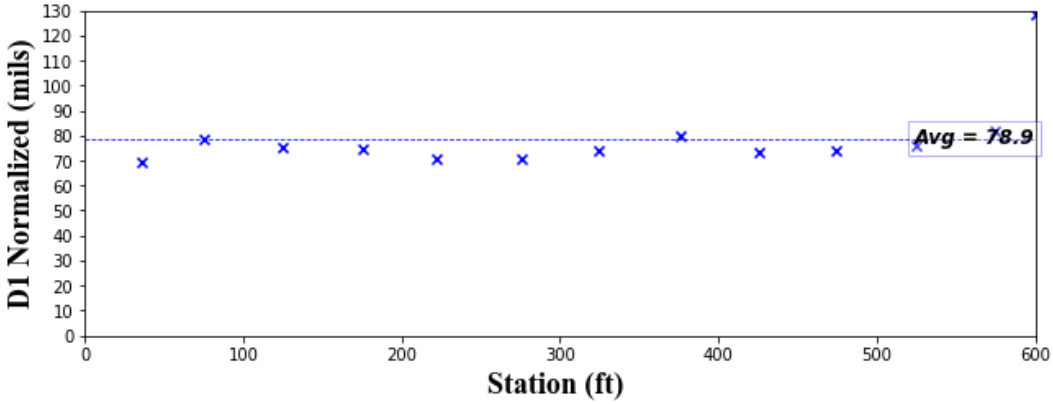


Figure C-63. TXL G 10L

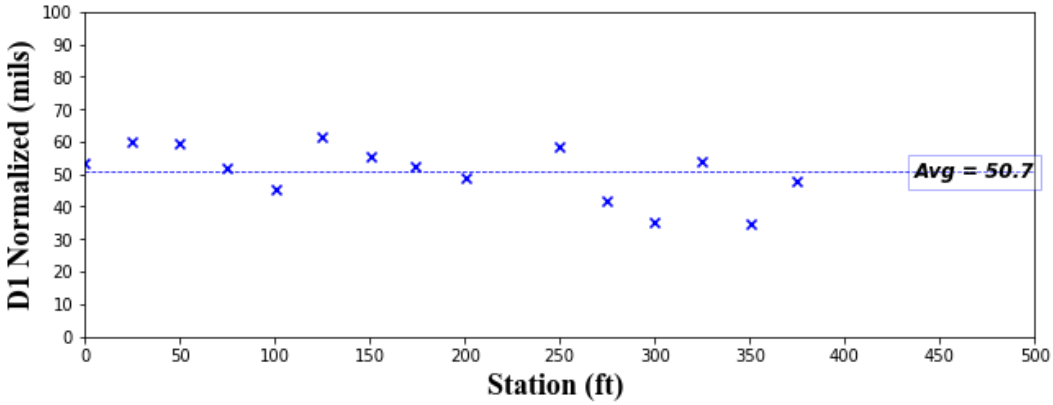


Figure C-64. TXL H 10L

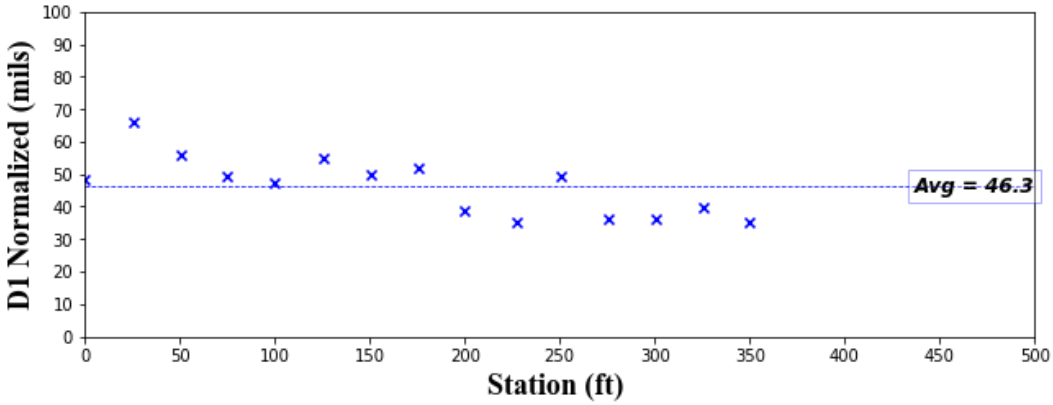


Figure C-65. TXL H 10R

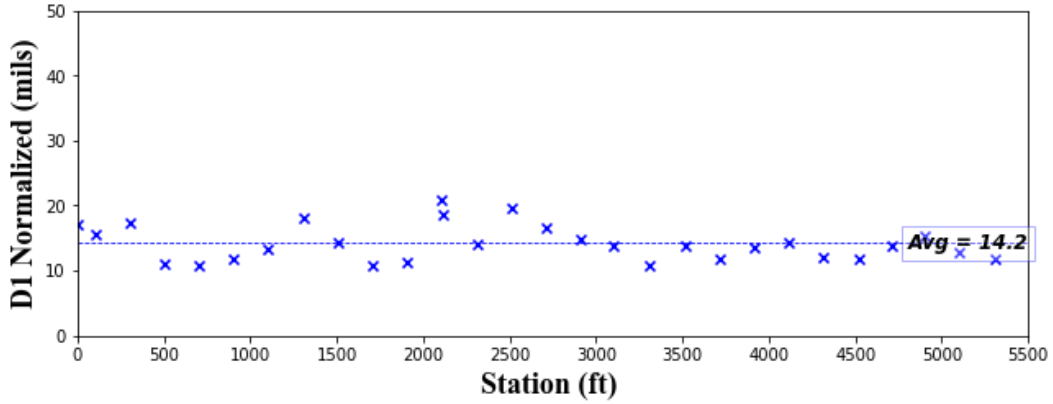


Figure C-66. TXL N1 10L

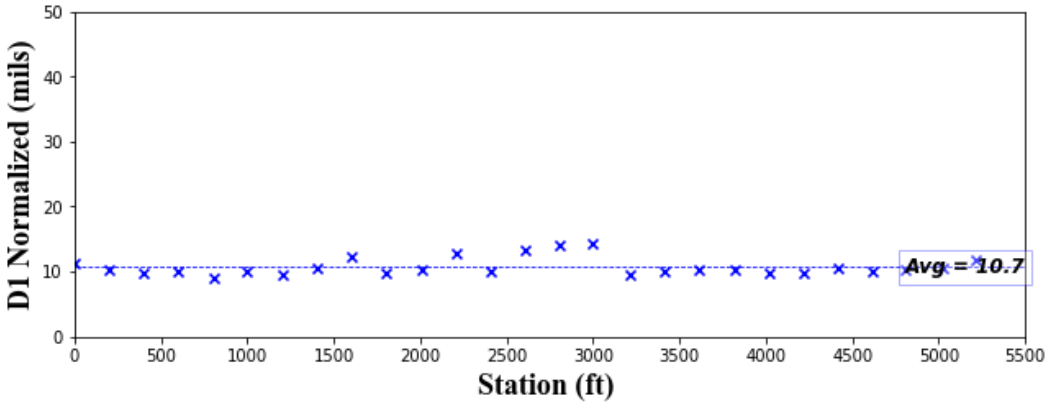


Figure C-67. TXL N1 10R

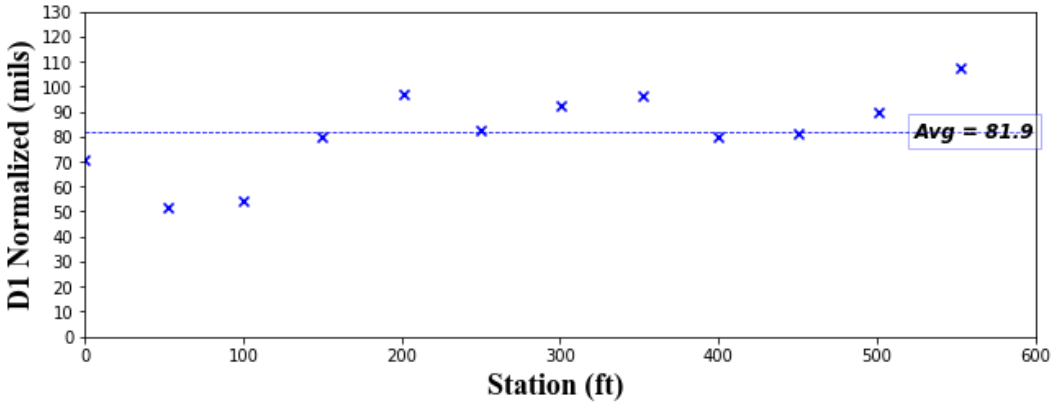


Figure C-68. TXY G 10R

Appendix D – Pavement Layer Moduli Plots

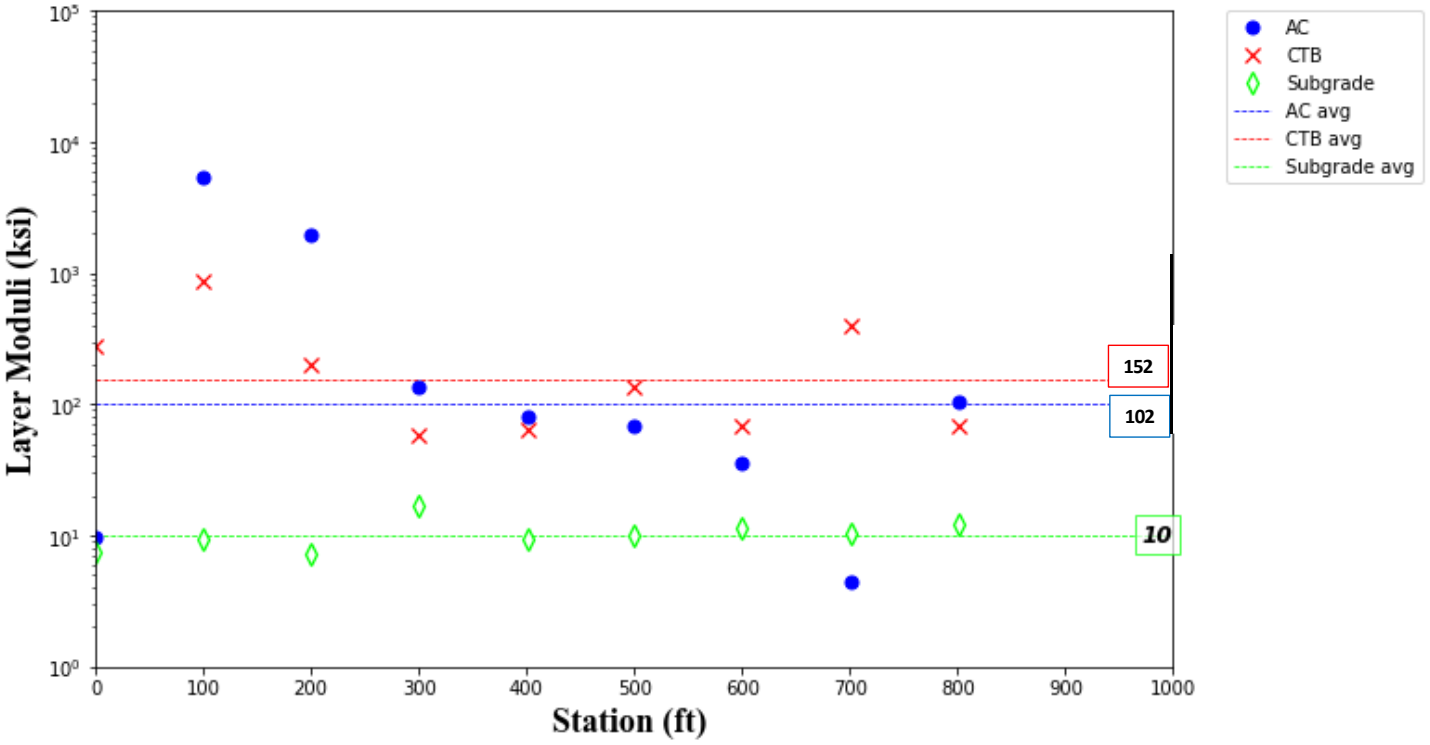


Figure D-1. Backcalculated Layer Moduli for ATLANTIC AVIATION APRON R1

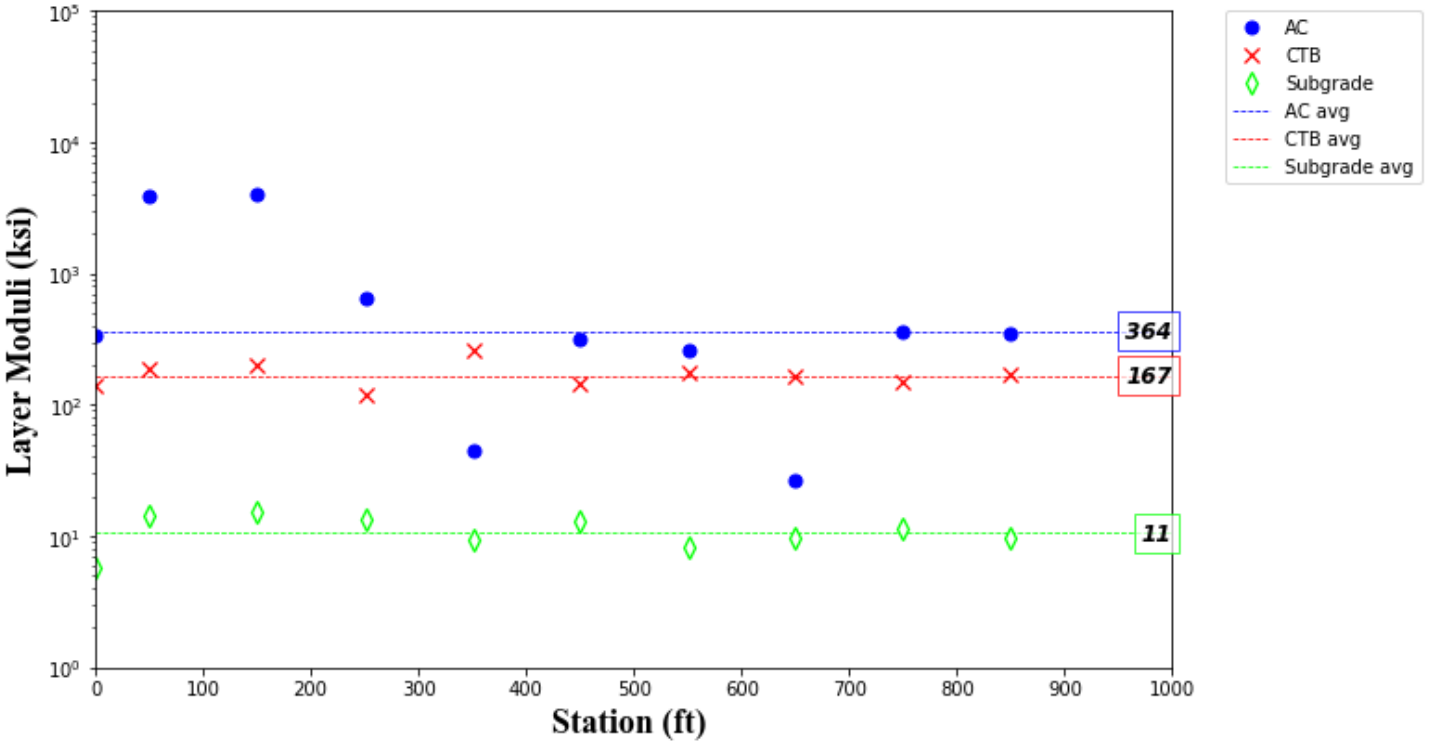


Figure D-2. Backcalculated Layer Moduli for ATLANTIC AVIATION APRON R2

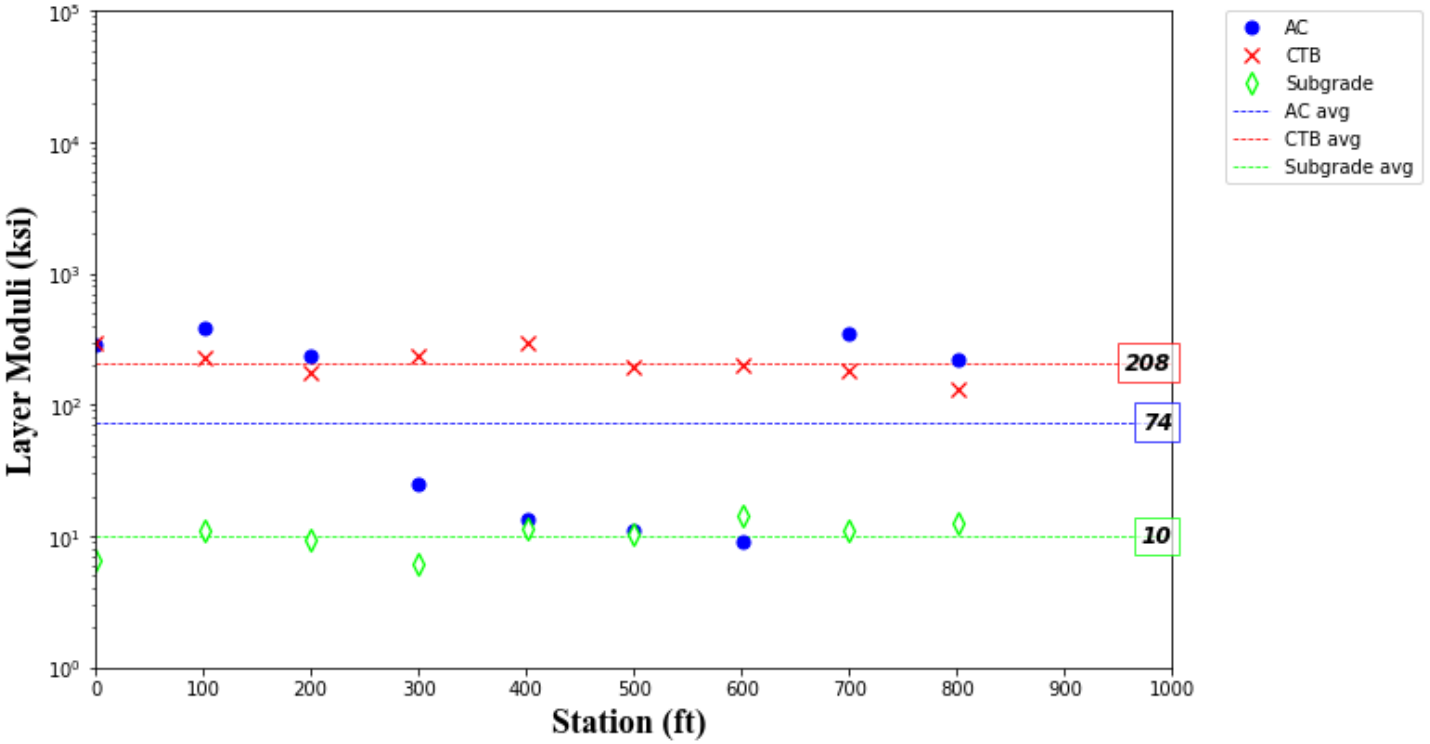


Figure D-3. Backcalculated Layer Moduli for ATLANTIC AVIATION APRON R3

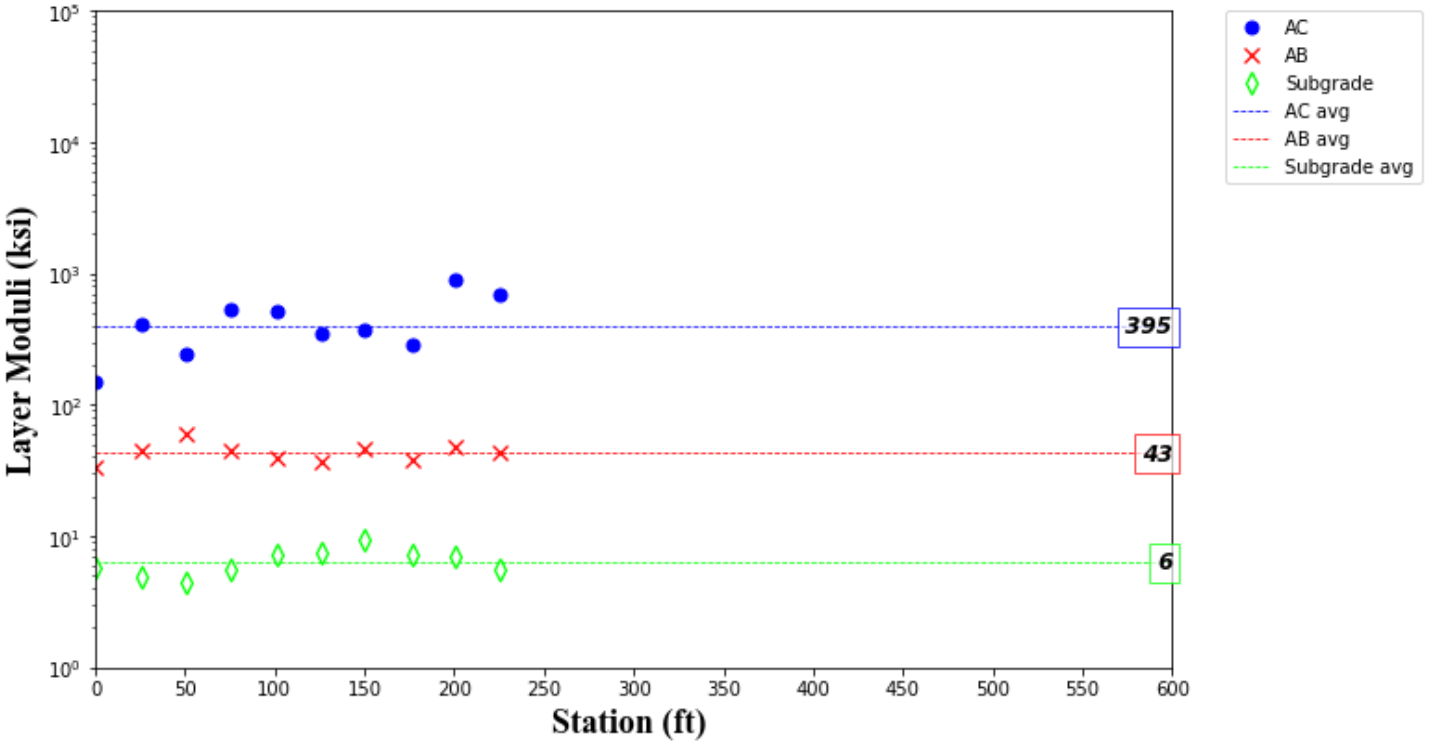


Figure D-4. Backcalculated Layer Moduli for INT TERMINAL APRON R1

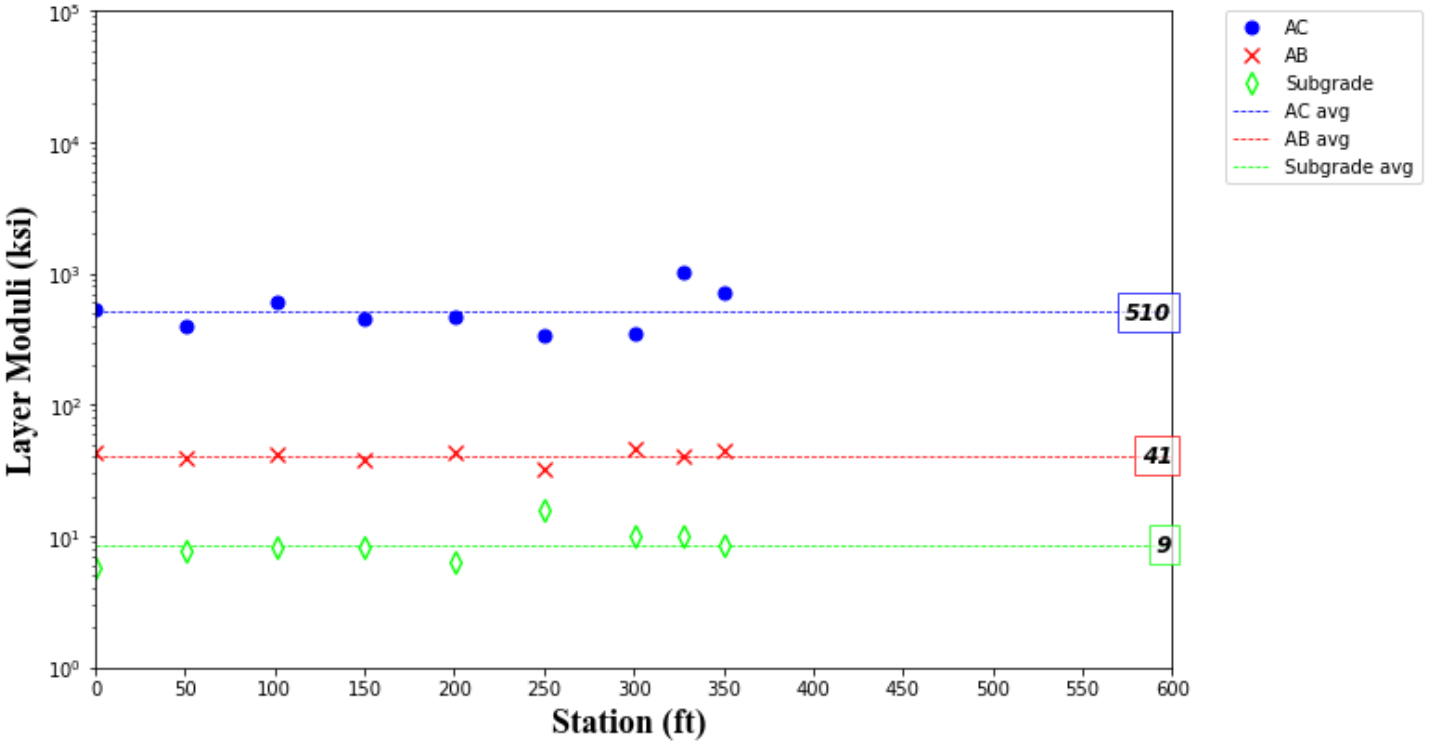


Figure D-5. Backcalculated Layer Moduli for INT TERMINAL APRON R2

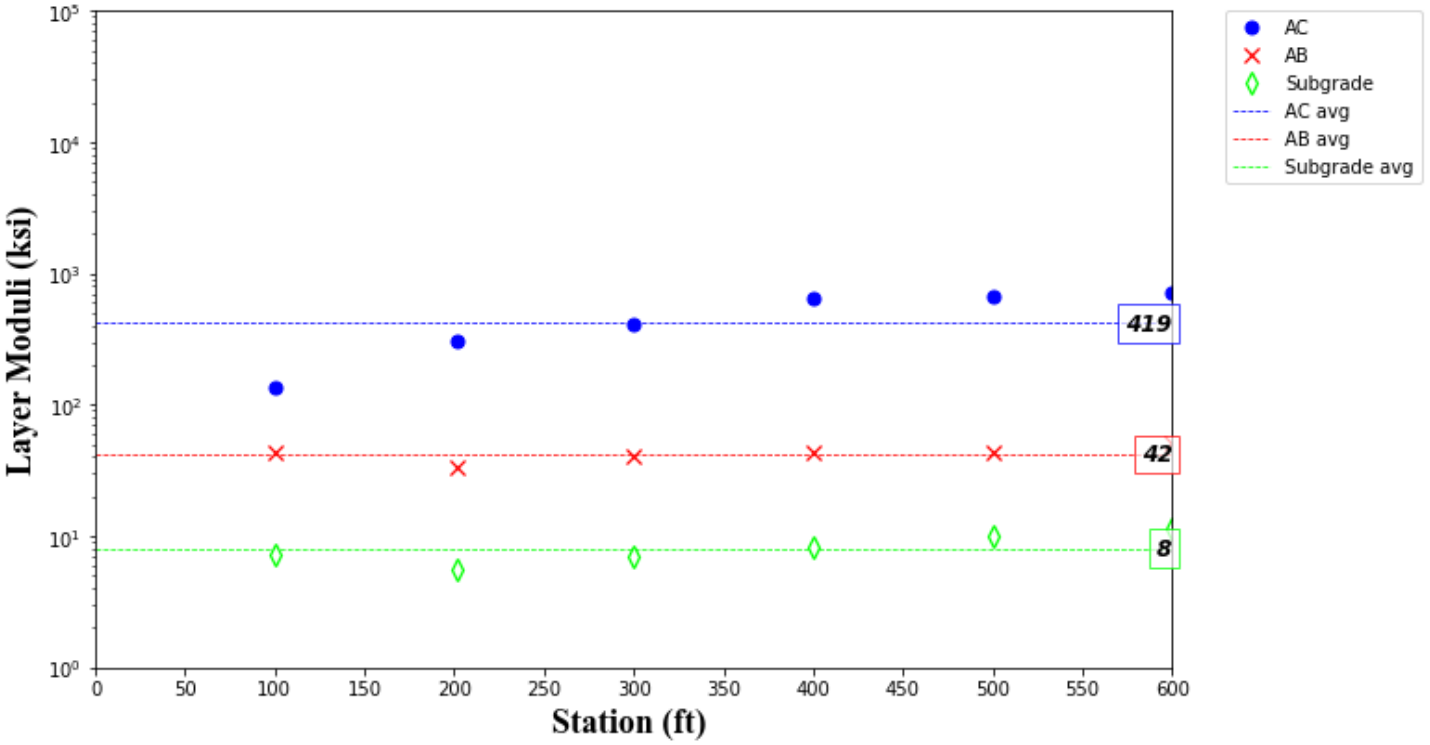


Figure D-6. Backcalculated Layer Moduli for INT TERMINAL APRON R3

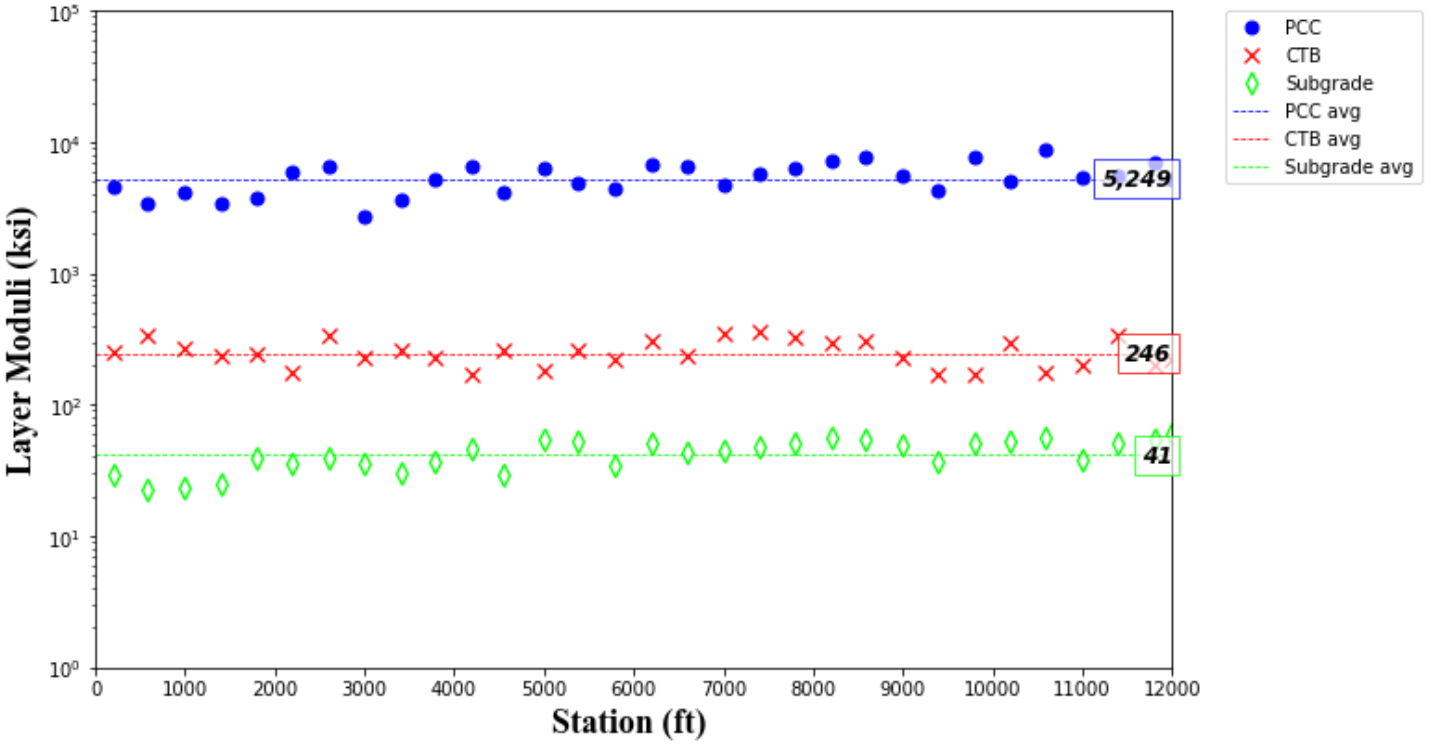


Figure D-7. Backcalculated Layer Moduli for RWY 8L26R 10L

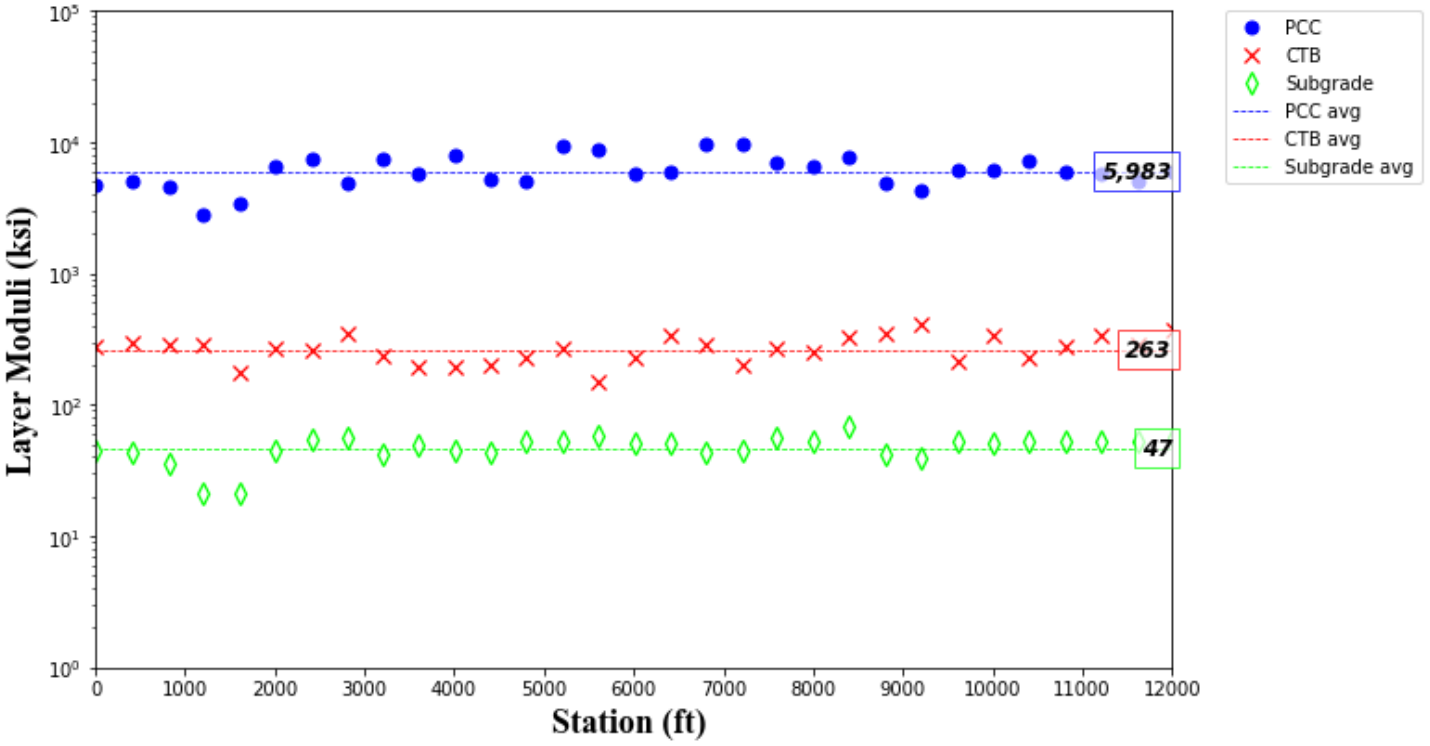


Figure D-8. Backcalculated Layer Moduli for RWY 8L26R 10R

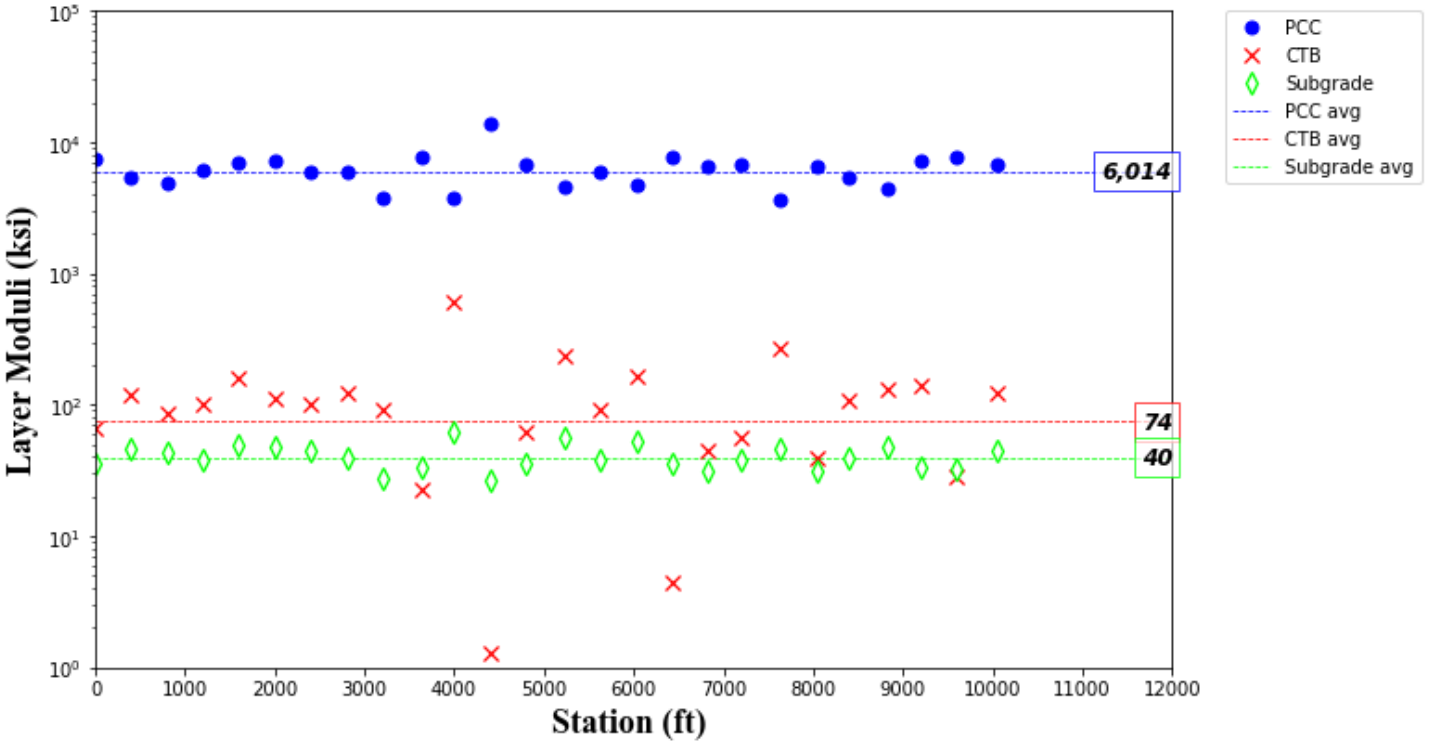


Figure D-9. Backcalculated Layer Moduli for RWY 8R26L 10L

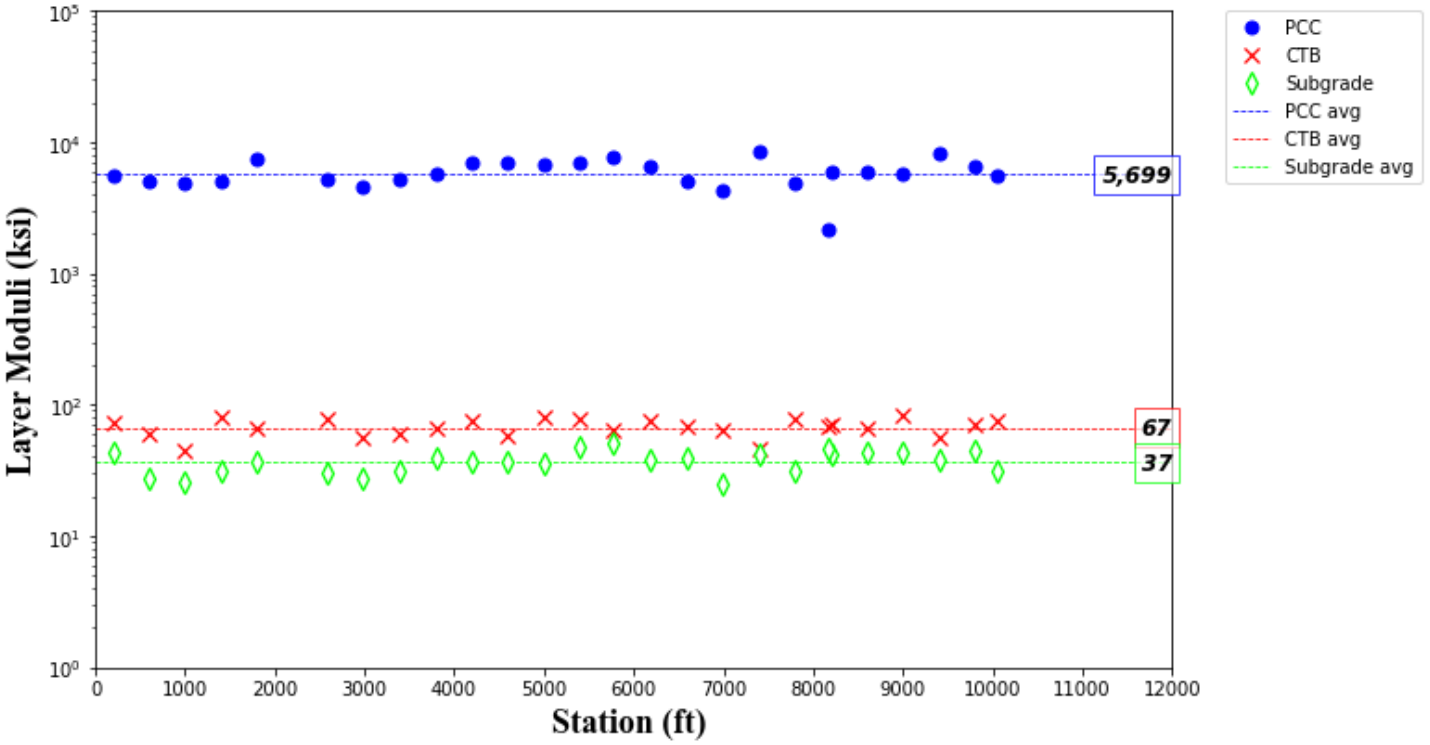


Figure D-10. Backcalculated Layer Moduli for RWY 8R26L 10R

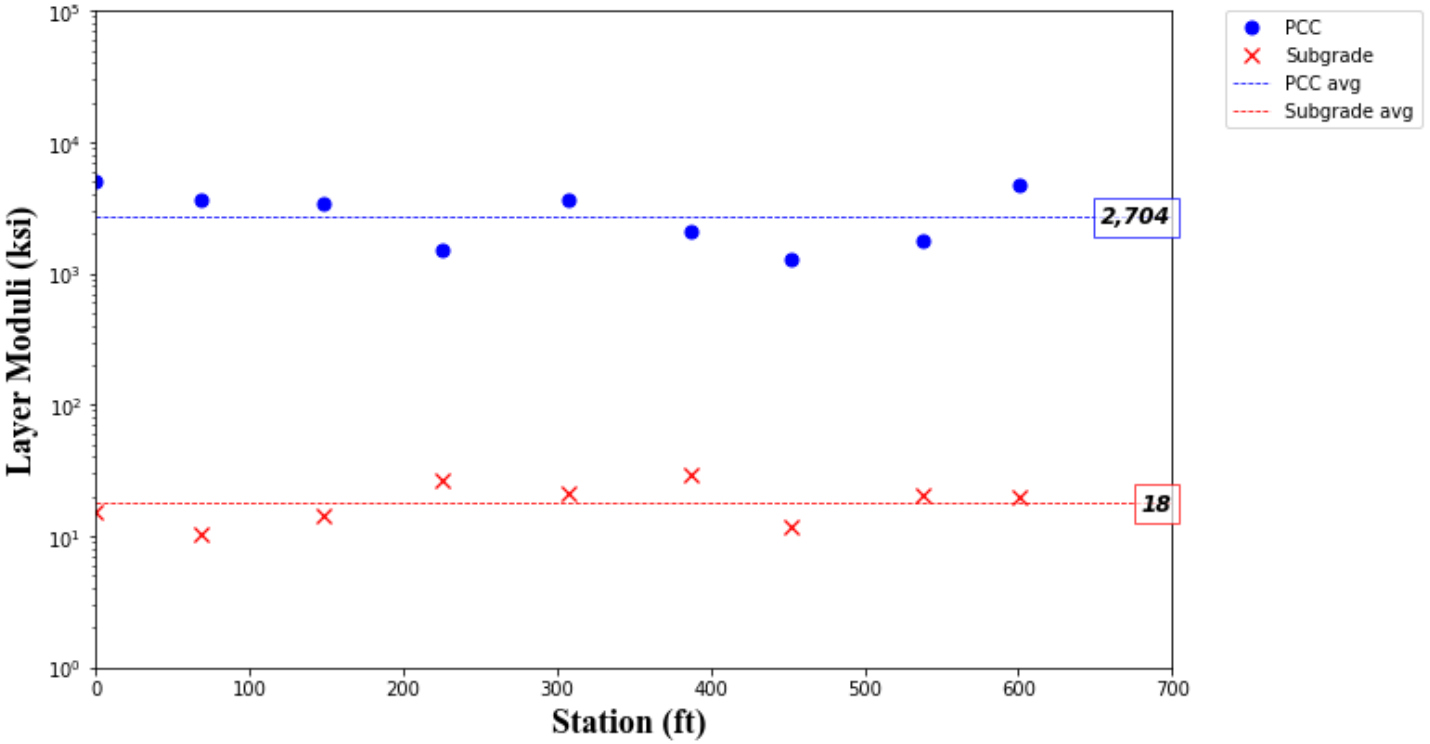


Figure D-11. Backcalculated Layer Moduli for TERMINAL1 APRON R1

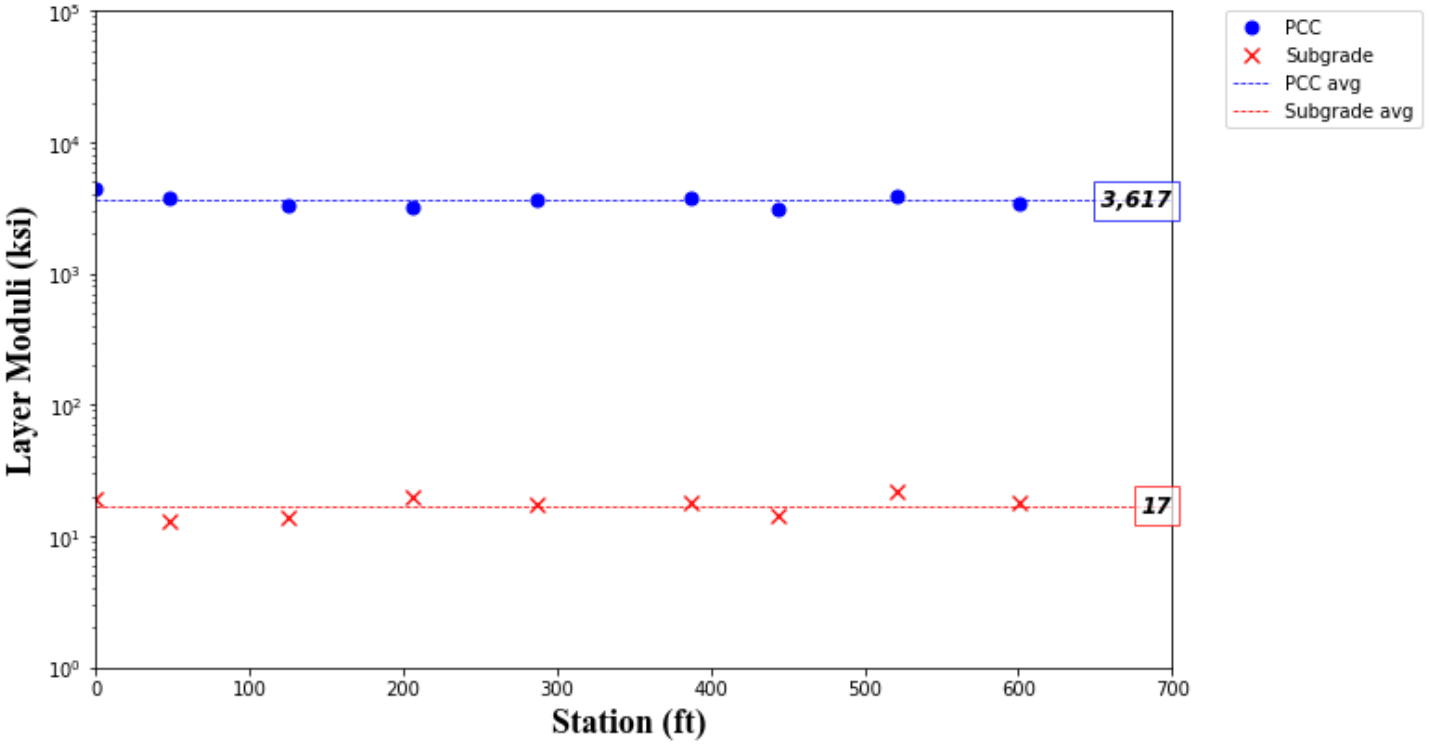


Figure D-12. Backcalculated Layer Moduli for TERMINAL1 APRON R2

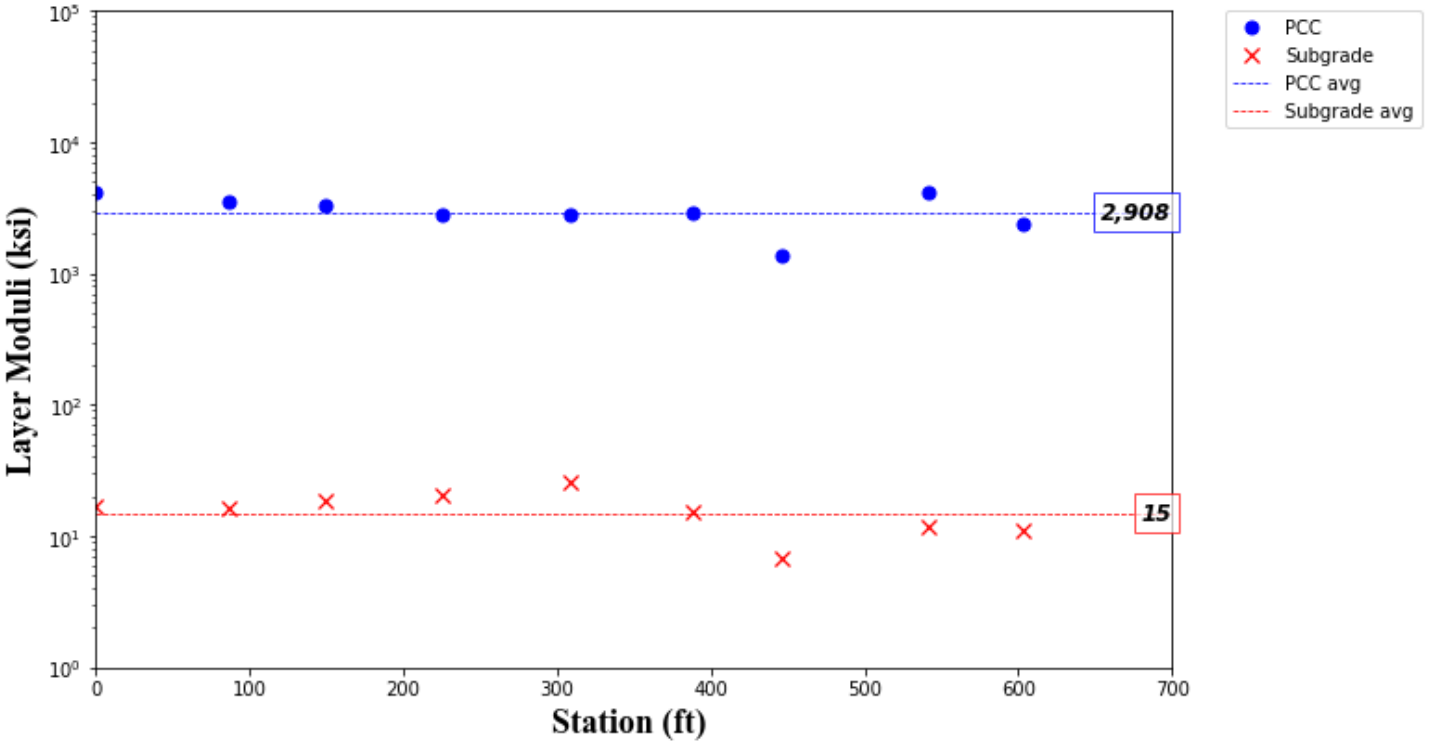


Figure D-13. Backcalculated Layer Moduli for TERMINAL1 APRON R3

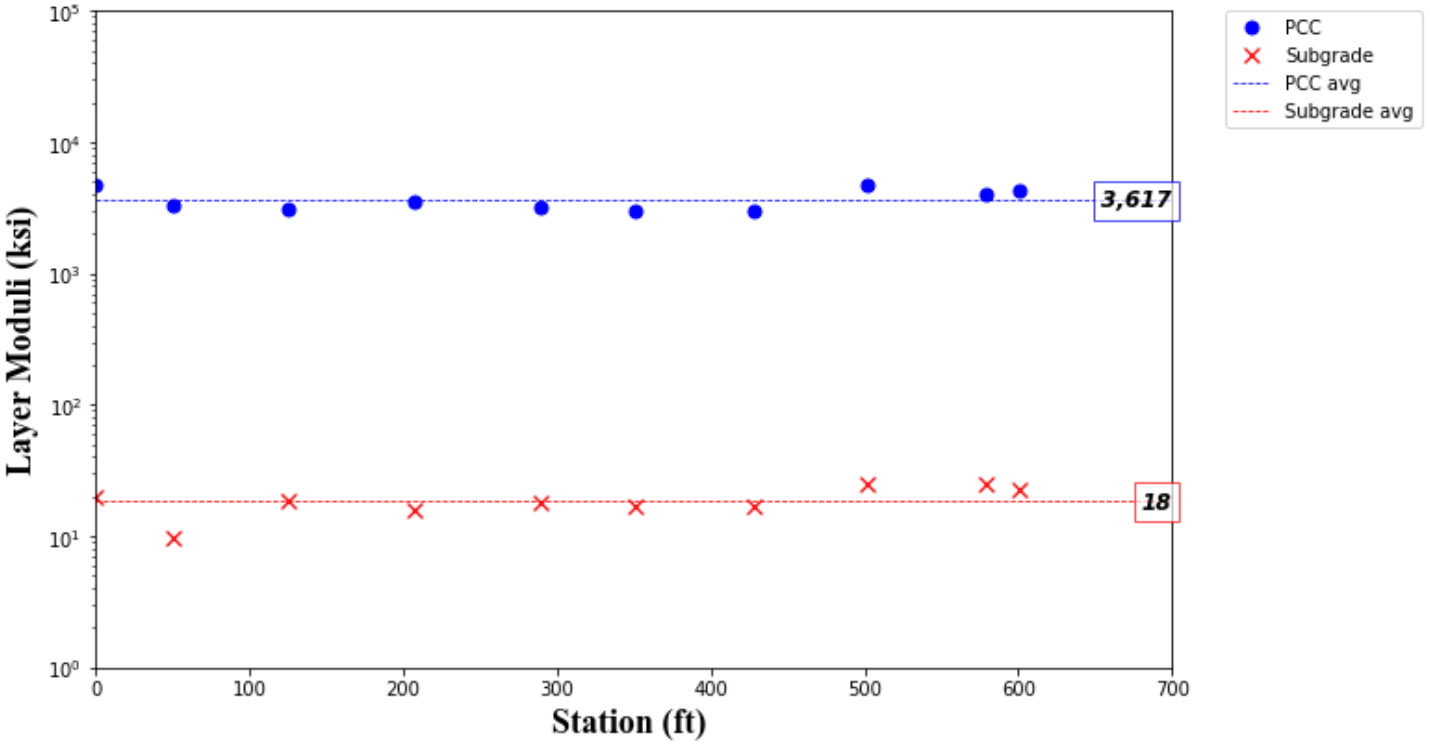


Figure D-14. Backcalculated Layer Moduli for TERMINAL1 APRON R4

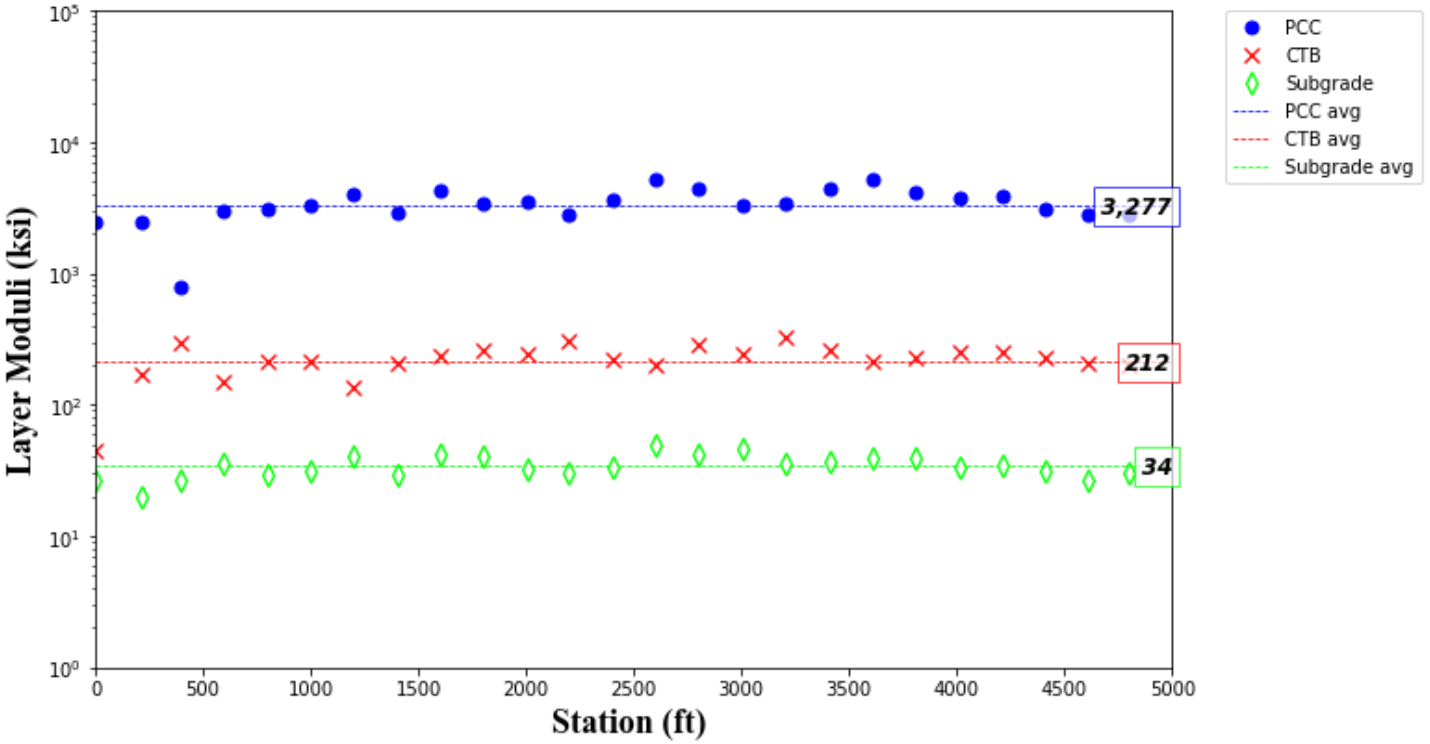


Figure D-15. Backcalculated Layer Moduli for TERMINAL2 4 R1

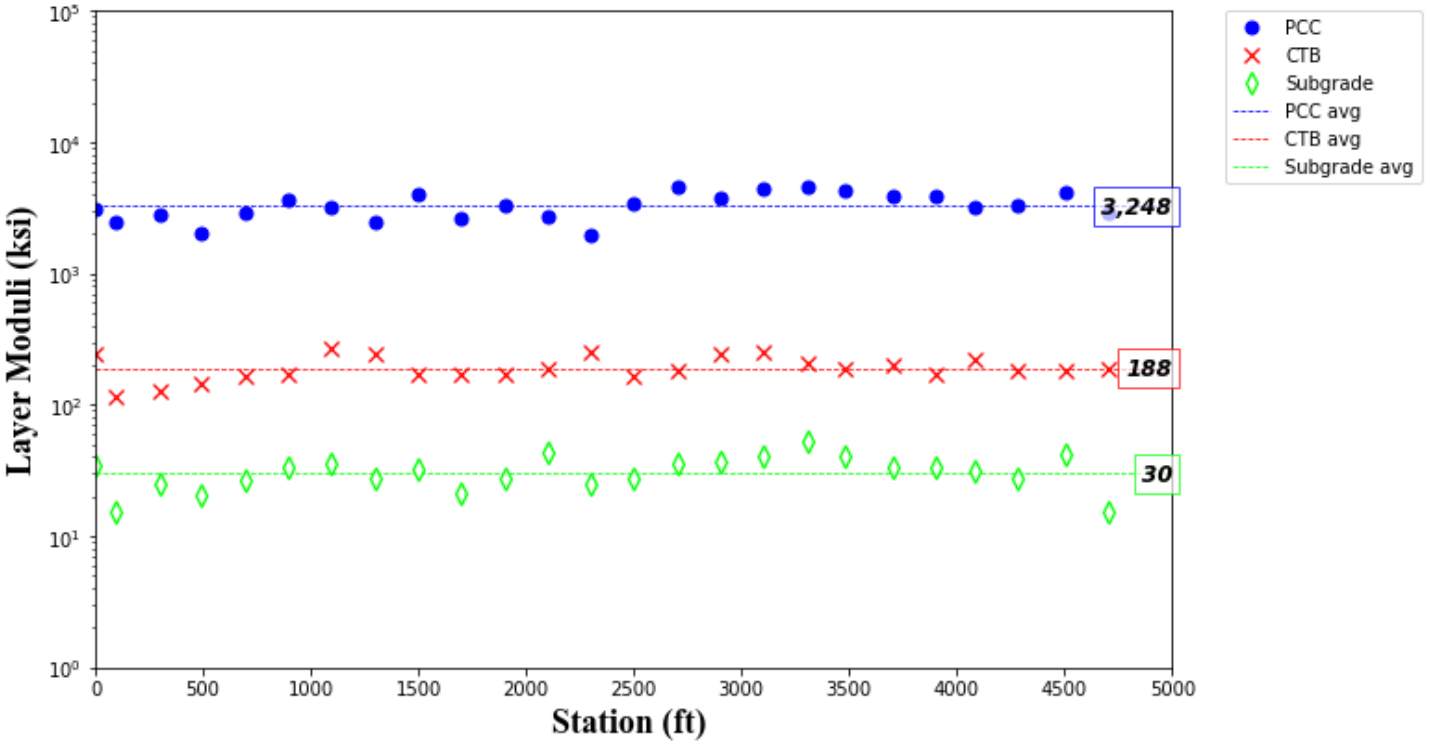


Figure D-16. Backcalculated Layer Moduli for TERMINAL2 4 R2

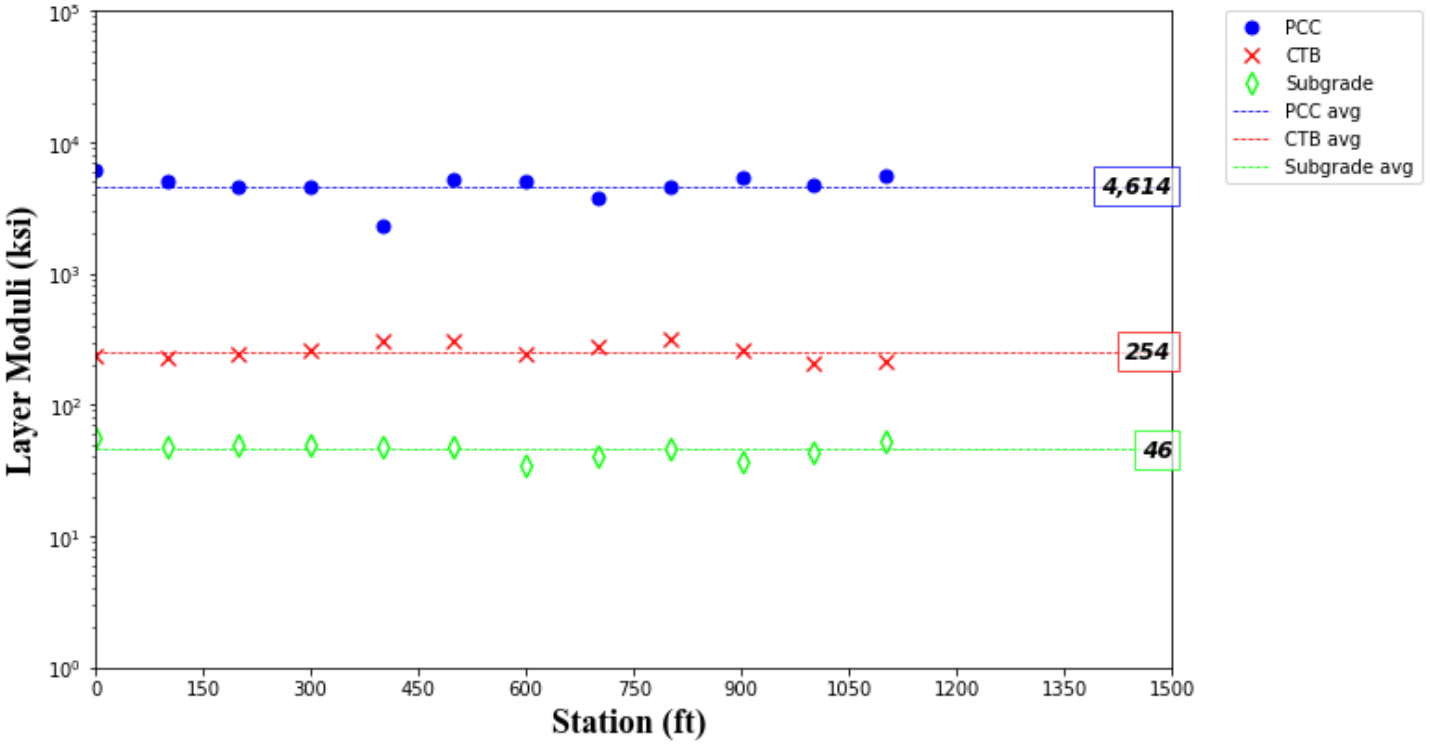


Figure D-17. Backcalculated Layer Moduli for TERMINAL2 4 R3

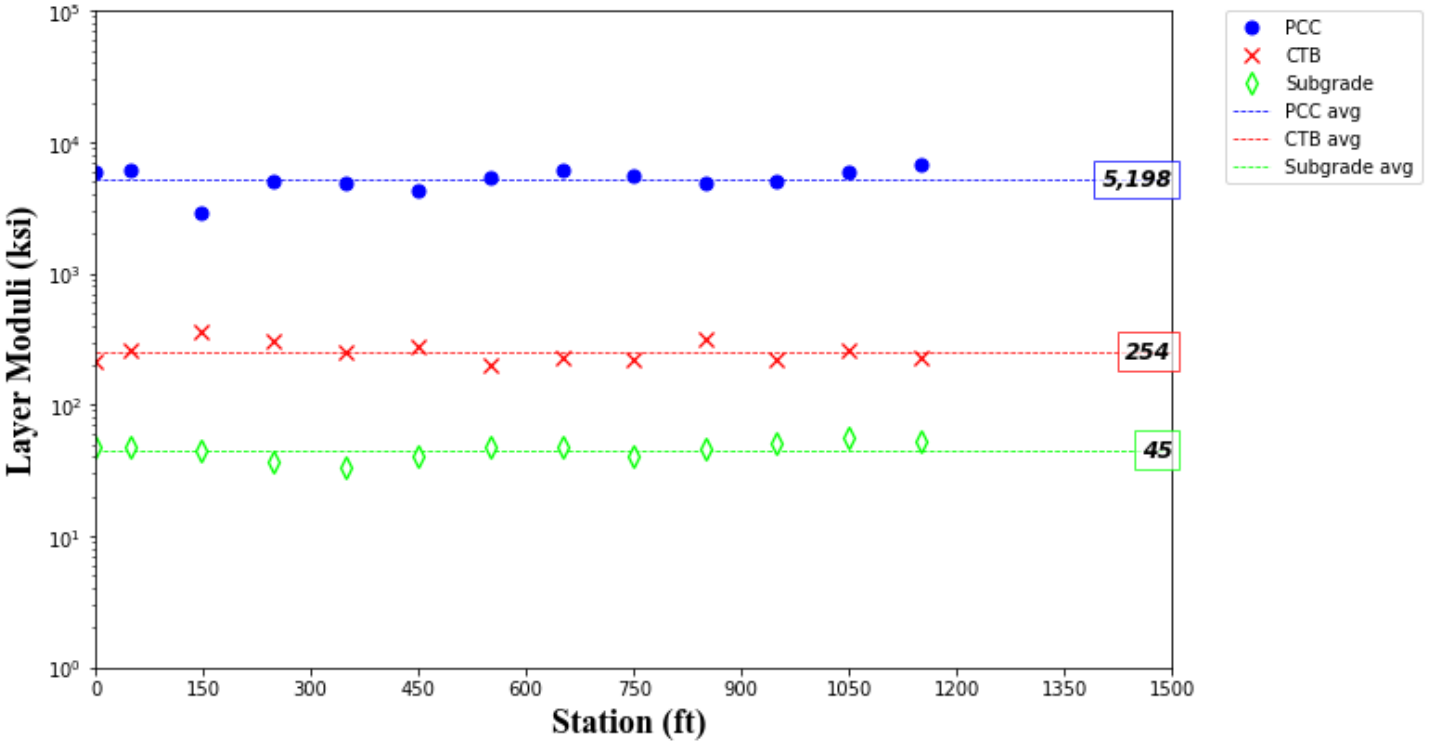


Figure D-18. Backcalculated Layer Moduli for TERMINAL2 4 R4

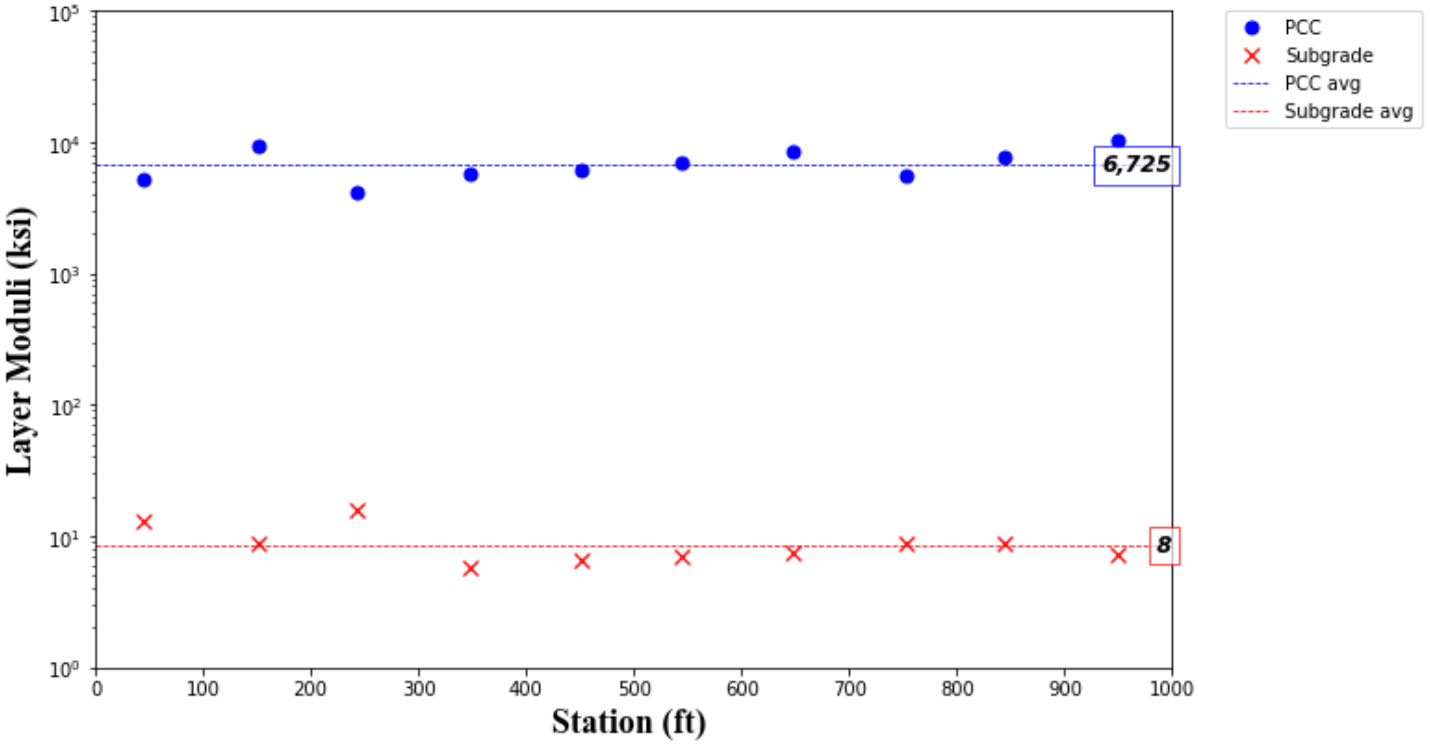


Figure D-19. Backcalculated Layer Moduli for TWY CSA 10L

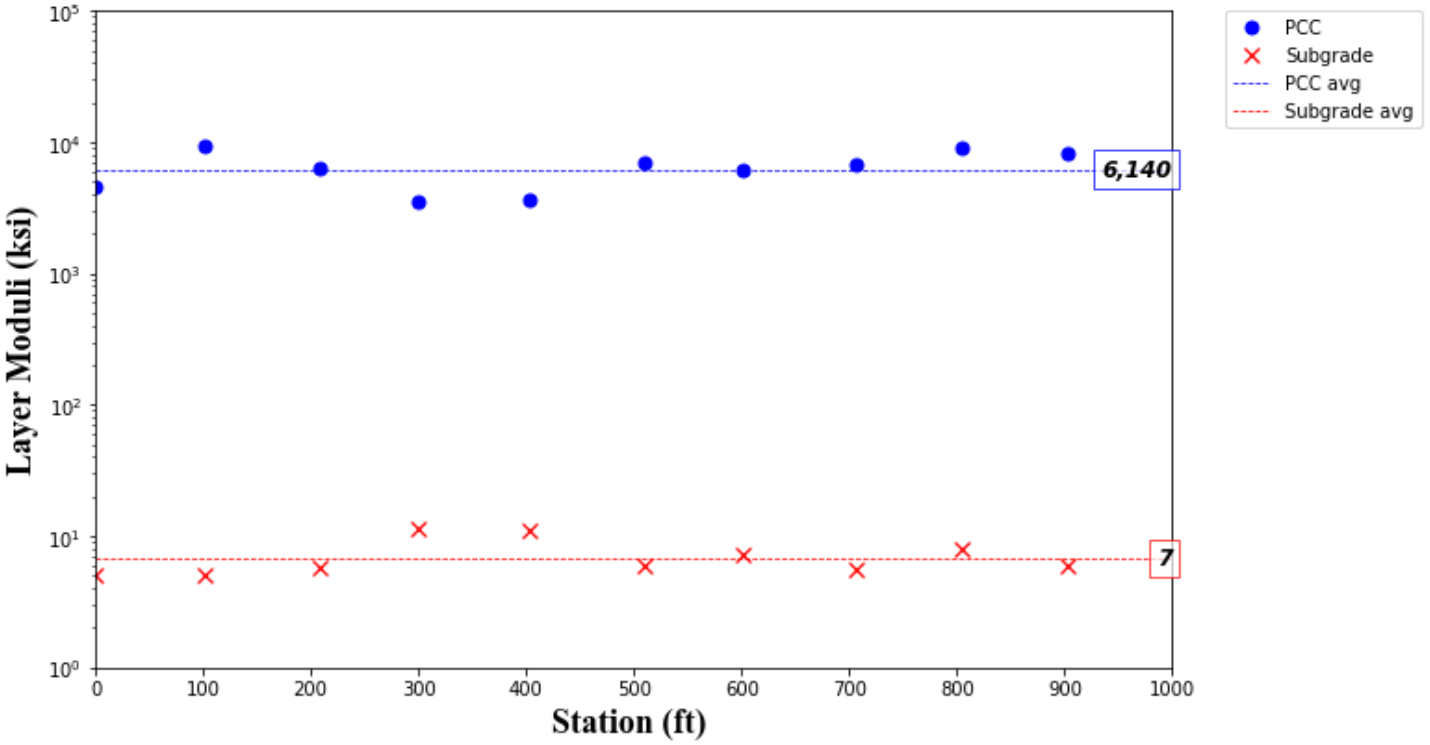


Figure D-20. Backcalculated Layer Moduli for TWY CSA 10R

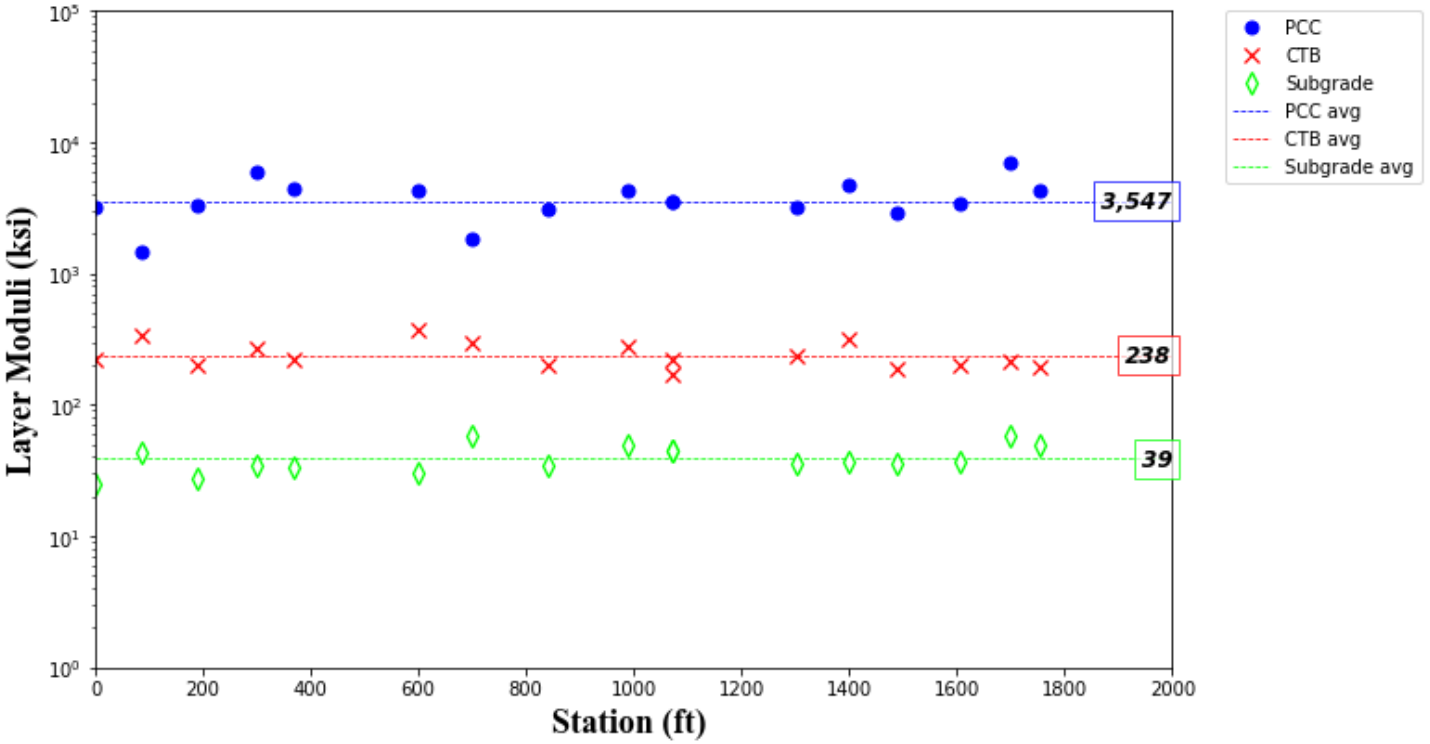


Figure D-21. Backcalculated Layer Moduli for TWY D 10L

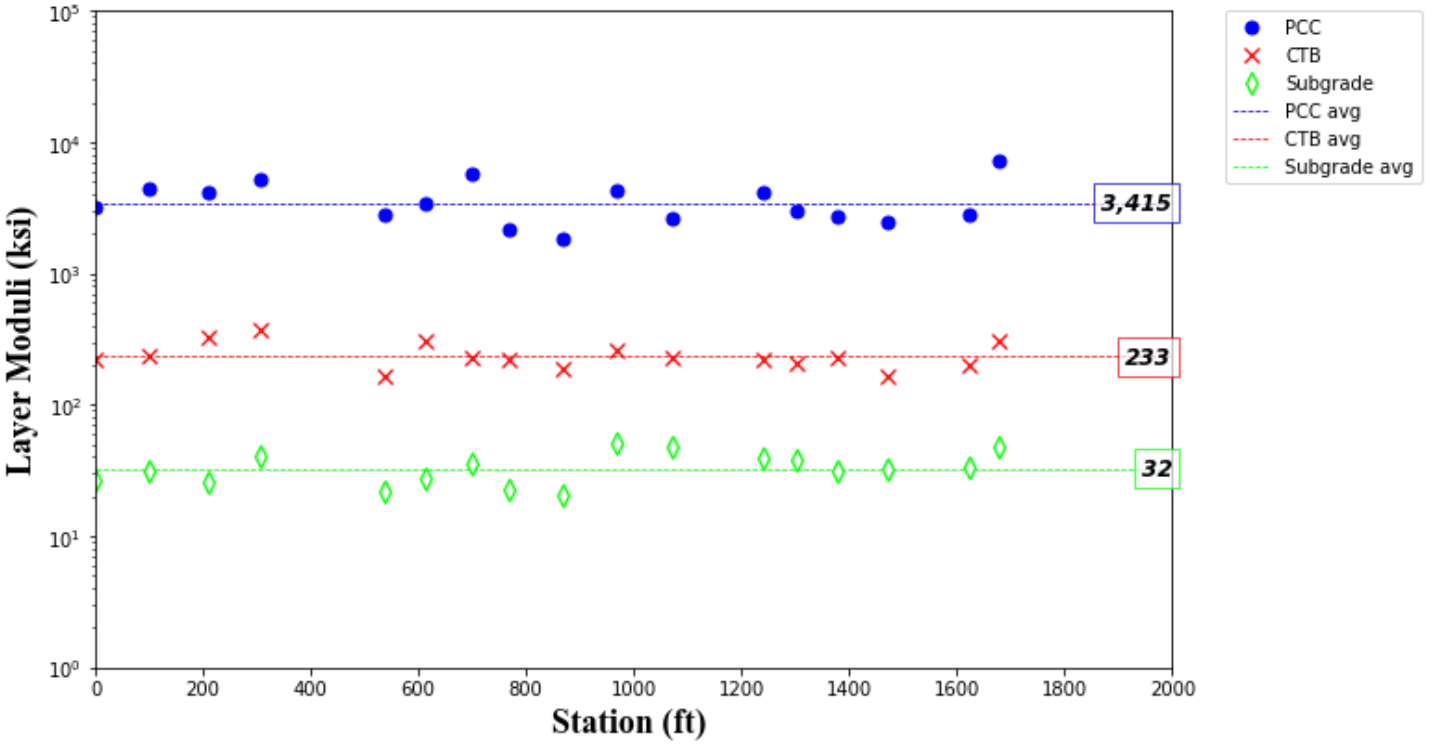


Figure D-22. Backcalculated Layer Moduli for TWY D 10R

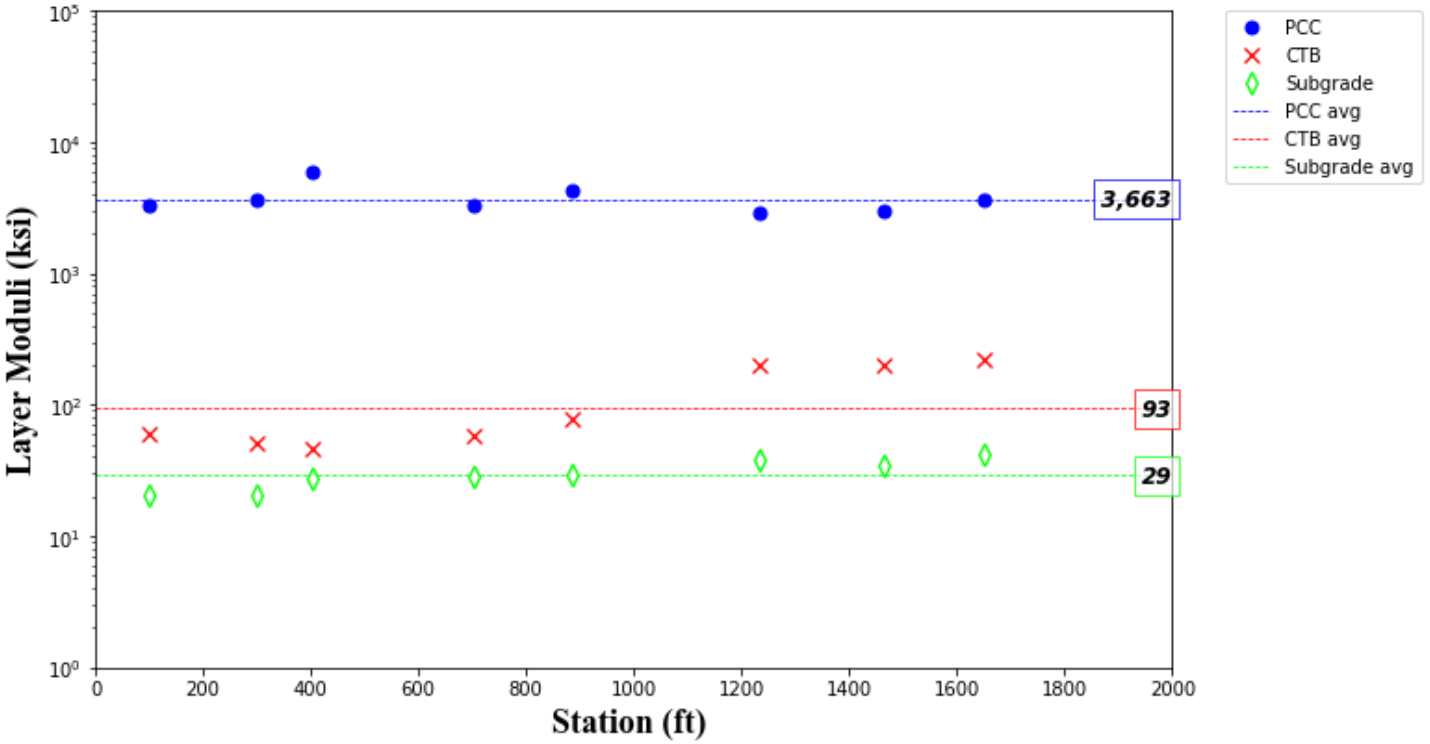


Figure D-23. Backcalculated Layer Moduli for TWY F 10L

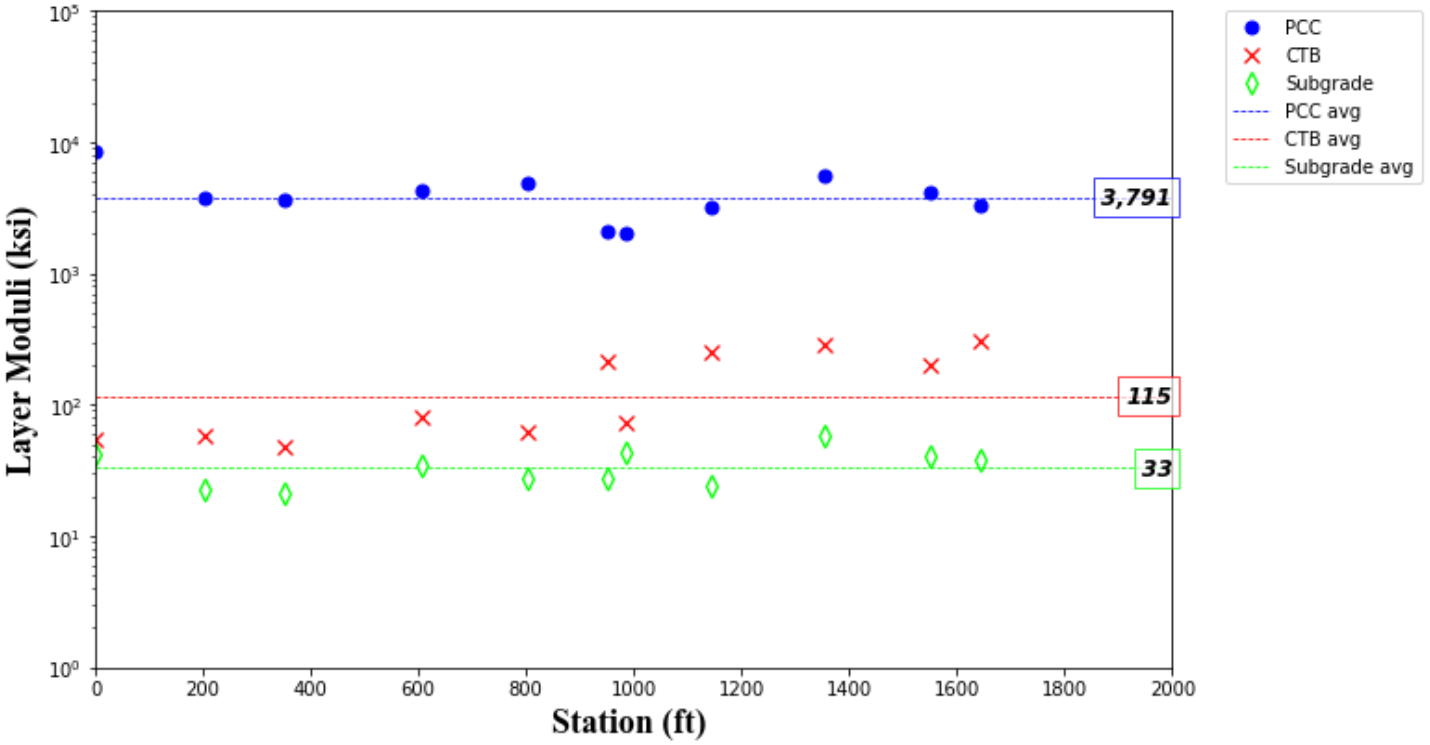


Figure D-24. Backcalculated Layer Moduli for TWY F 10R

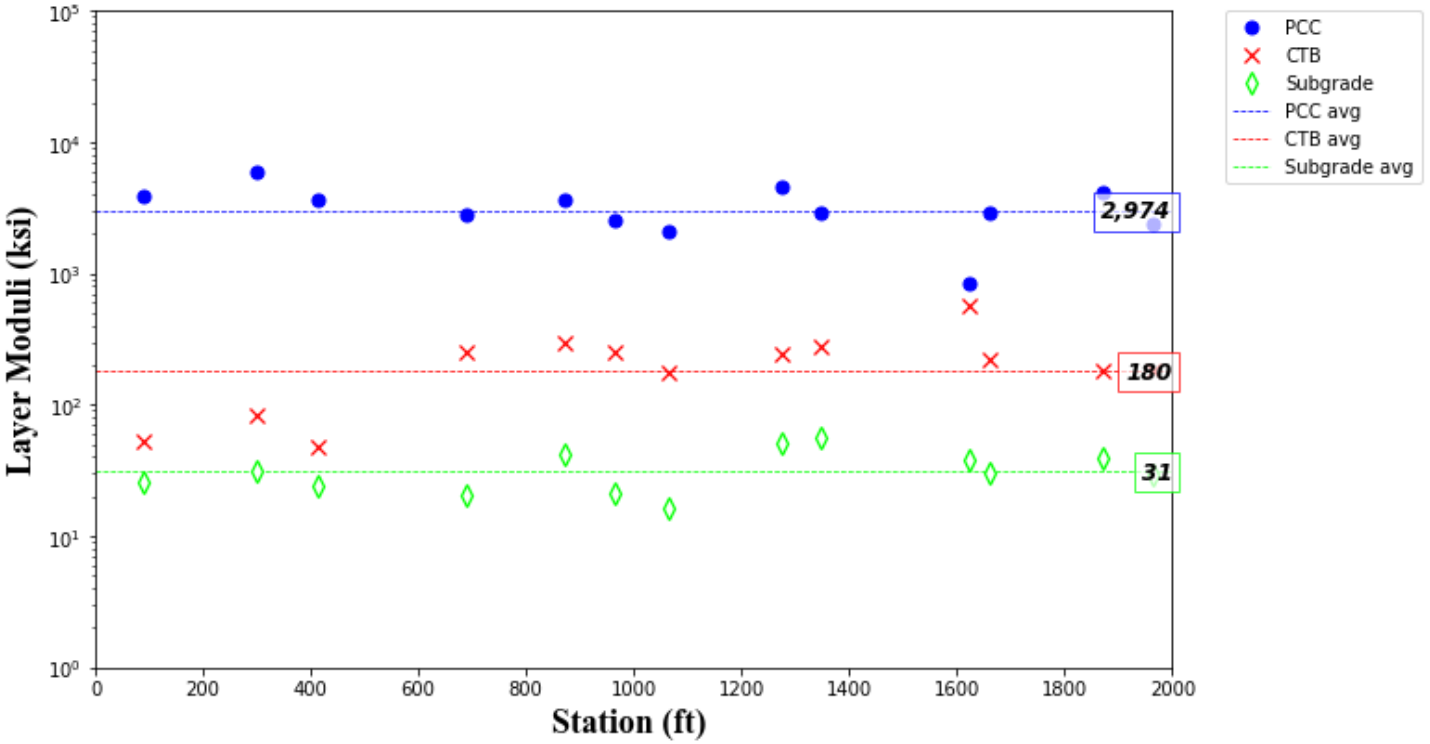


Figure D-25. Backcalculated Layer Moduli for TWY K 10L

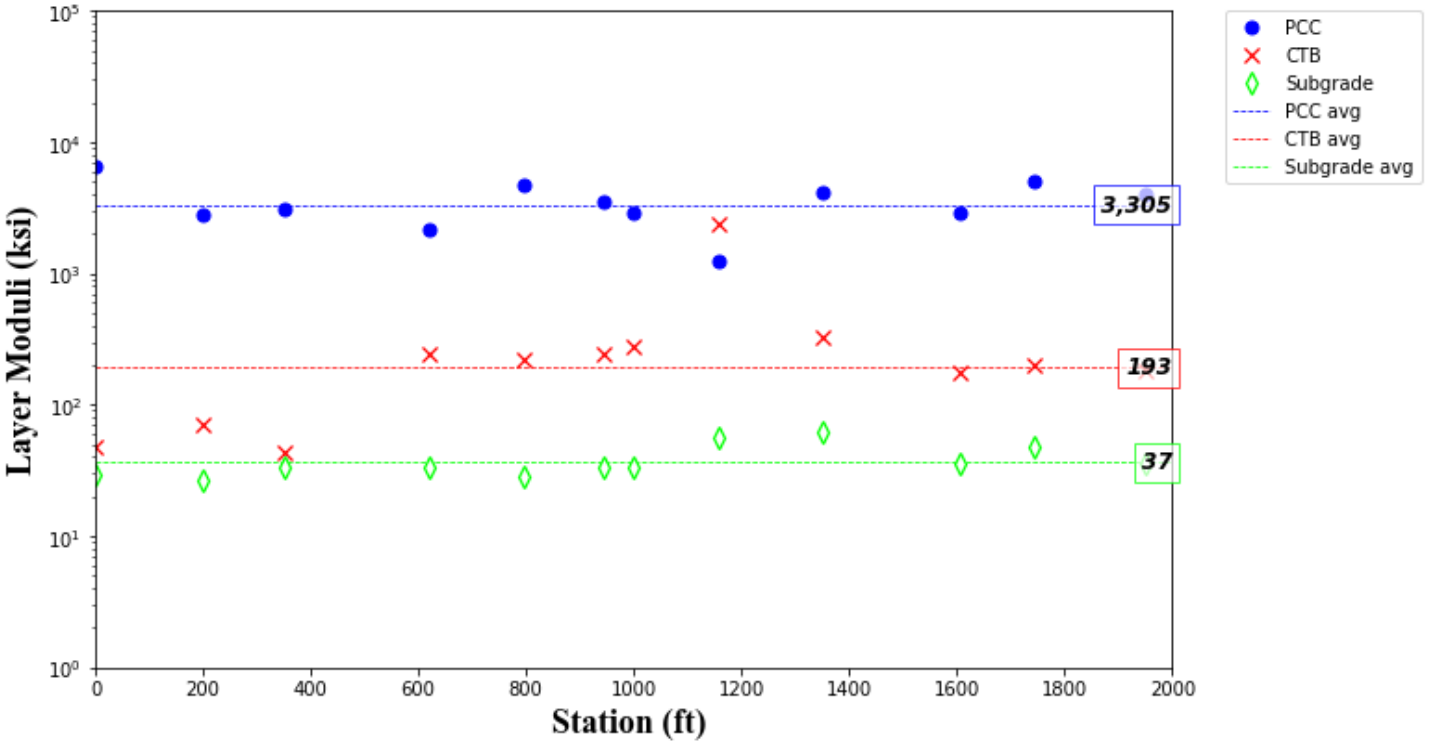


Figure D-26. Backcalculated Layer Moduli for TWY K 10R

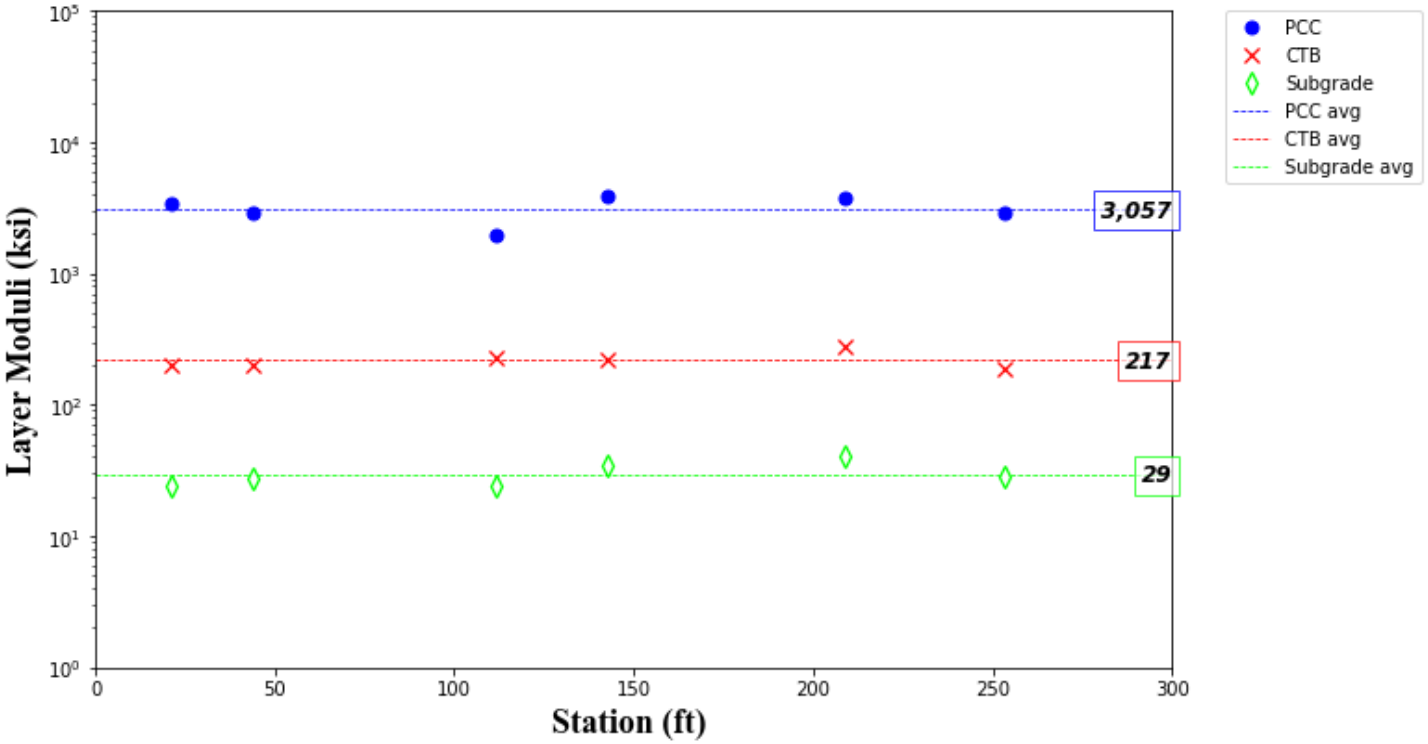


Figure D-27. Backcalculated Layer Moduli for TWY L 10L

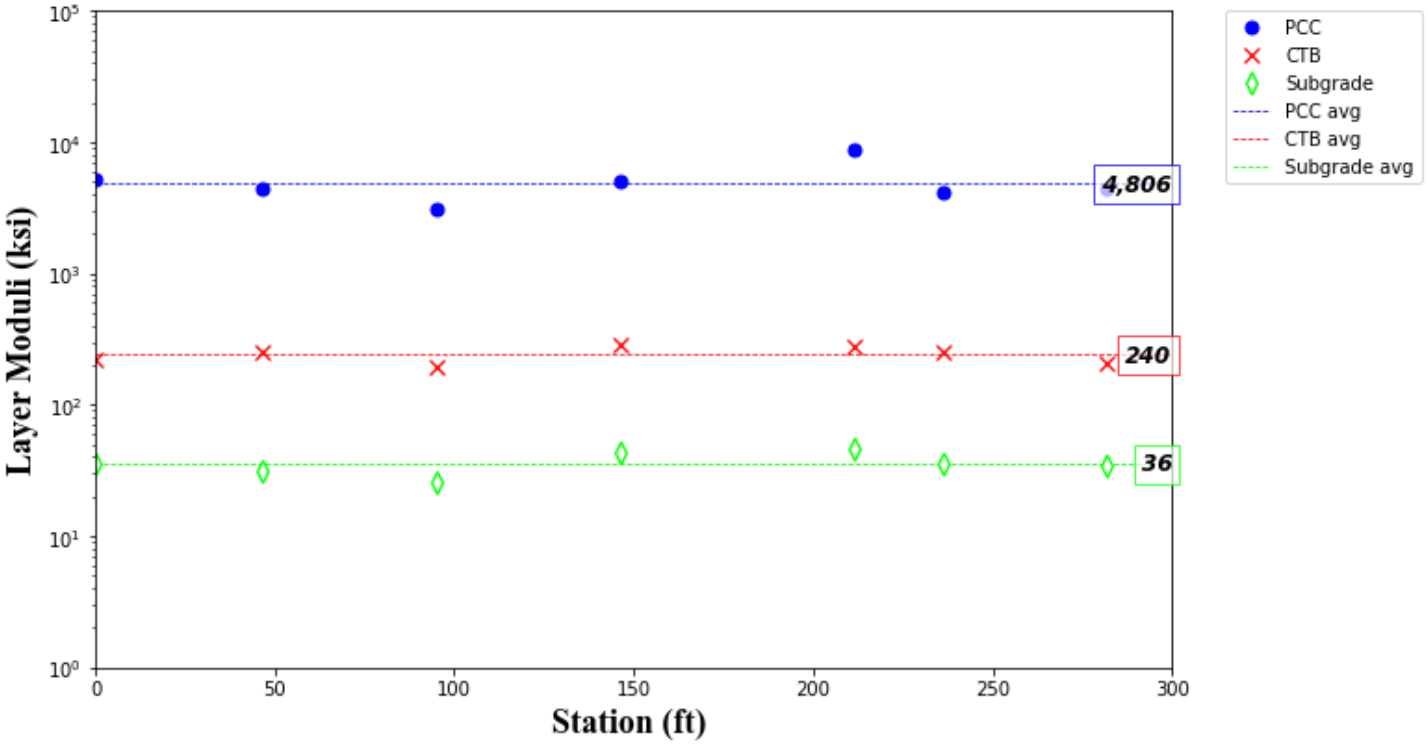


Figure D-28. Backcalculated Layer Moduli for TWY L 10R

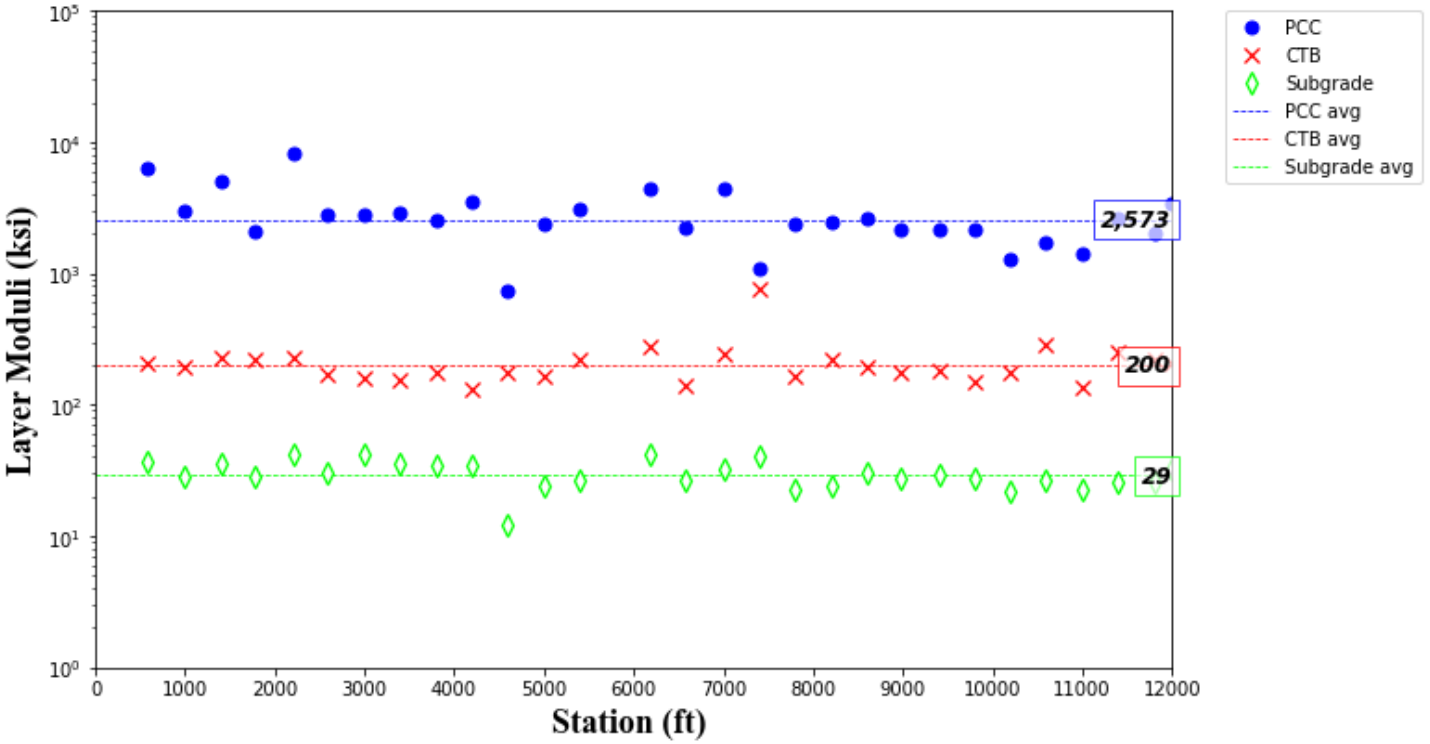


Figure D-29. Backcalculated Layer Moduli for TWY N 10L

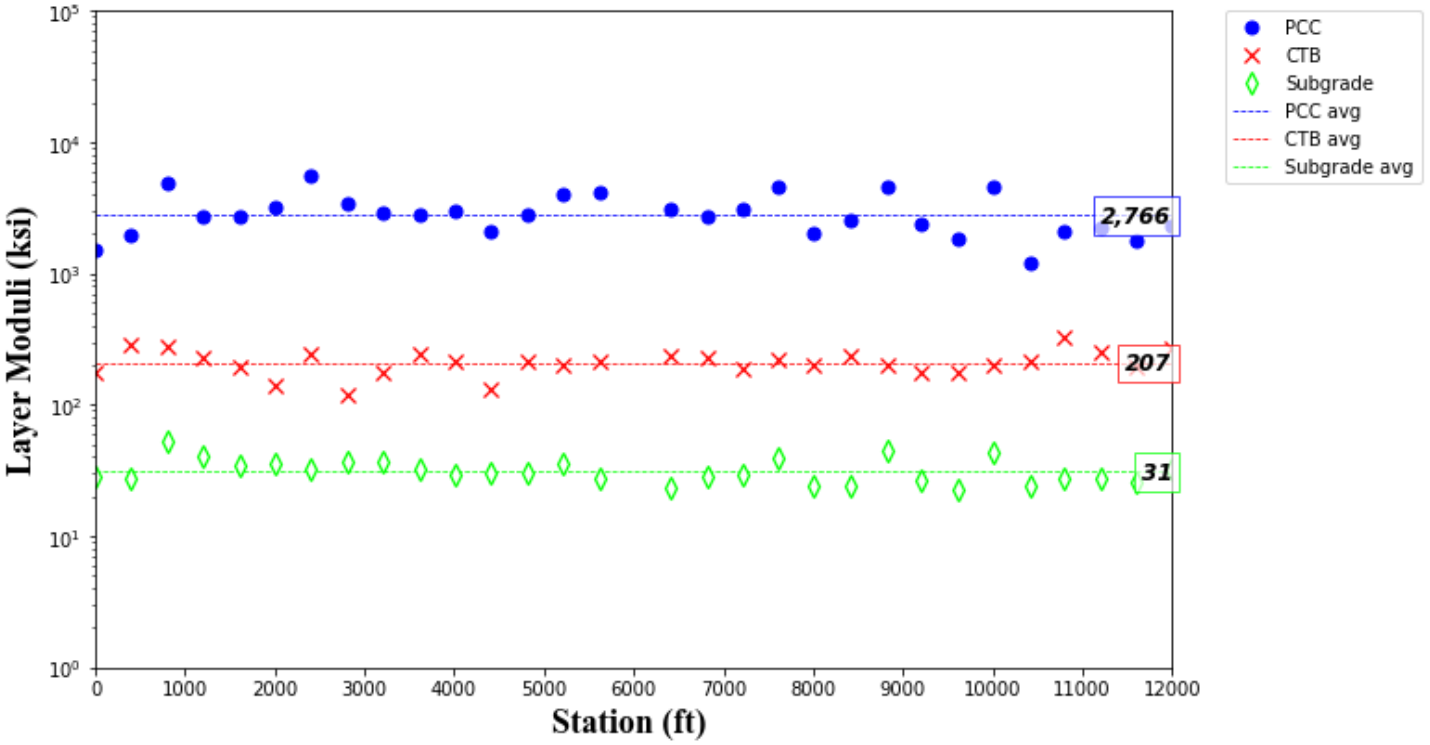


Figure D-30. Backcalculated Layer Moduli for TWY N 10R

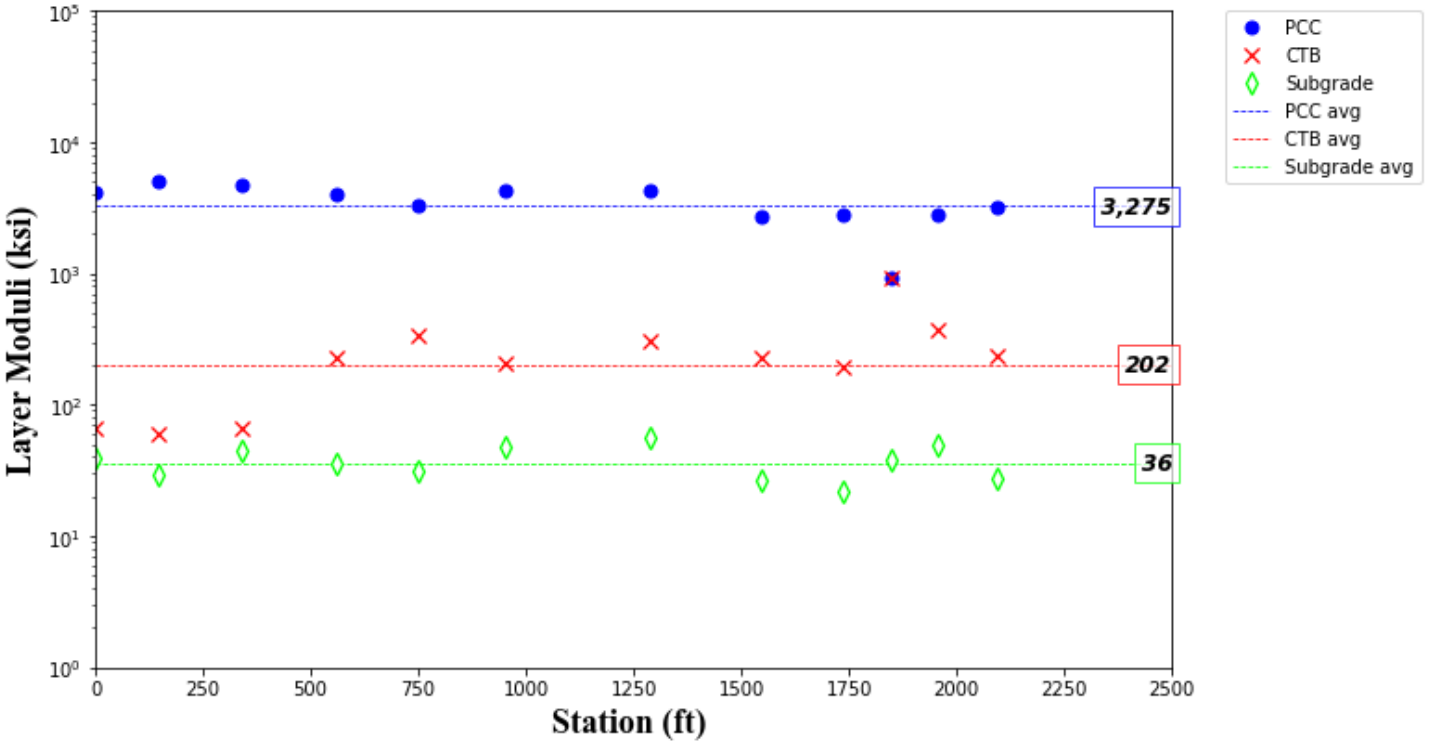


Figure D-31. Backcalculated Layer Moduli for TWY P 10L

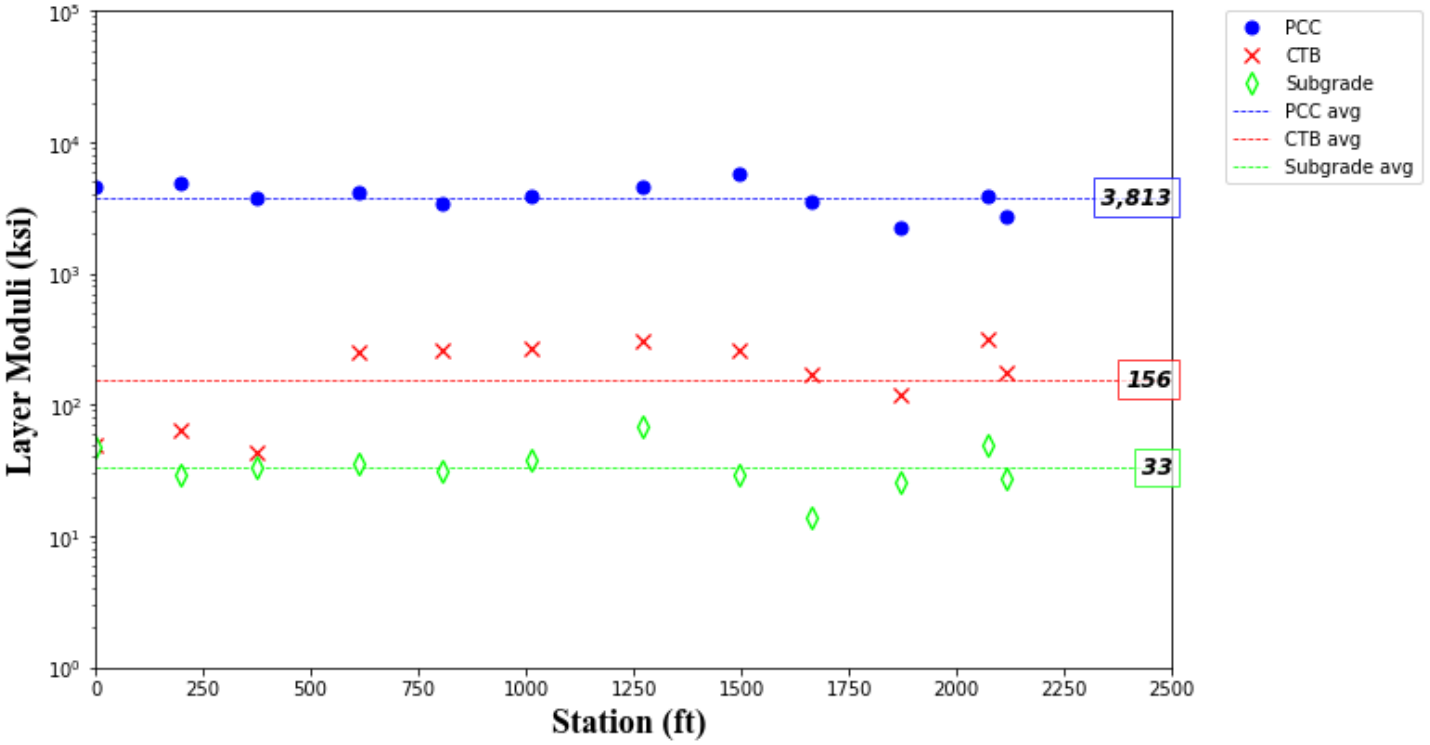


Figure D-32. Backcalculated Layer Moduli for TWY P 10R

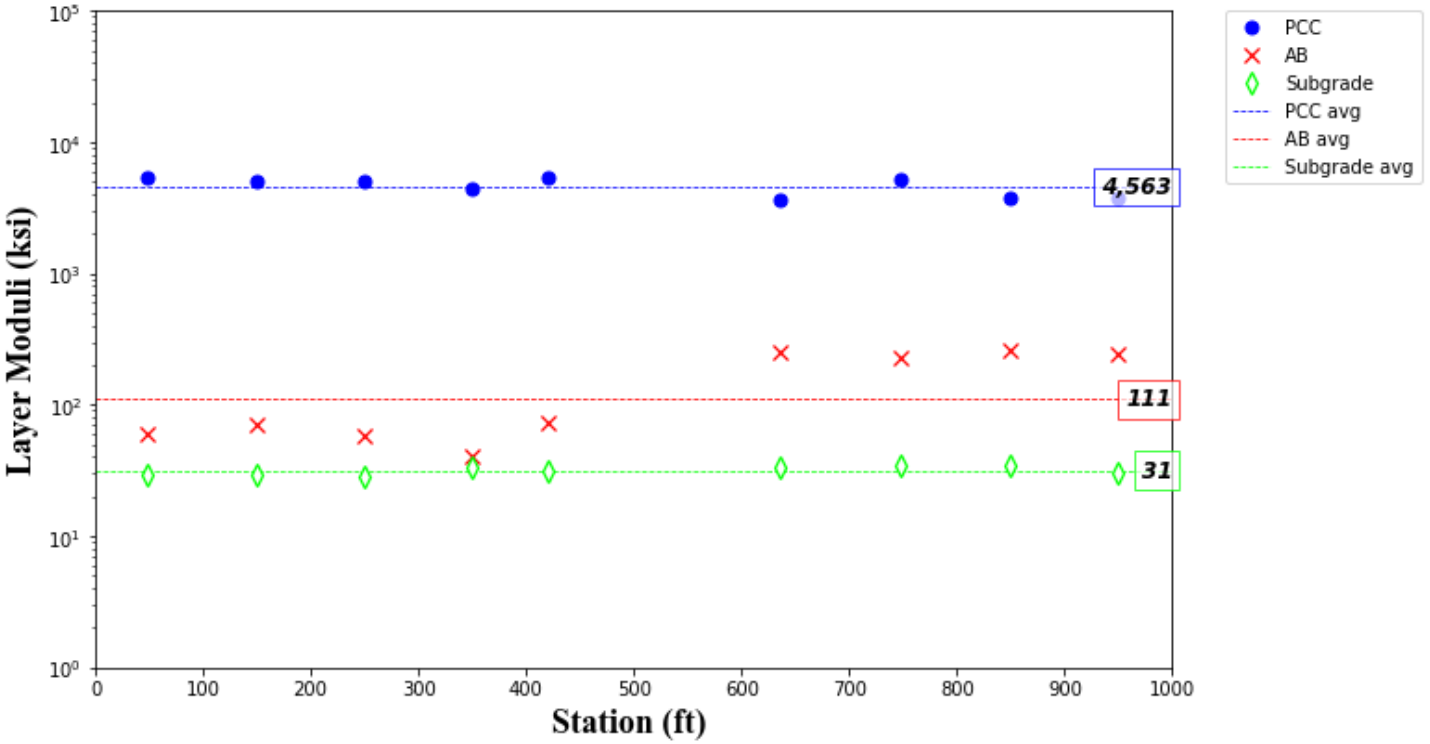


Figure D-33. Backcalculated Layer Moduli for TWY Q 10L

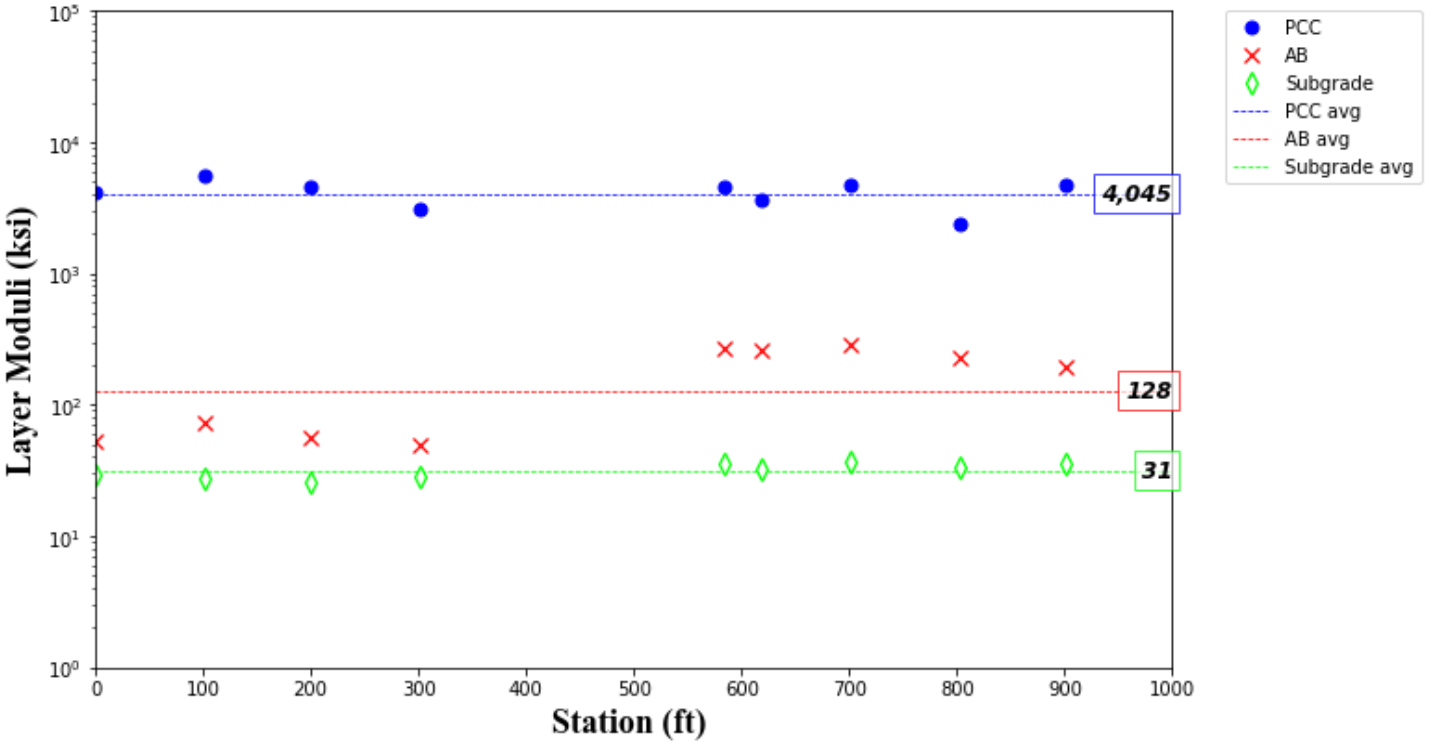


Figure D-34. Backcalculated Layer Moduli for TWY Q 10R

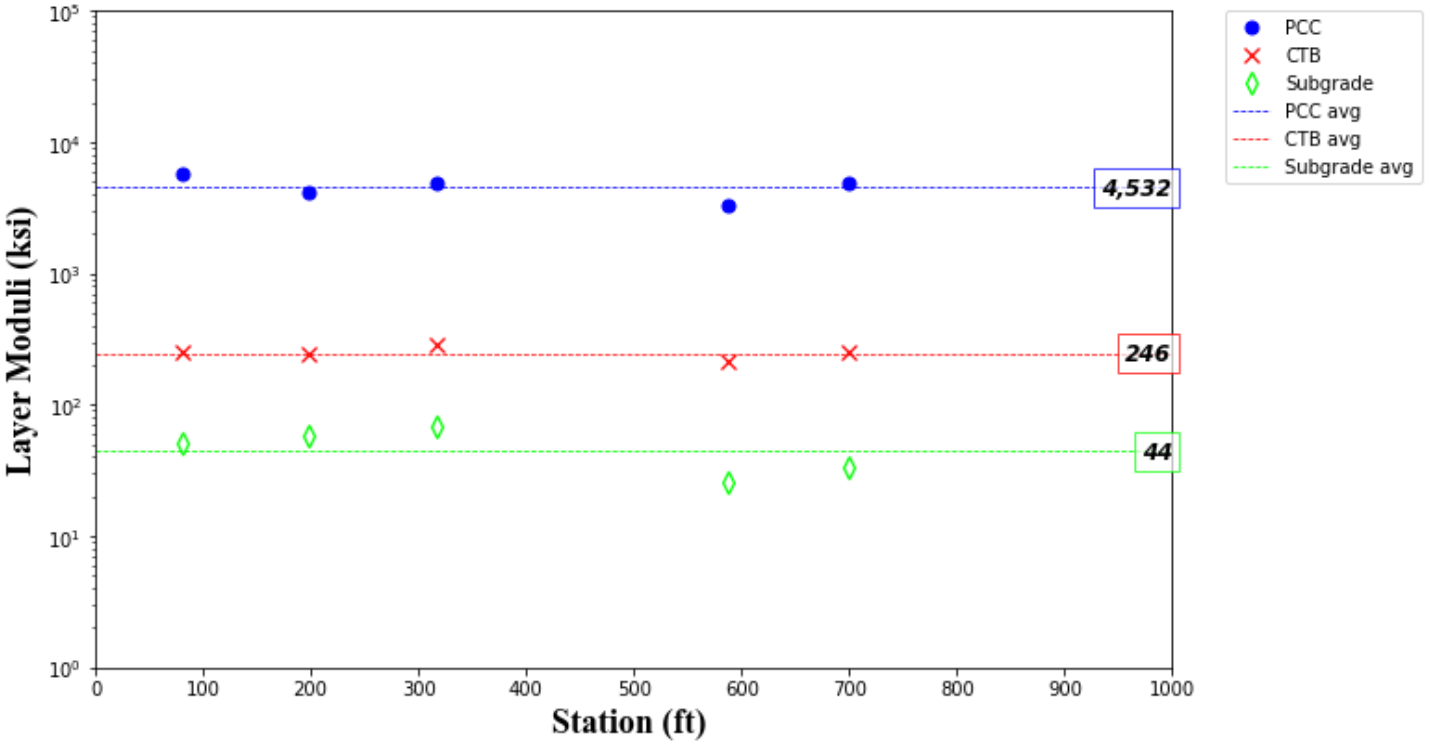


Figure D-35. Backcalculated Layer Moduli for TWY R 10L

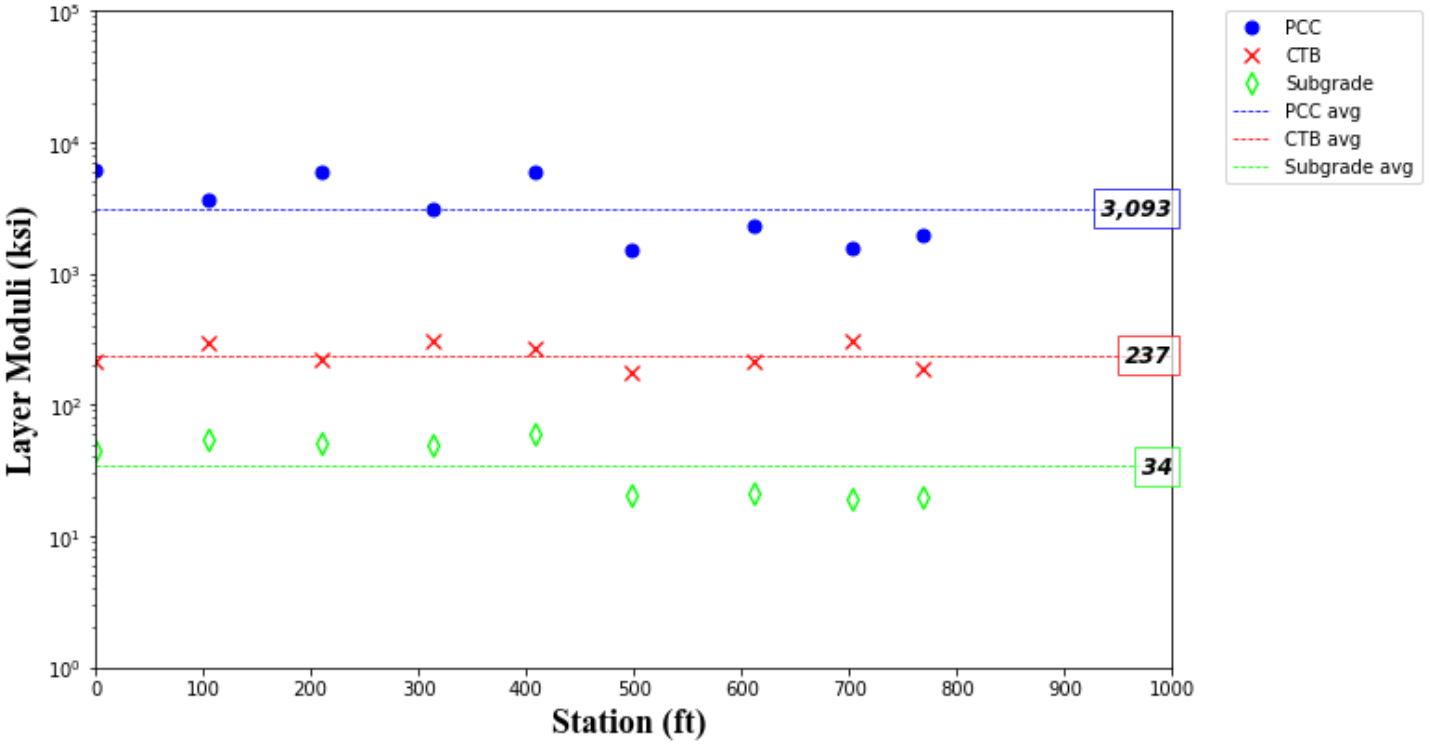


Figure D-36. Backcalculated Layer Moduli for TWY R 10R

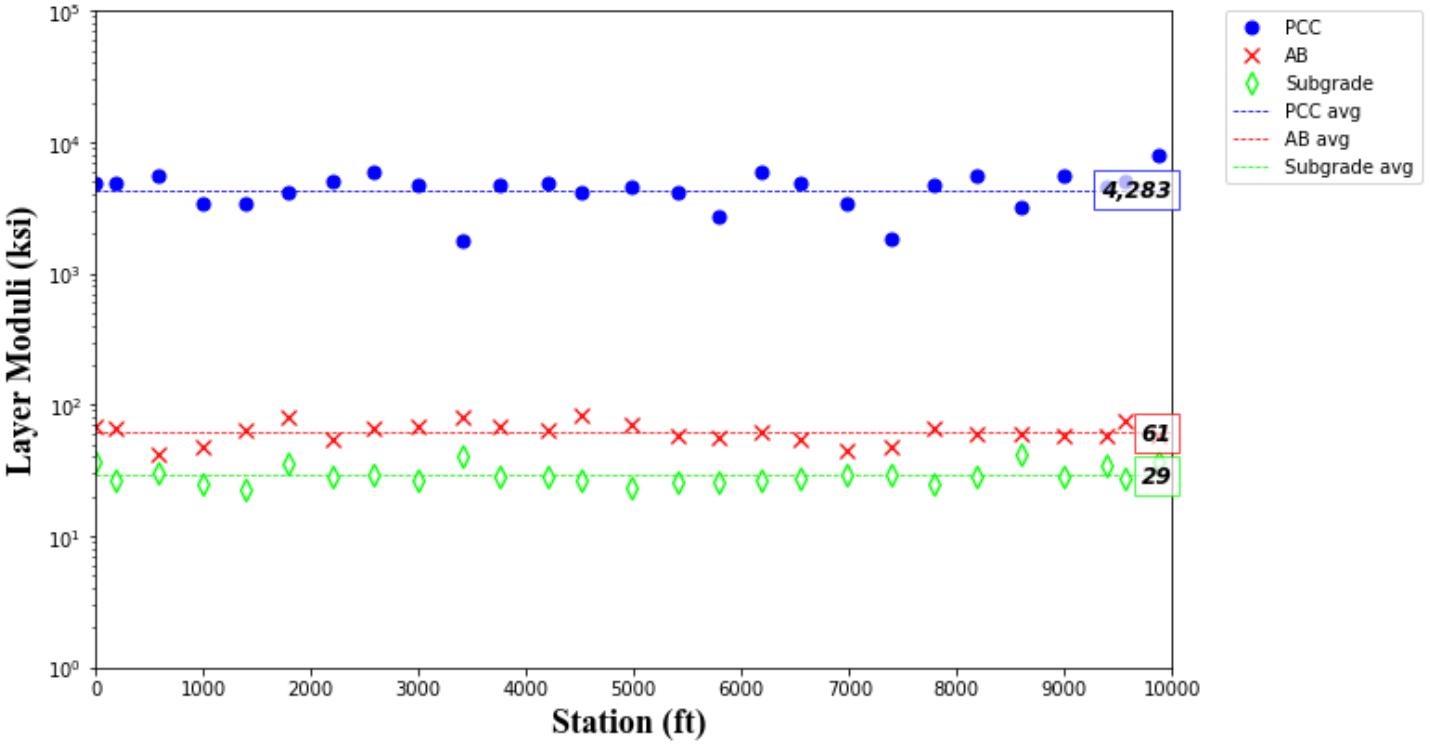


Figure D-37. Backcalculated Layer Moduli for TWY S 10L

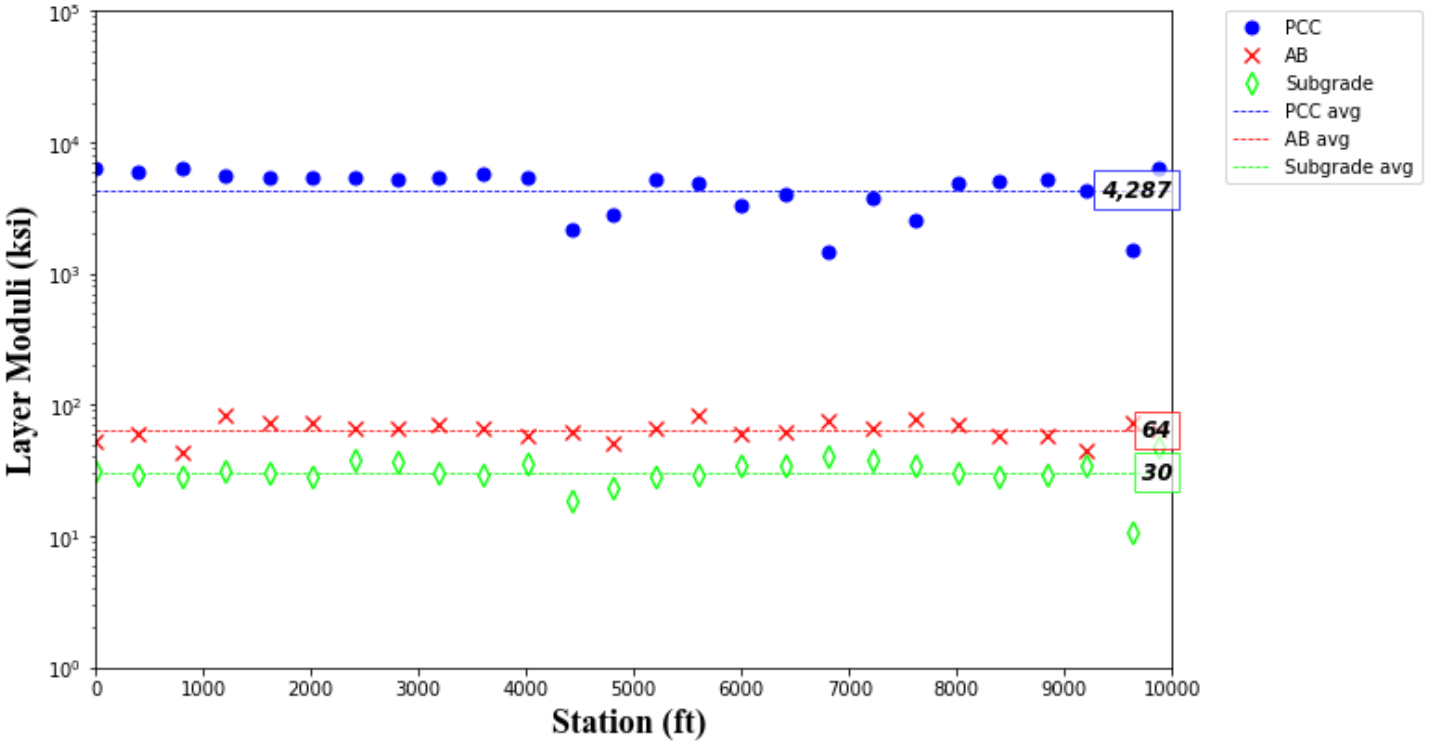


Figure D-38. Backcalculated Layer Moduli for TWY S 10R

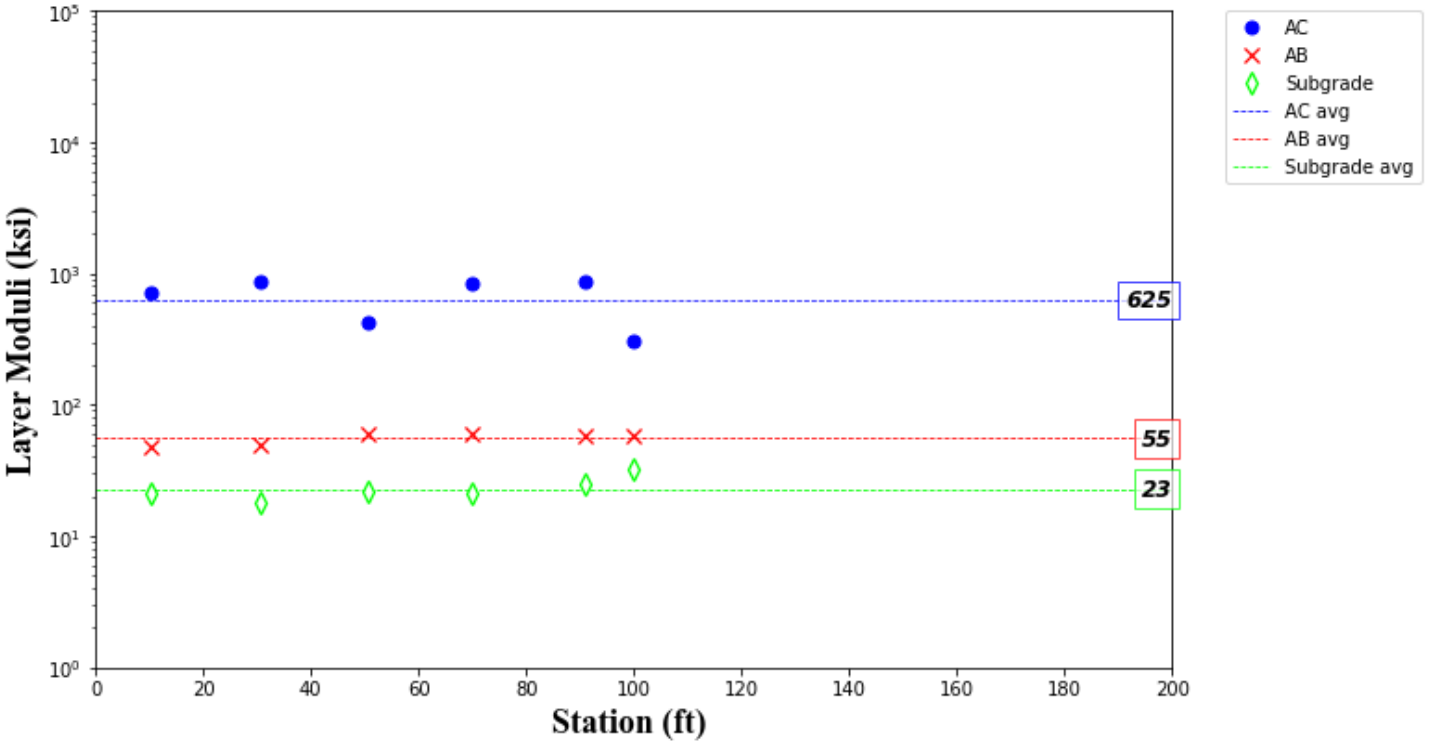


Figure D-39. Backcalculated Layer Moduli for TWY S1 10L

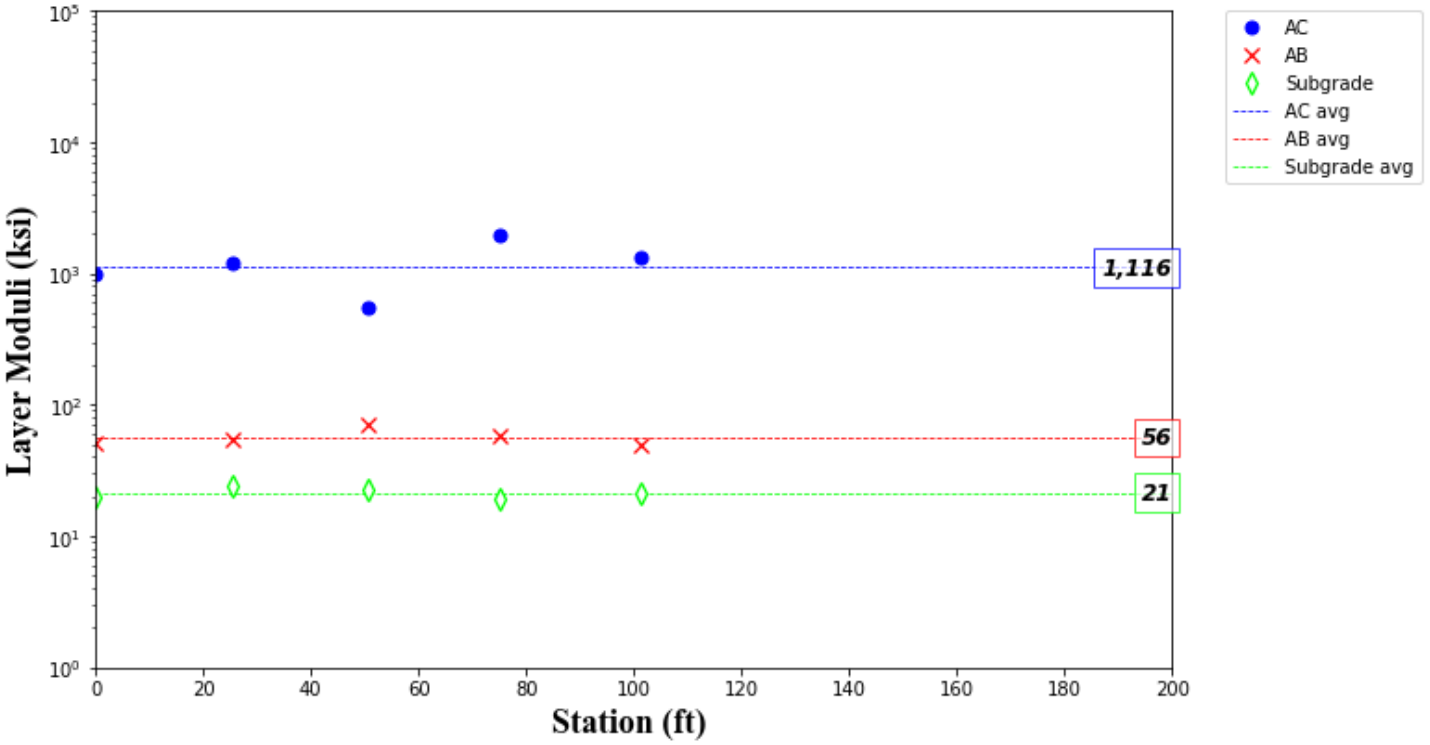


Figure D-40. Backcalculated Layer Moduli for TWY S1 10R

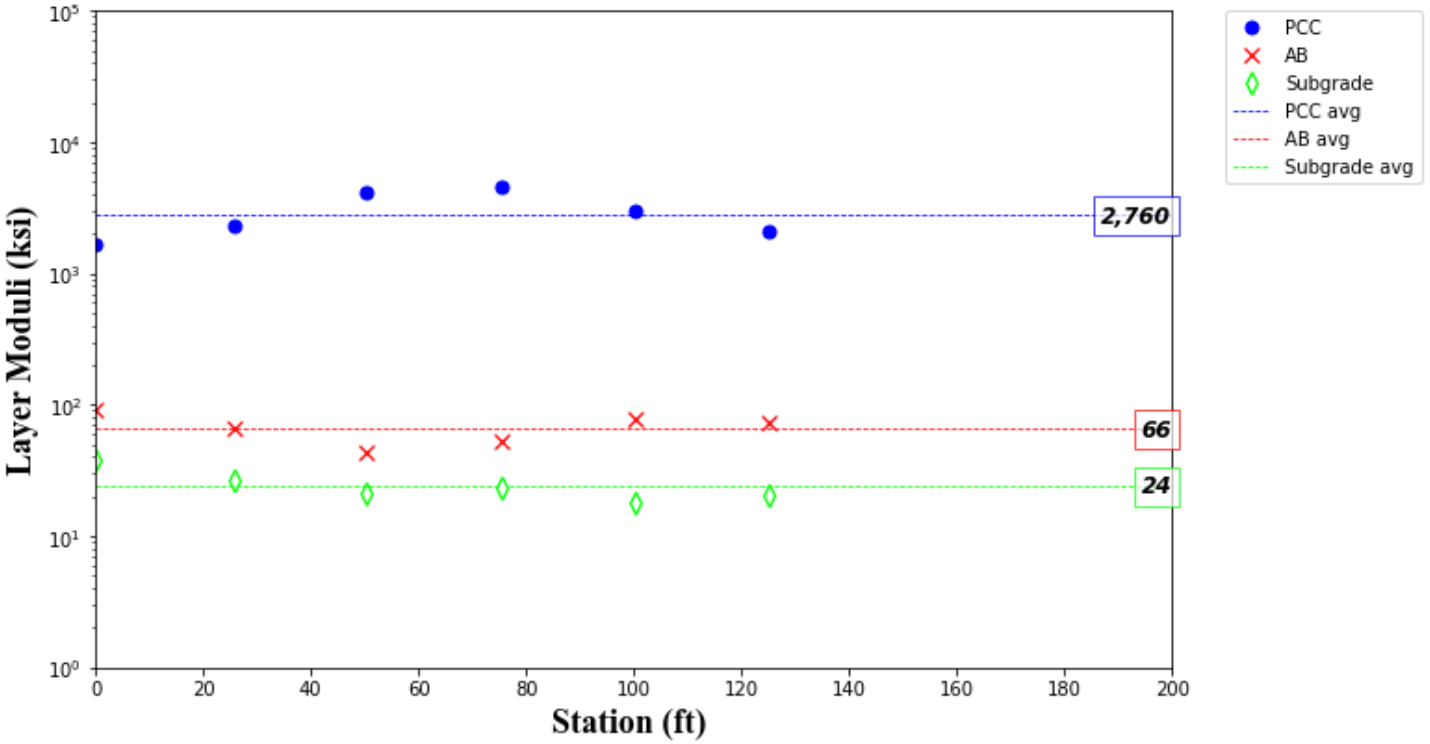


Figure D-41. Backcalculated Layer Moduli for TWY S2 10L

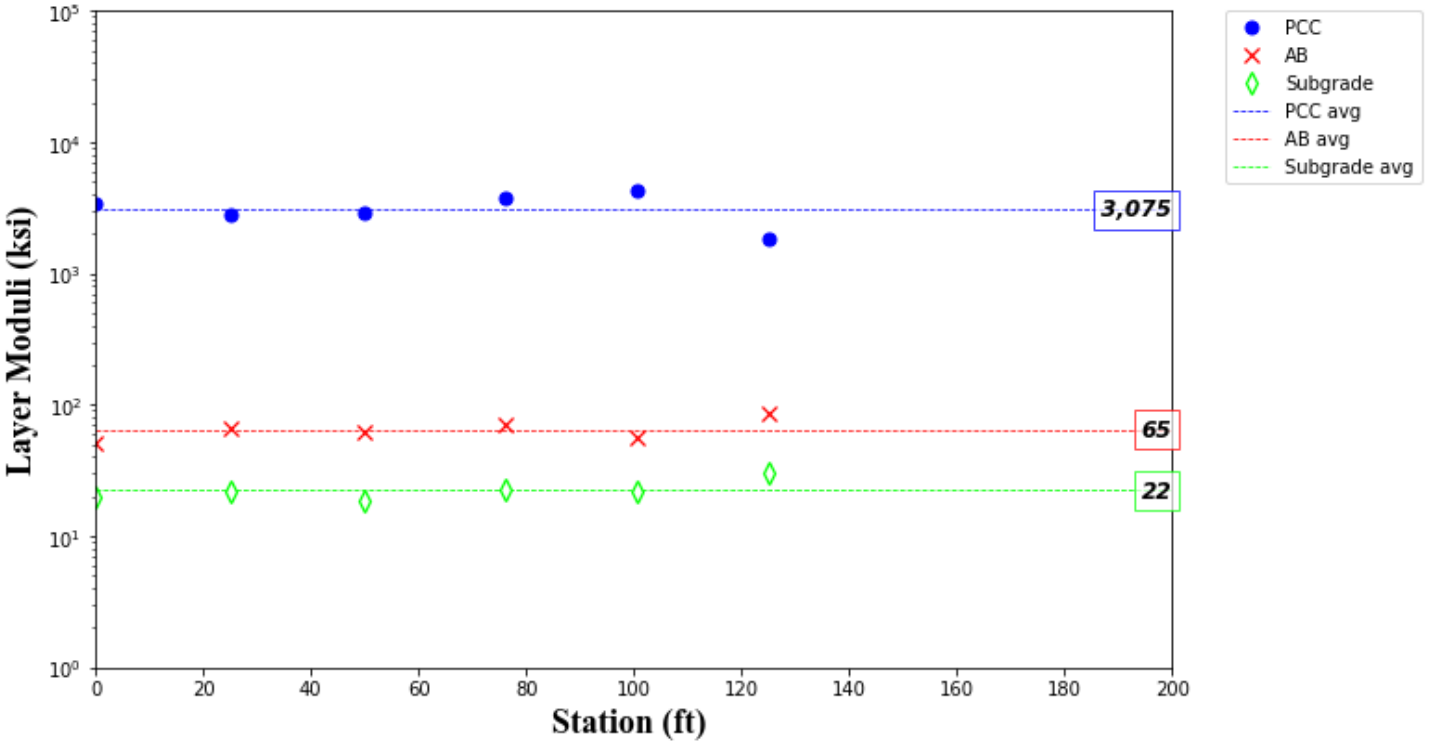


Figure D-42. Backcalculated Layer Moduli for TWY S2 10R

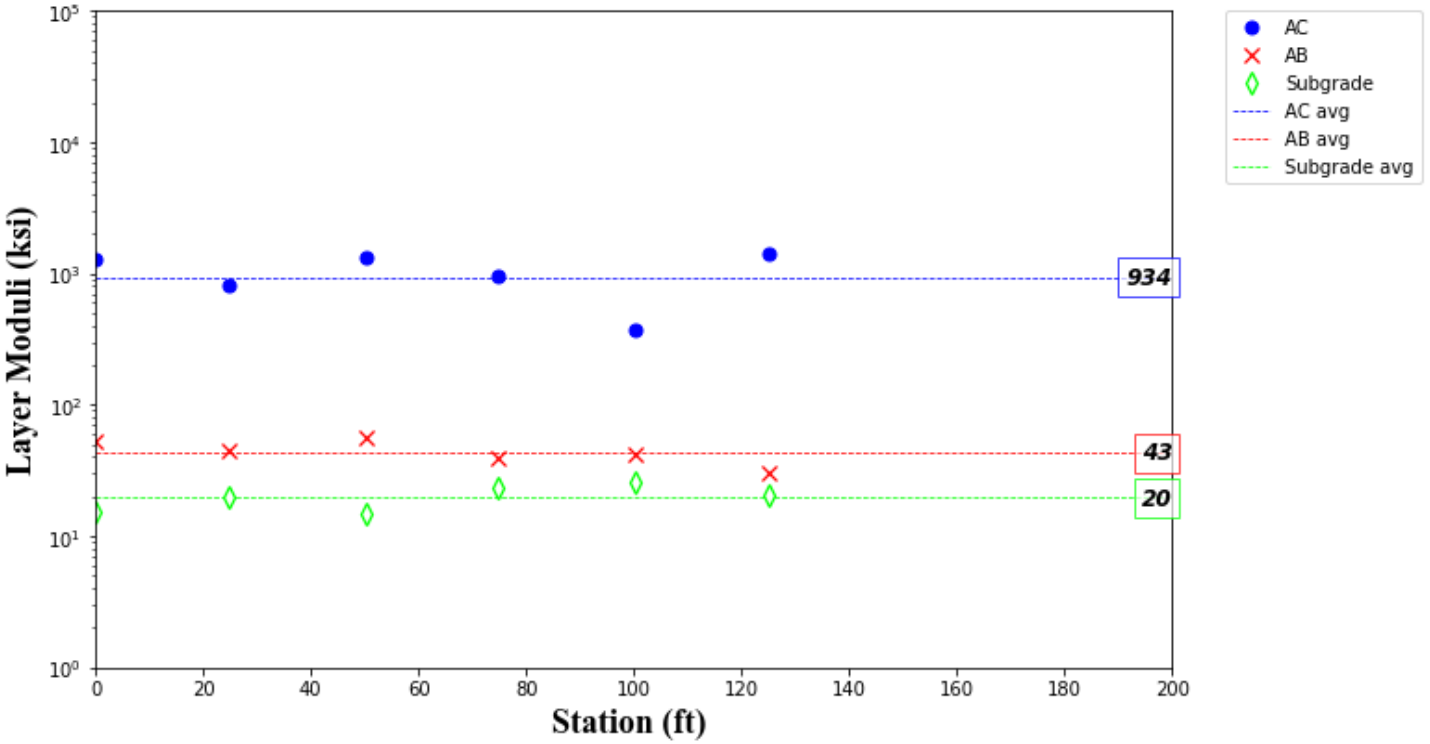


Figure D-43. Backcalculated Layer Moduli for TWY S3 10L

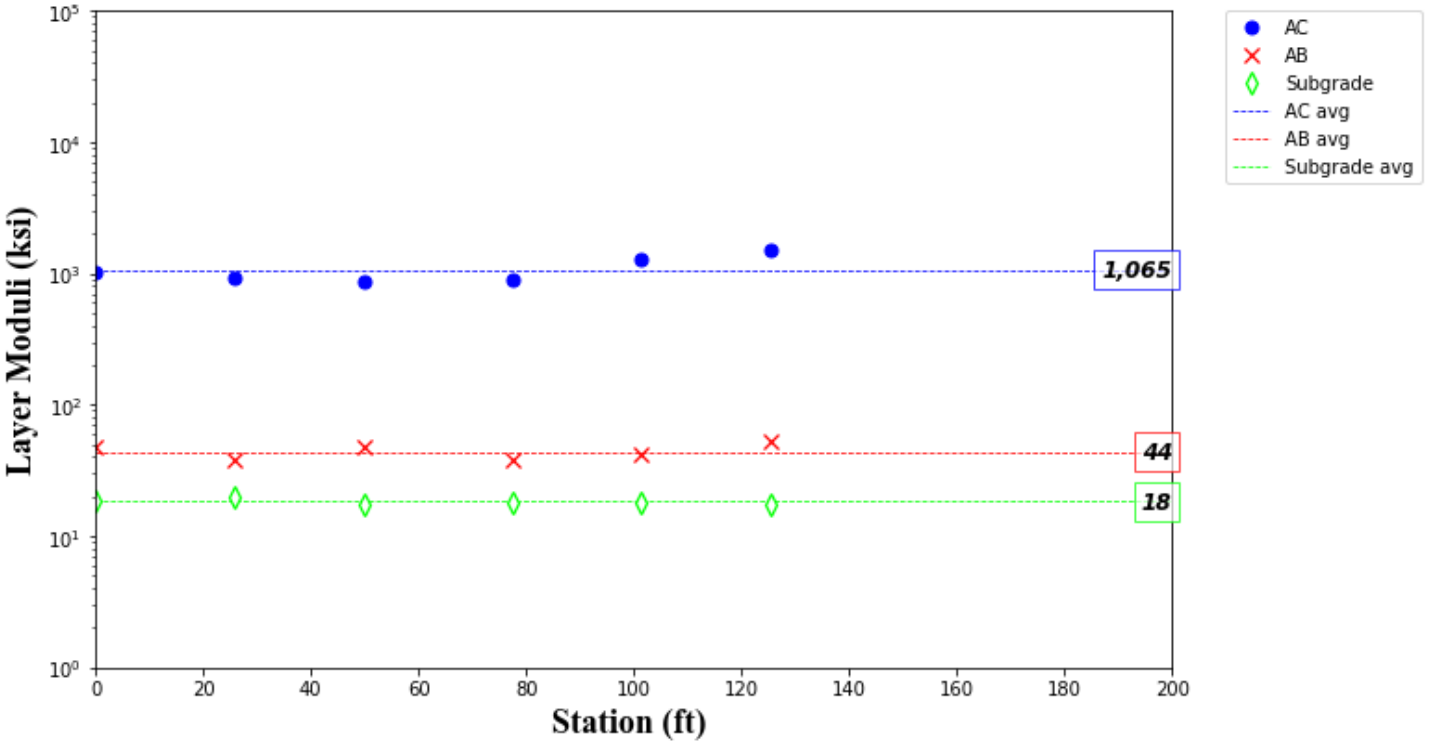


Figure D-44. Backcalculated Layer Moduli for TWY S3 10R

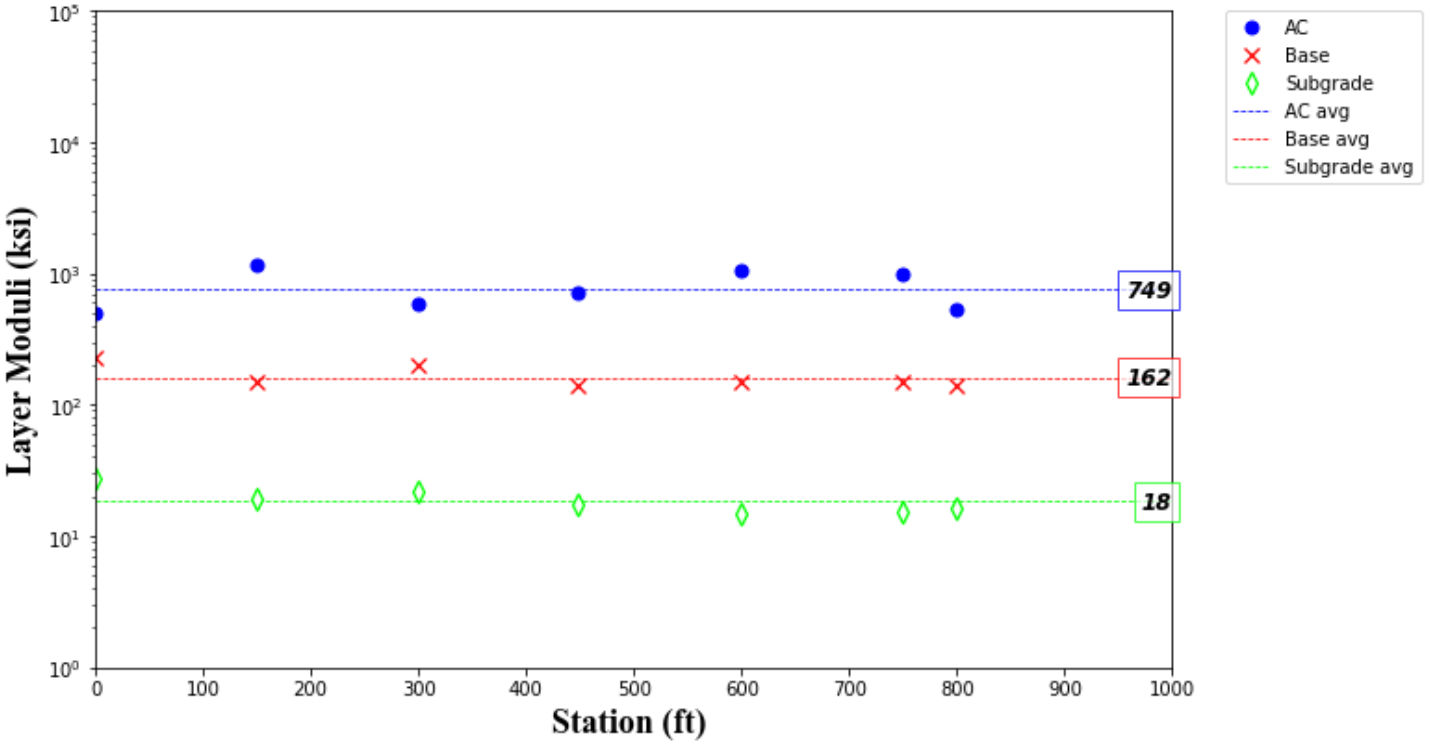


Figure D-45. Backcalculated Layer Moduli for TWY S5 10L

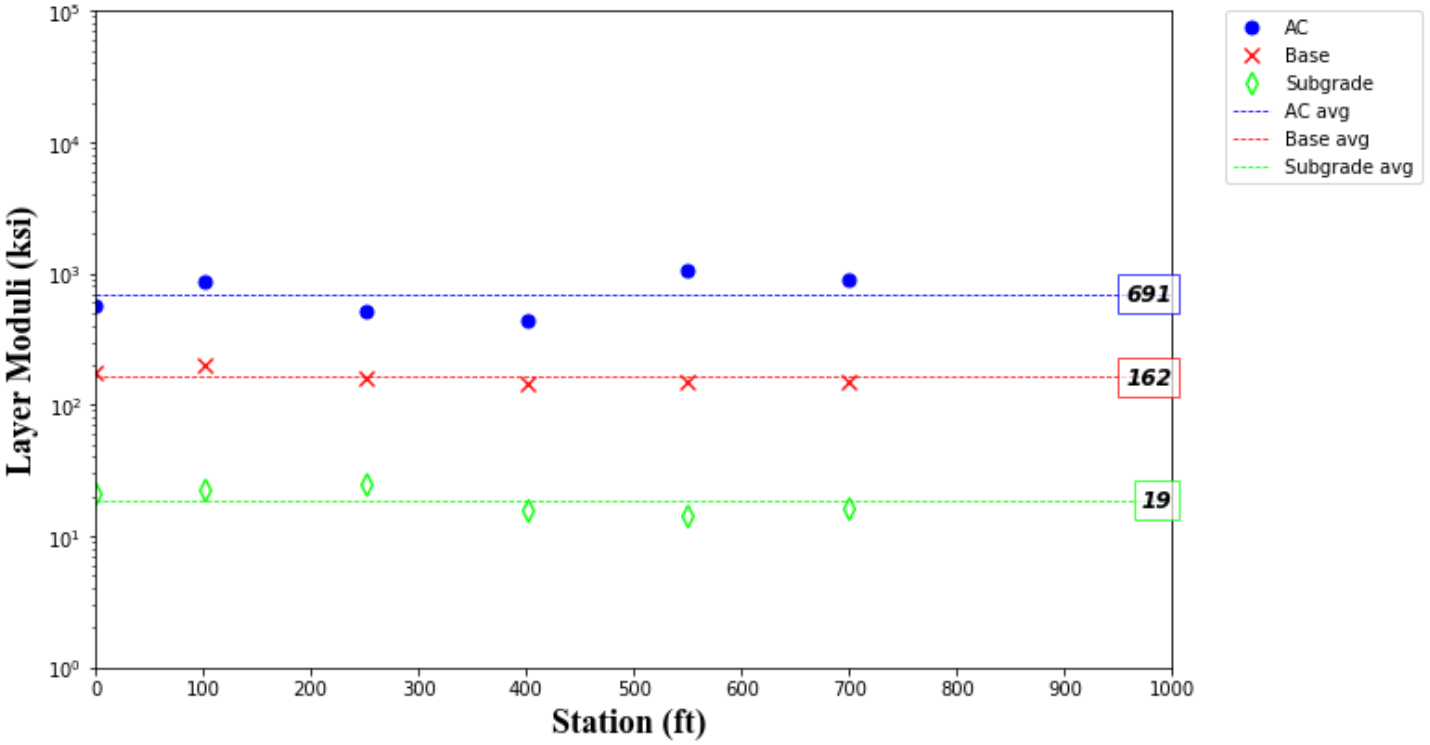


Figure D-46. Backcalculated Layer Moduli for TWY S5 10R

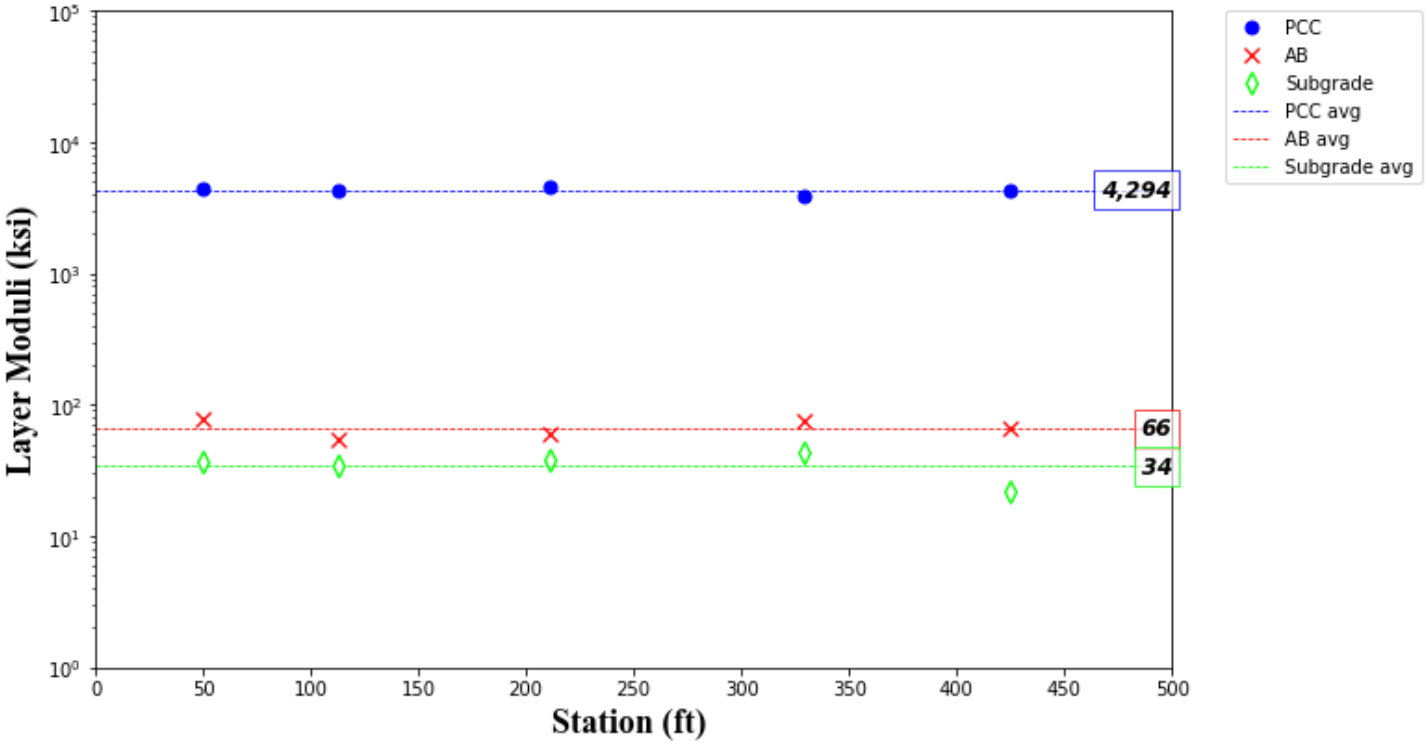


Figure D-47. Backcalculated Layer Moduli for TWY T 10L

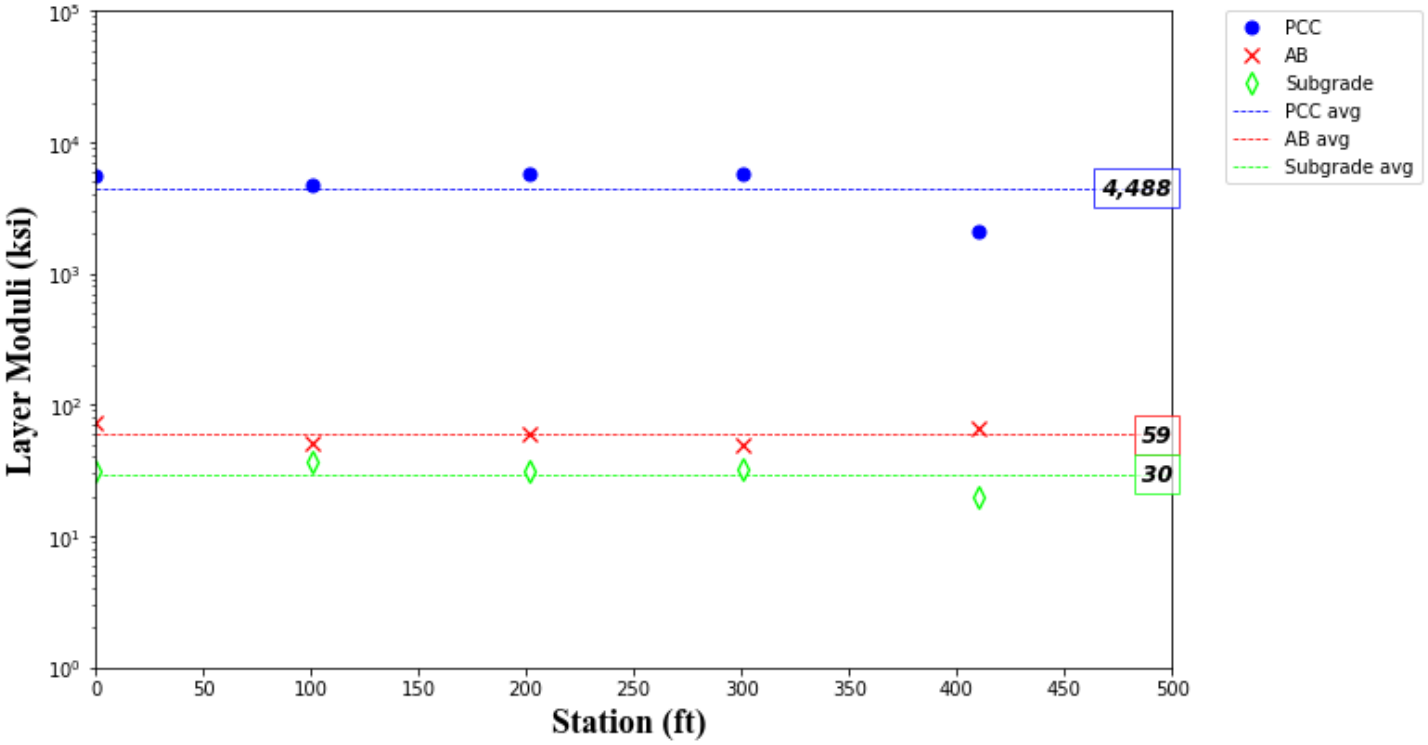


Figure D-48. Backcalculated Layer Moduli for TWY T 10R

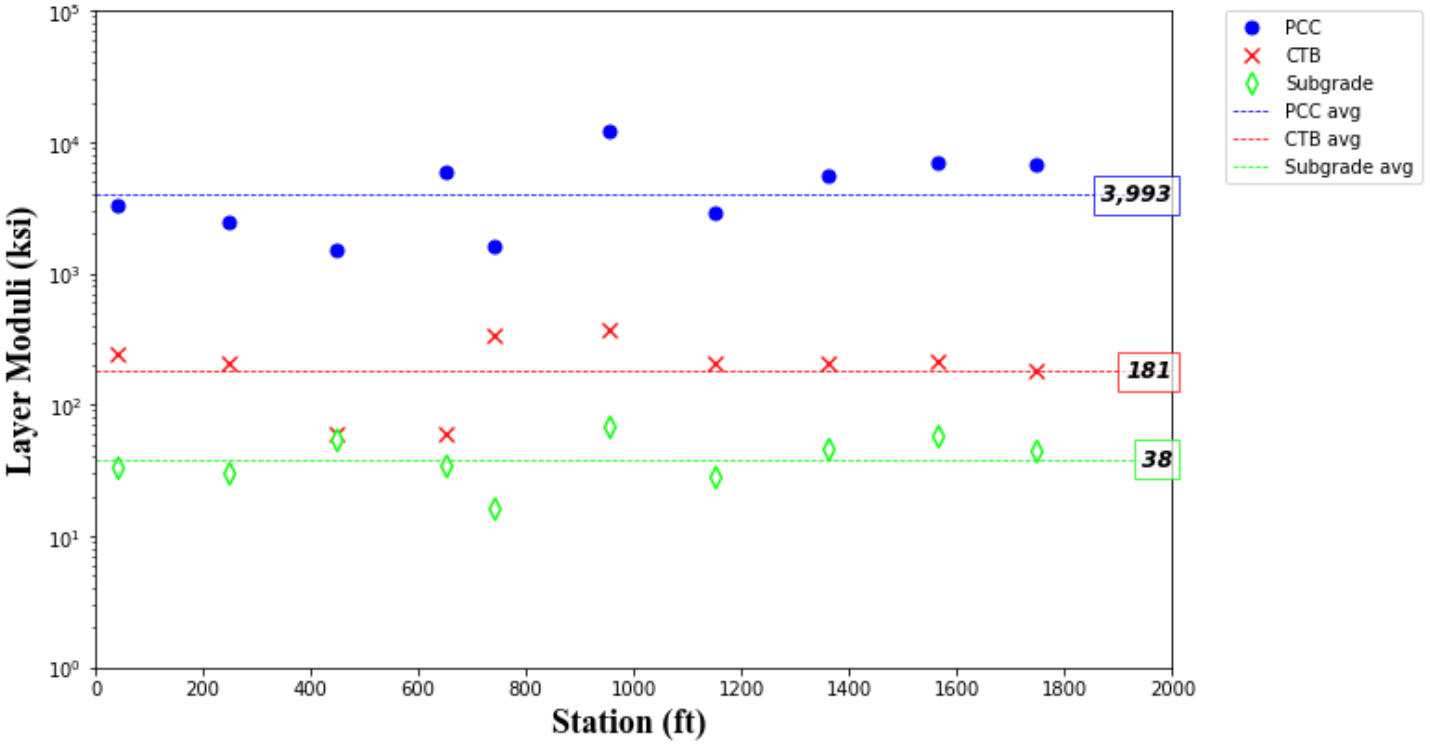


Figure D-49. Backcalculated Layer Moduli for TWY U 10L

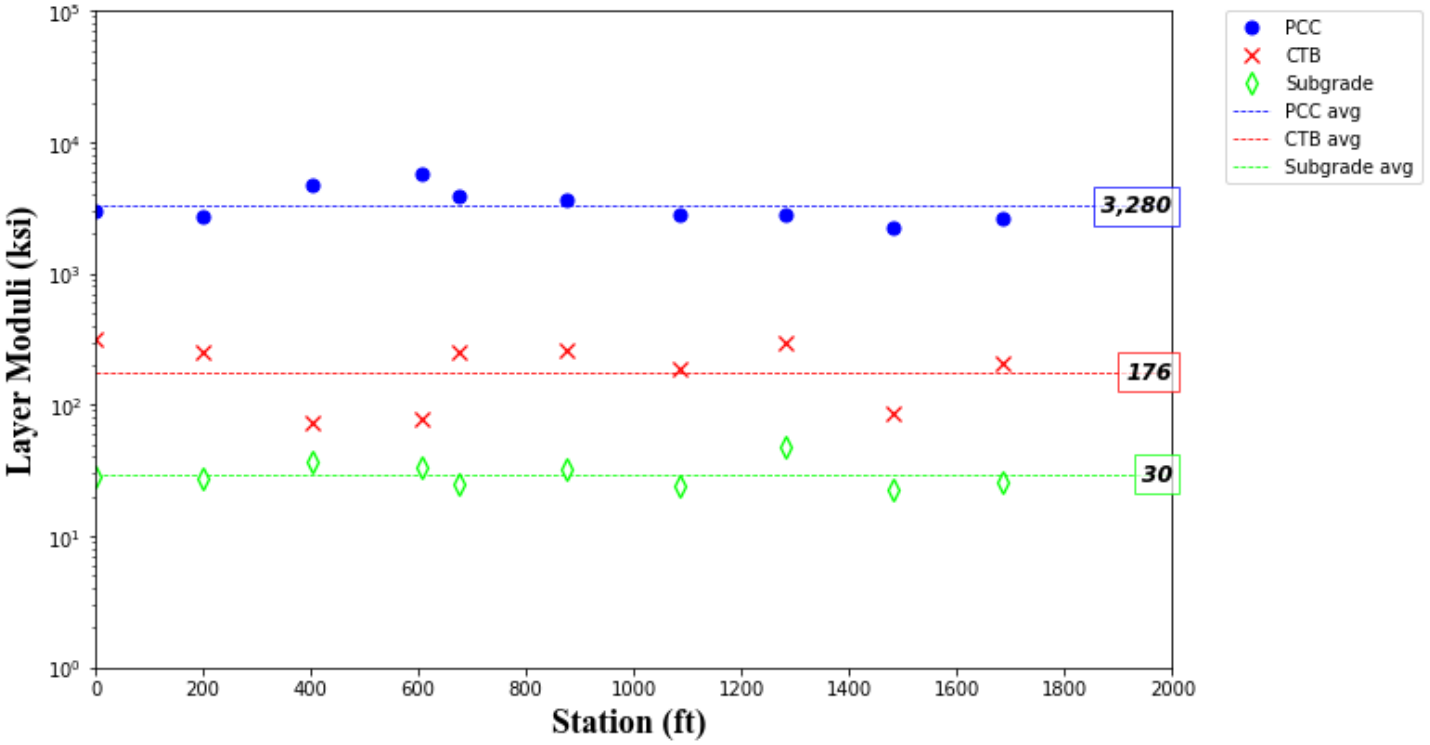


Figure D-50. Backcalculated Layer Moduli for TWY U 10R

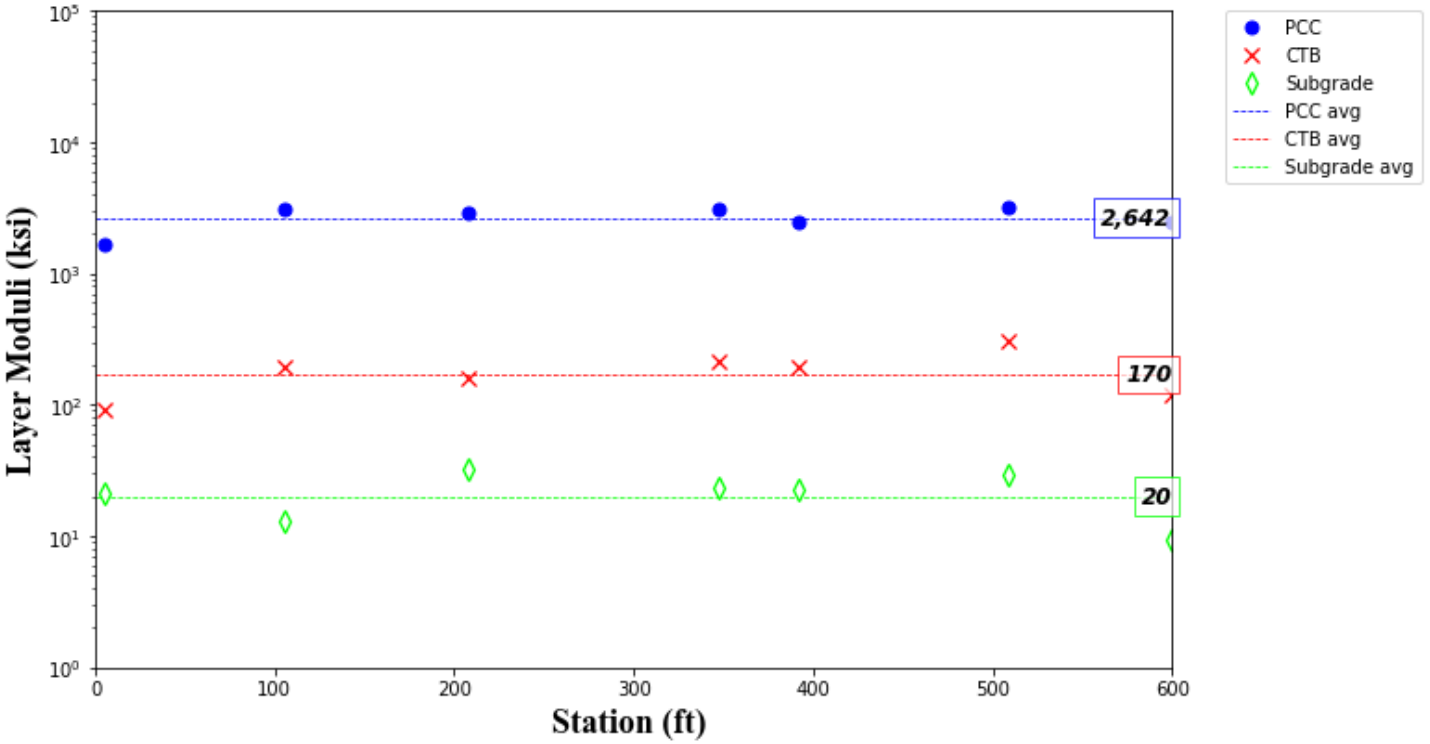


Figure D-51. Backcalculated Layer Moduli for TWY V 10L

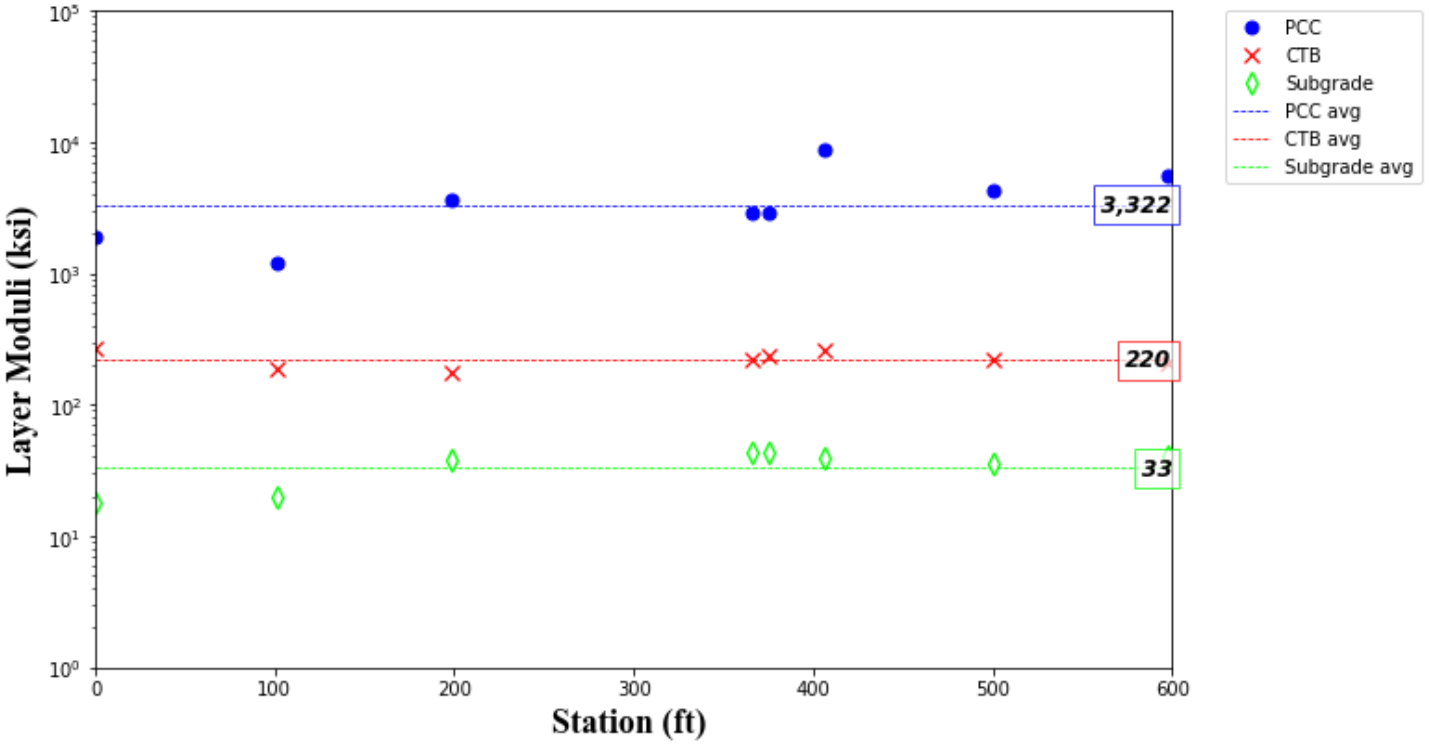


Figure D-52. Backcalculated Layer Moduli for TWY V 10R

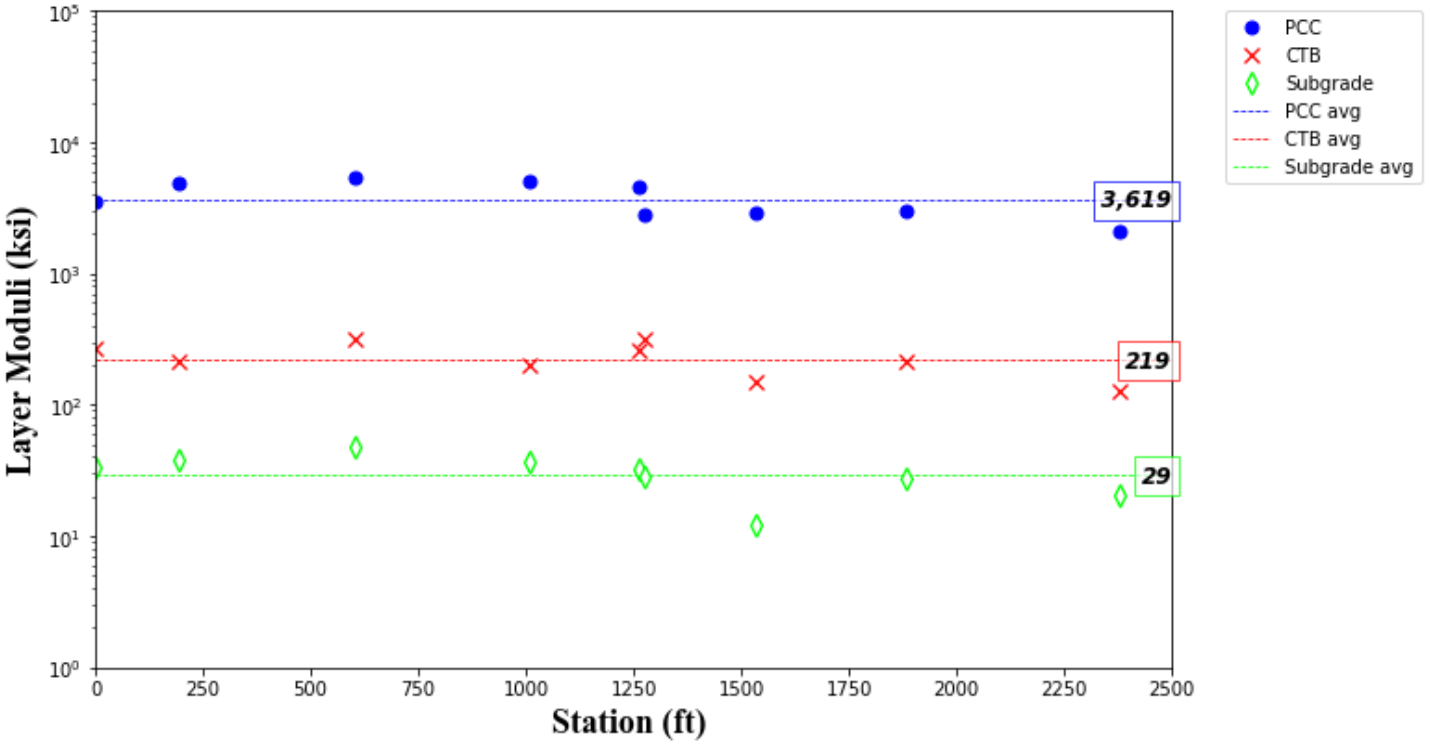


Figure D-53. Backcalculated Layer Moduli for TWY W 10L

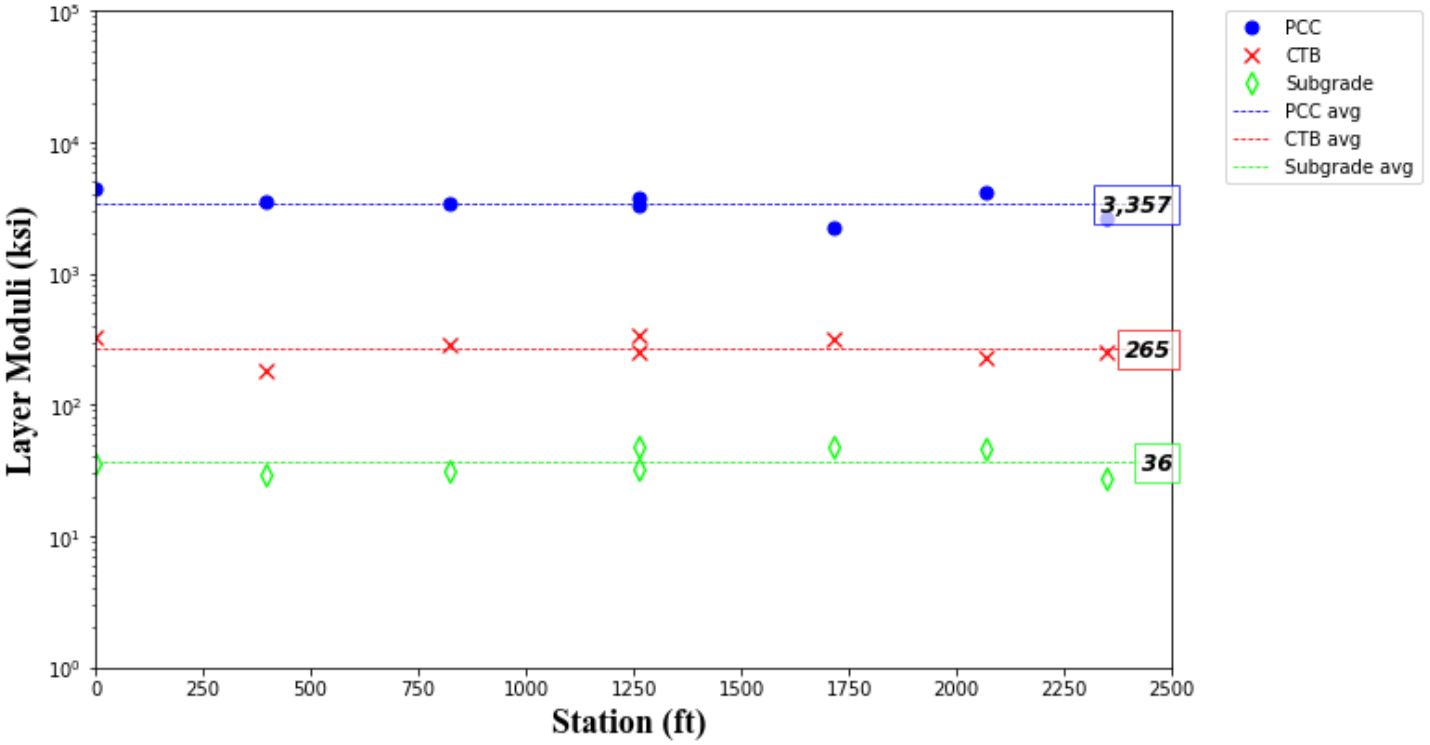


Figure D-54. Backcalculated Layer Moduli for TWY W 10R

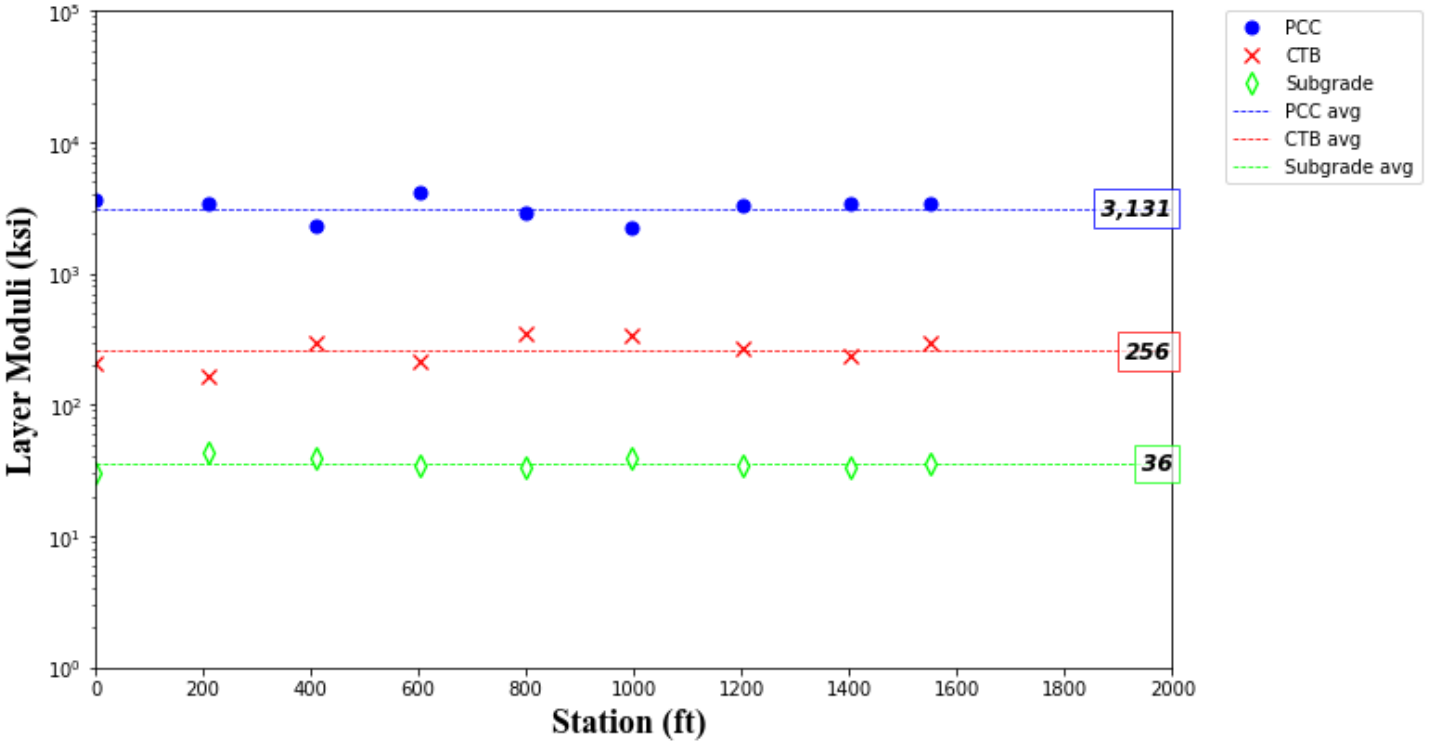


Figure D-55. Backcalculated Layer Moduli for TWY Y 10L

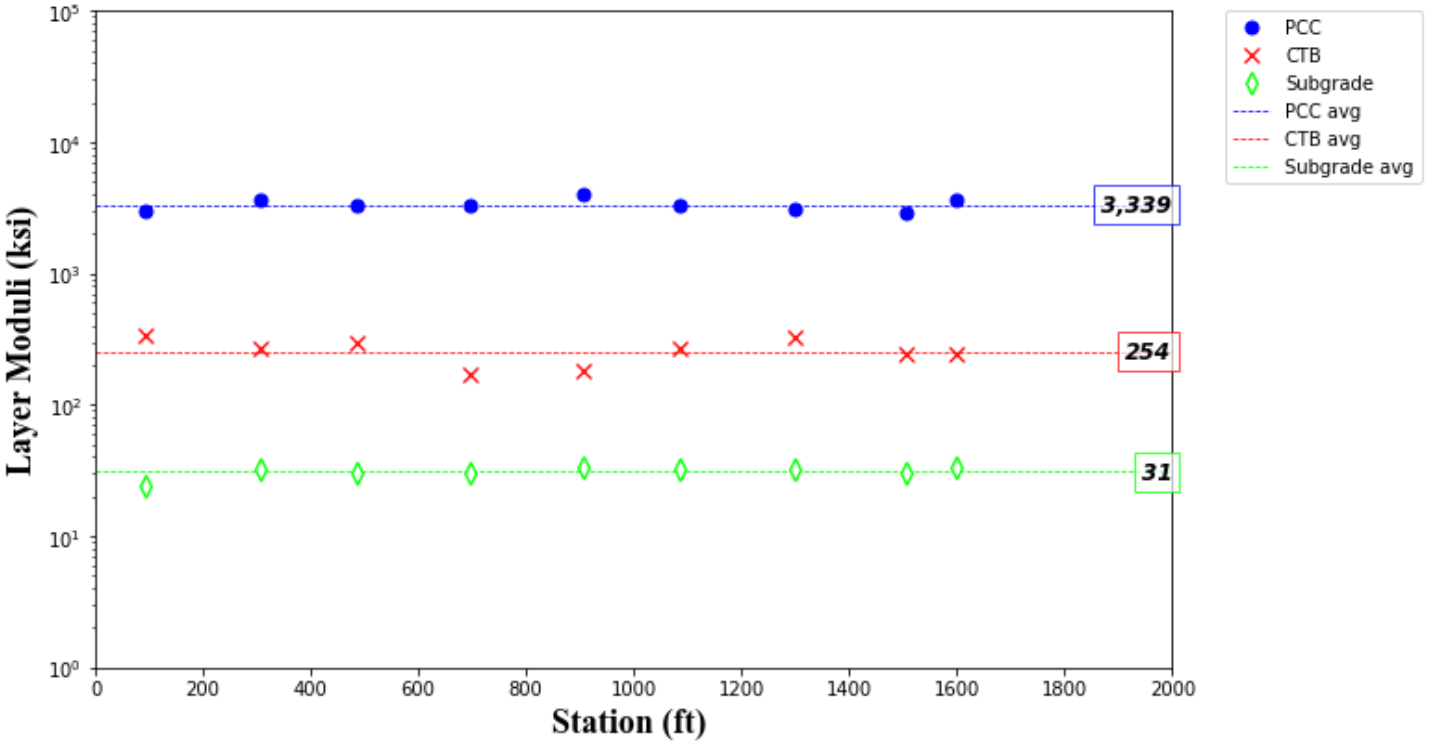


Figure D-56. Backcalculated Layer Moduli for TWY Y 10R

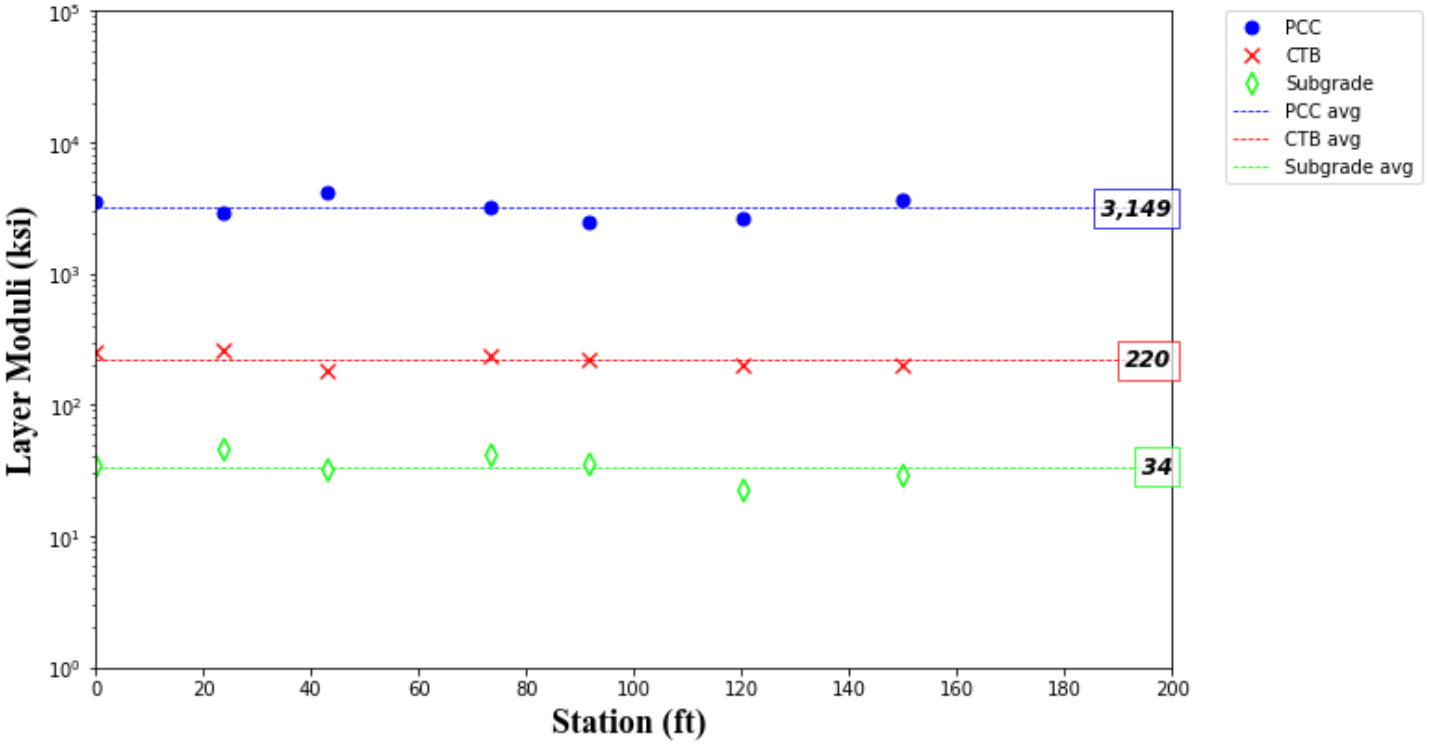


Figure D-57. Backcalculated Layer Moduli for TWY Y1 10L

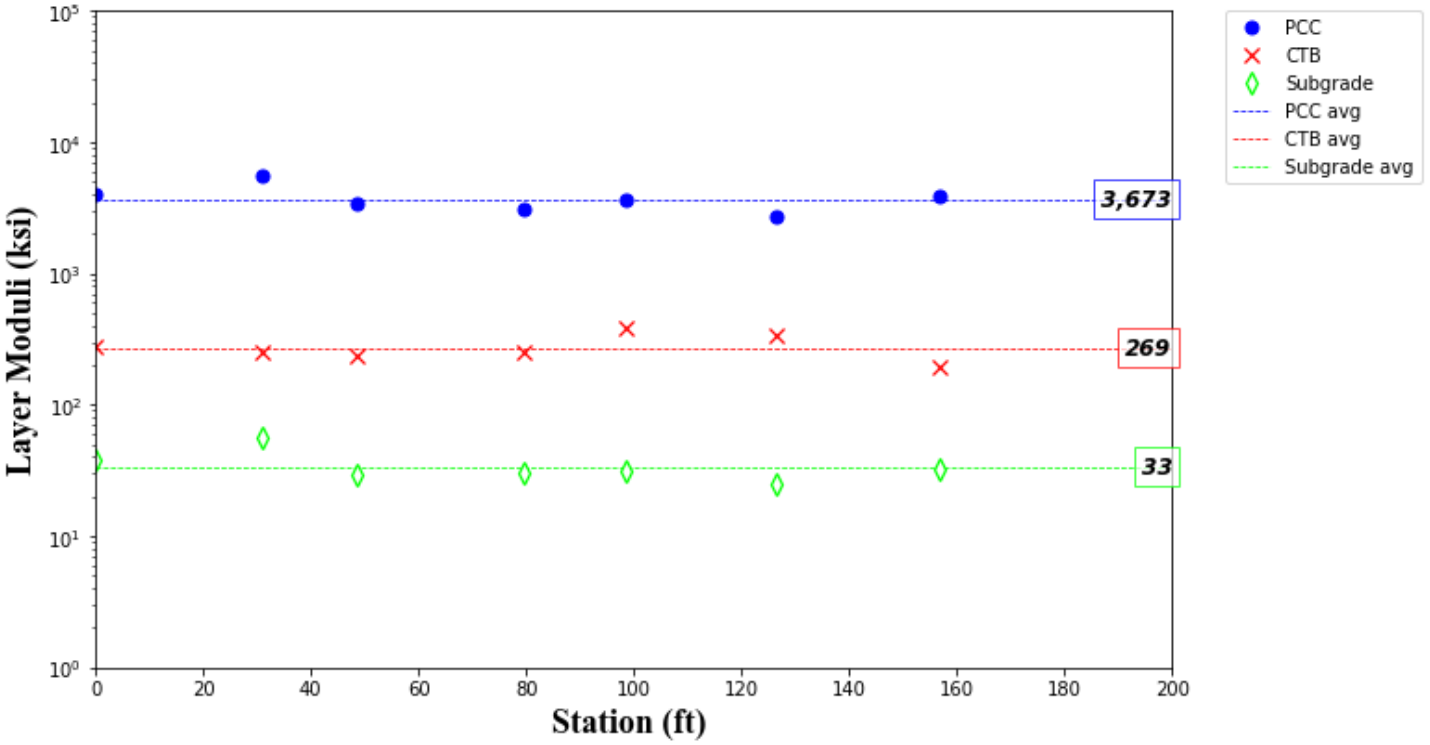


Figure D-58. Backcalculated Layer Moduli for TWY Y1 10R

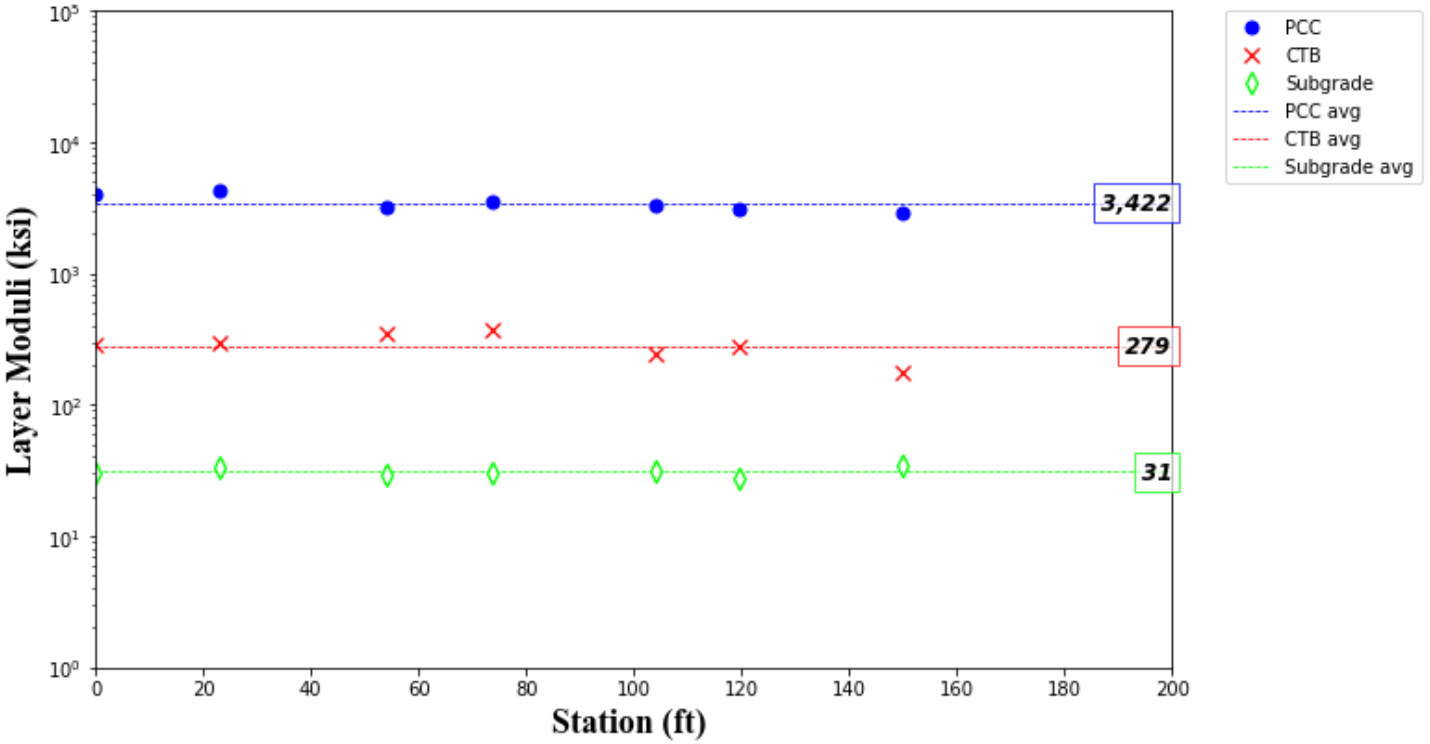


Figure D-59. Backcalculated Layer Moduli for TWY Y2 10L

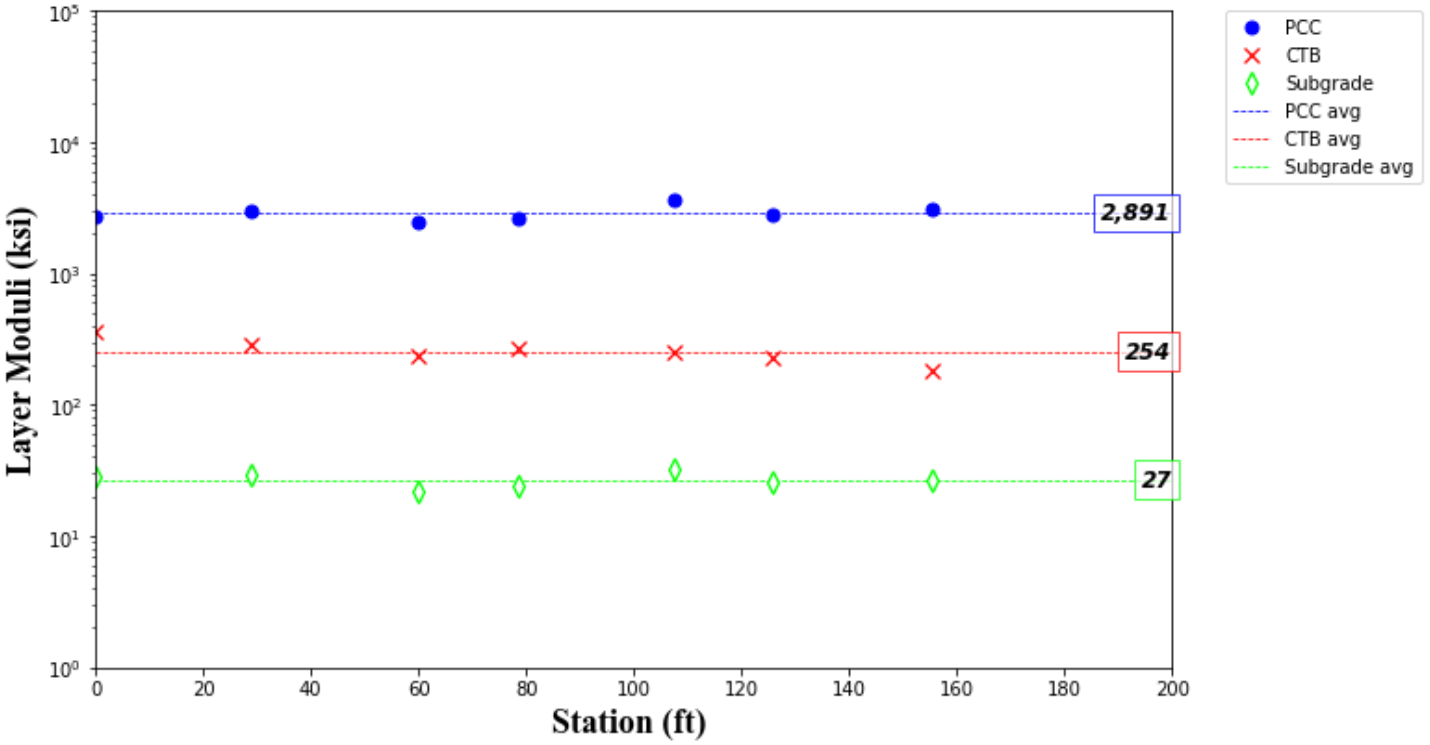


Figure D-60. Backcalculated Layer Moduli for TWY Y2 10R

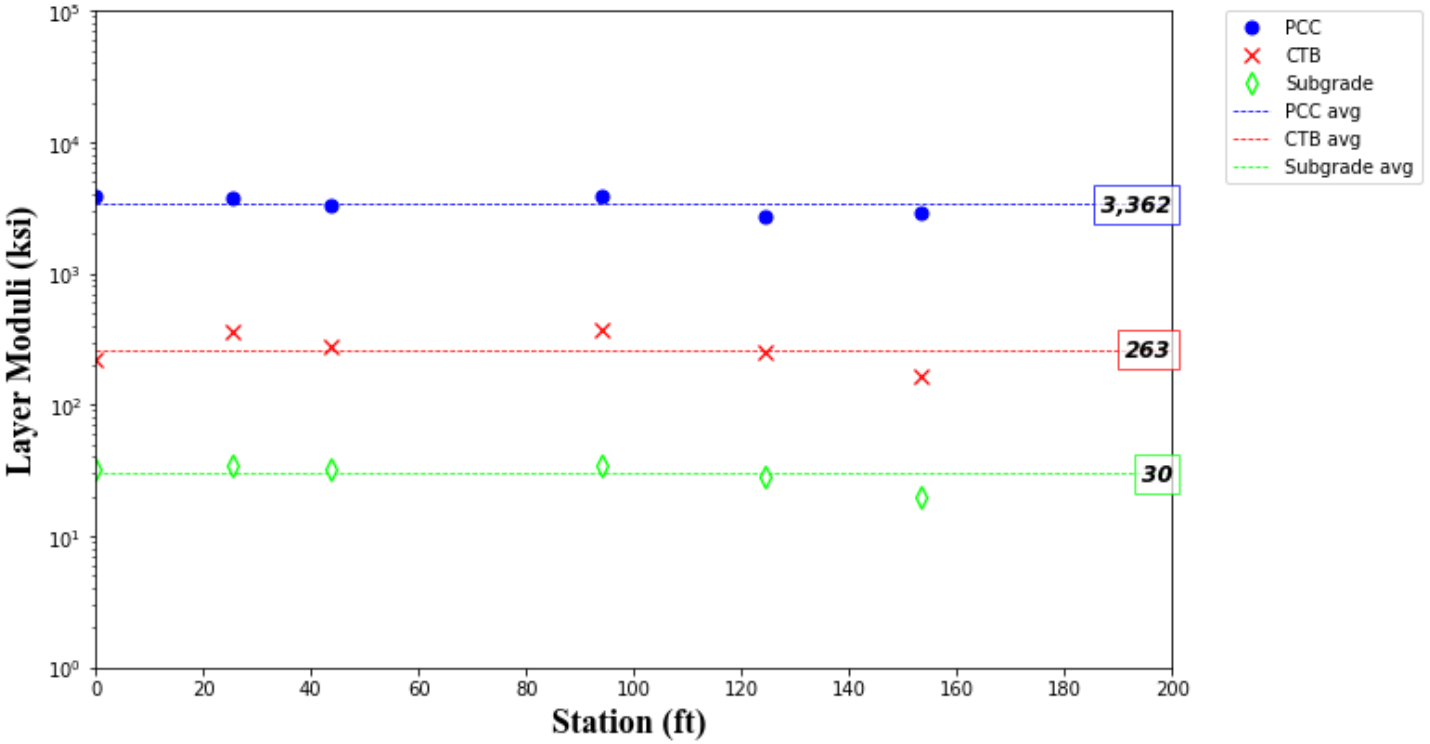


Figure D-61. Backcalculated Layer Moduli for TWY Y3 10L

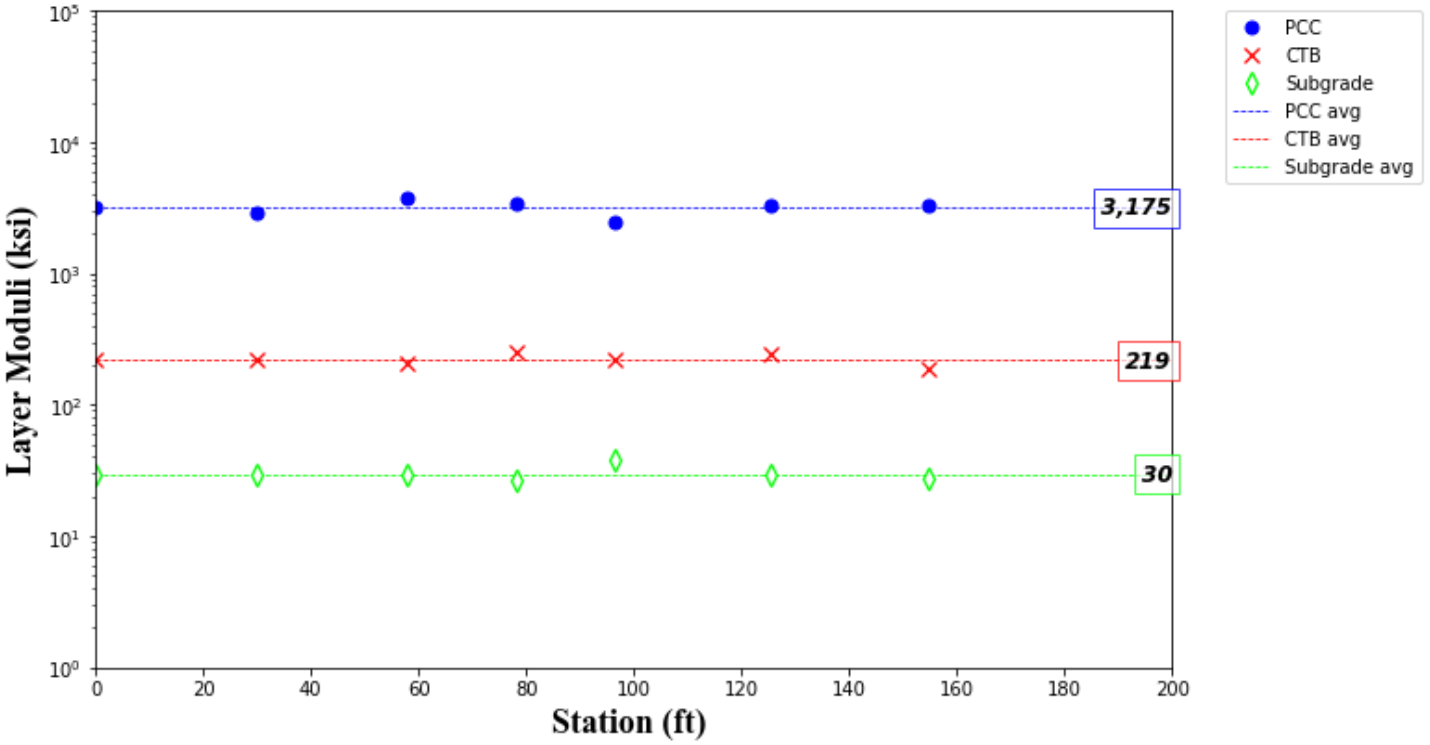


Figure D-62. Backcalculated Layer Moduli for TWY Y3 10R

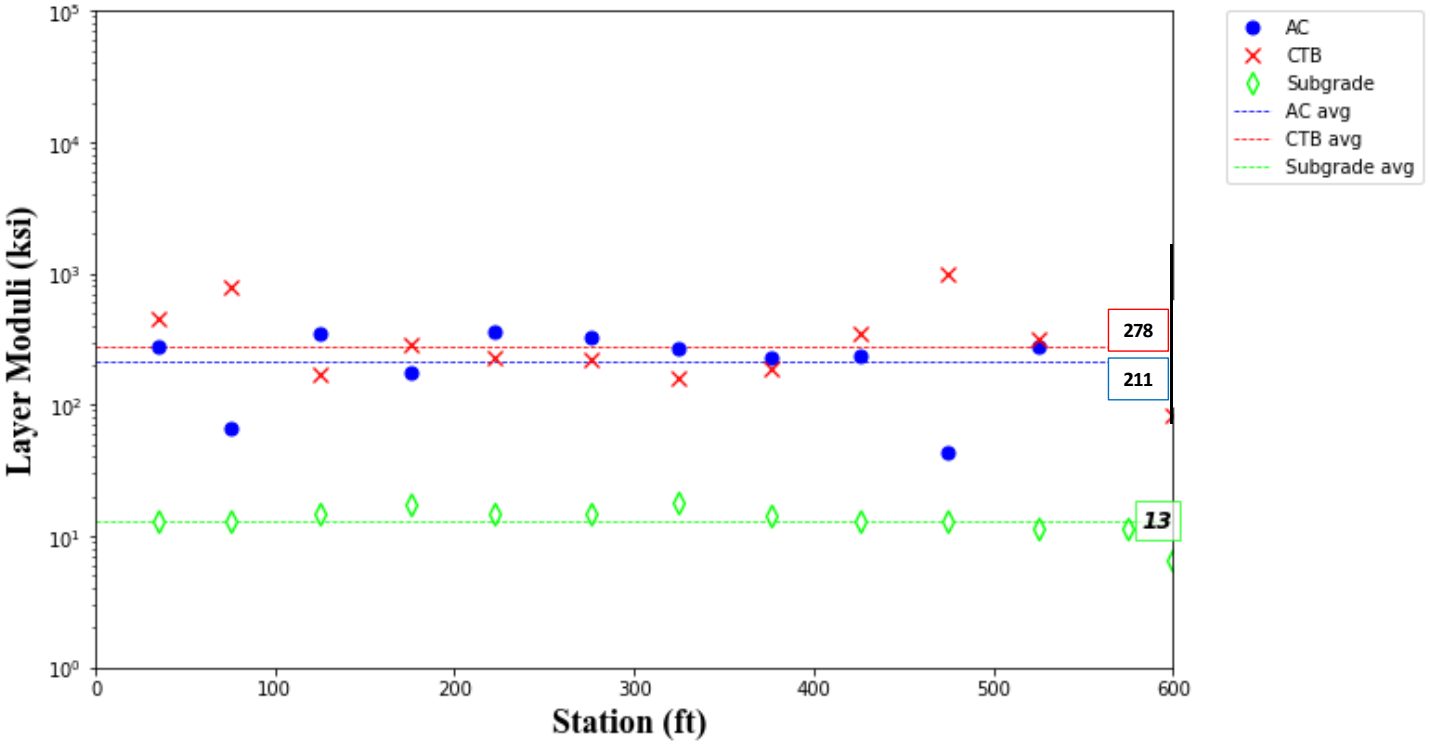


Figure D-63. Backcalculated Layer Moduli for TXL G 10L

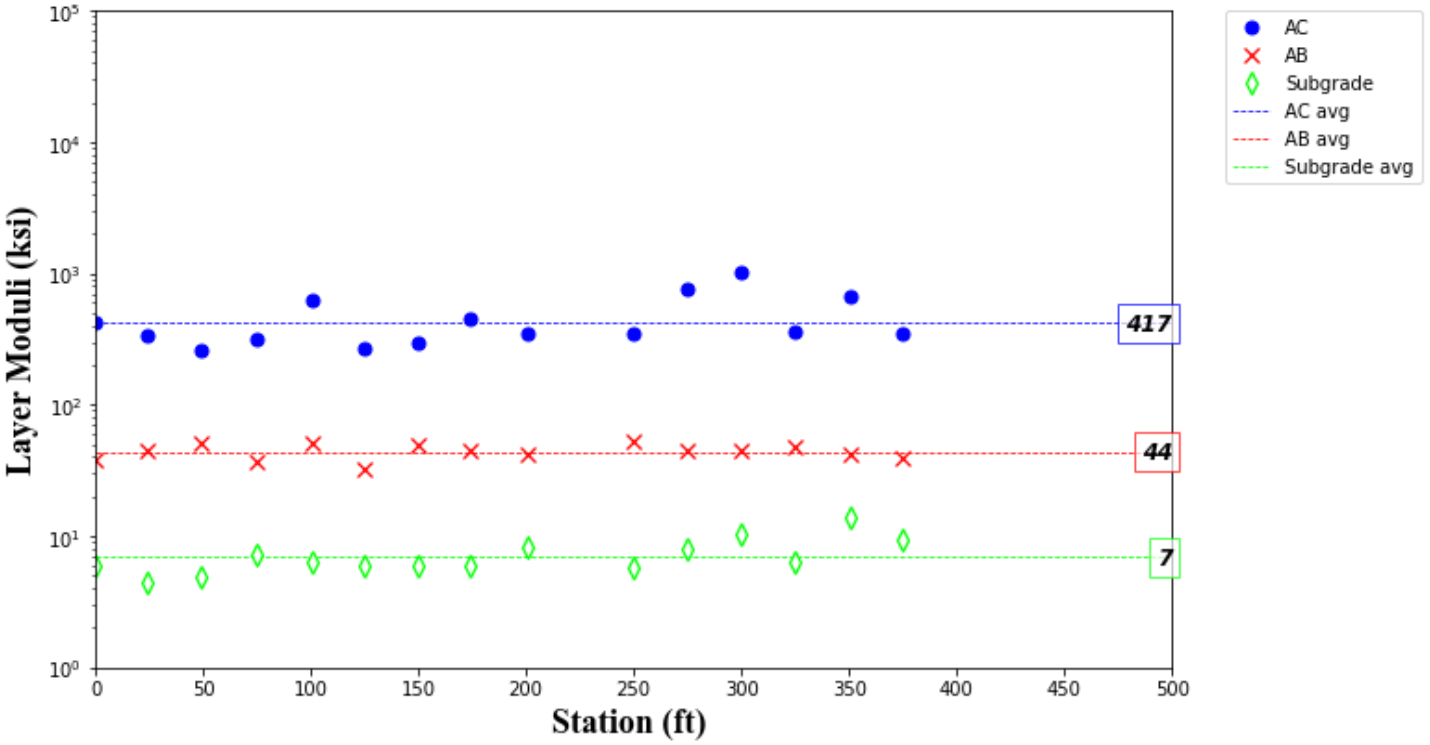


Figure D-64. Backcalculated Layer Moduli for TXL H 10L

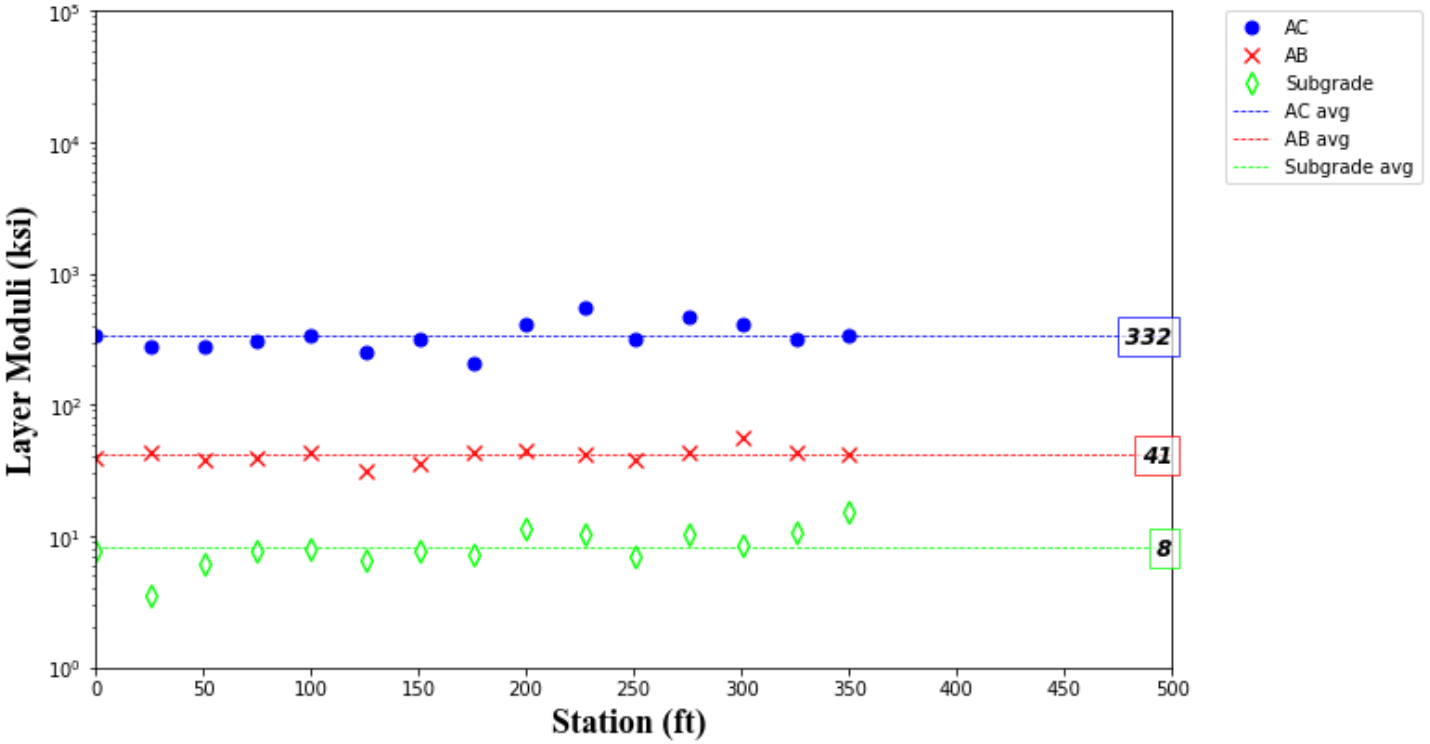


Figure D-65. Backcalculated Layer Moduli for TXL H 10R

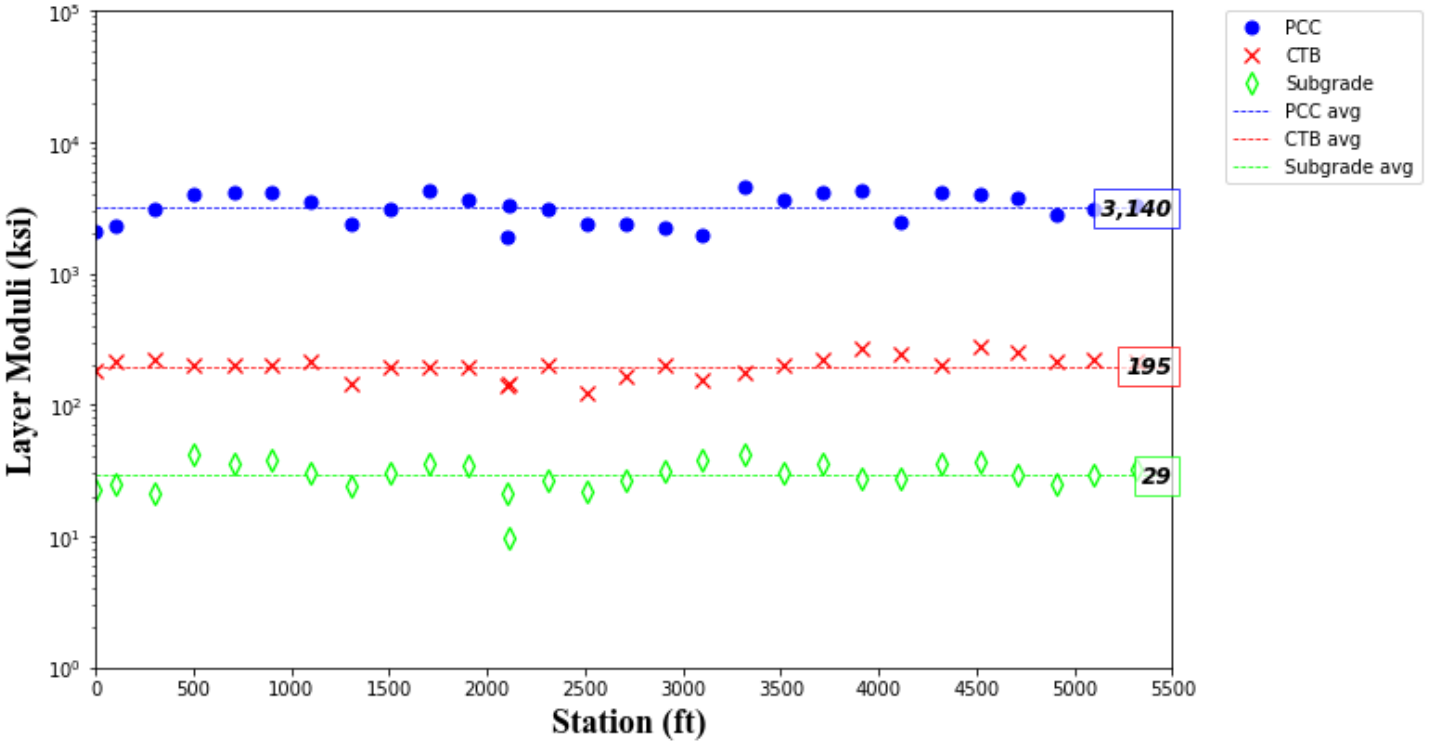


Figure D-66. Backcalculated Layer Moduli for TXL N1 10L

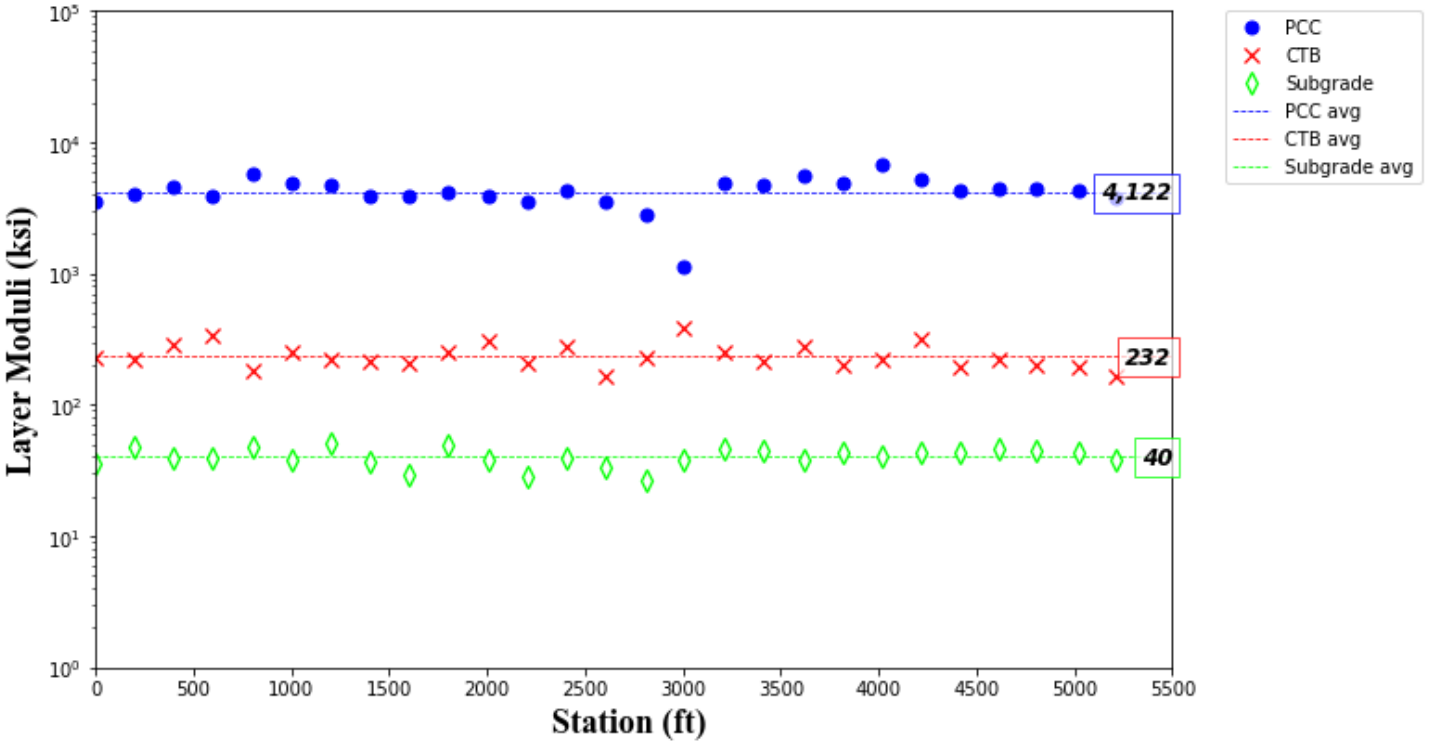


Figure D-67. Backcalculated Layer Moduli for TXL N1 10R

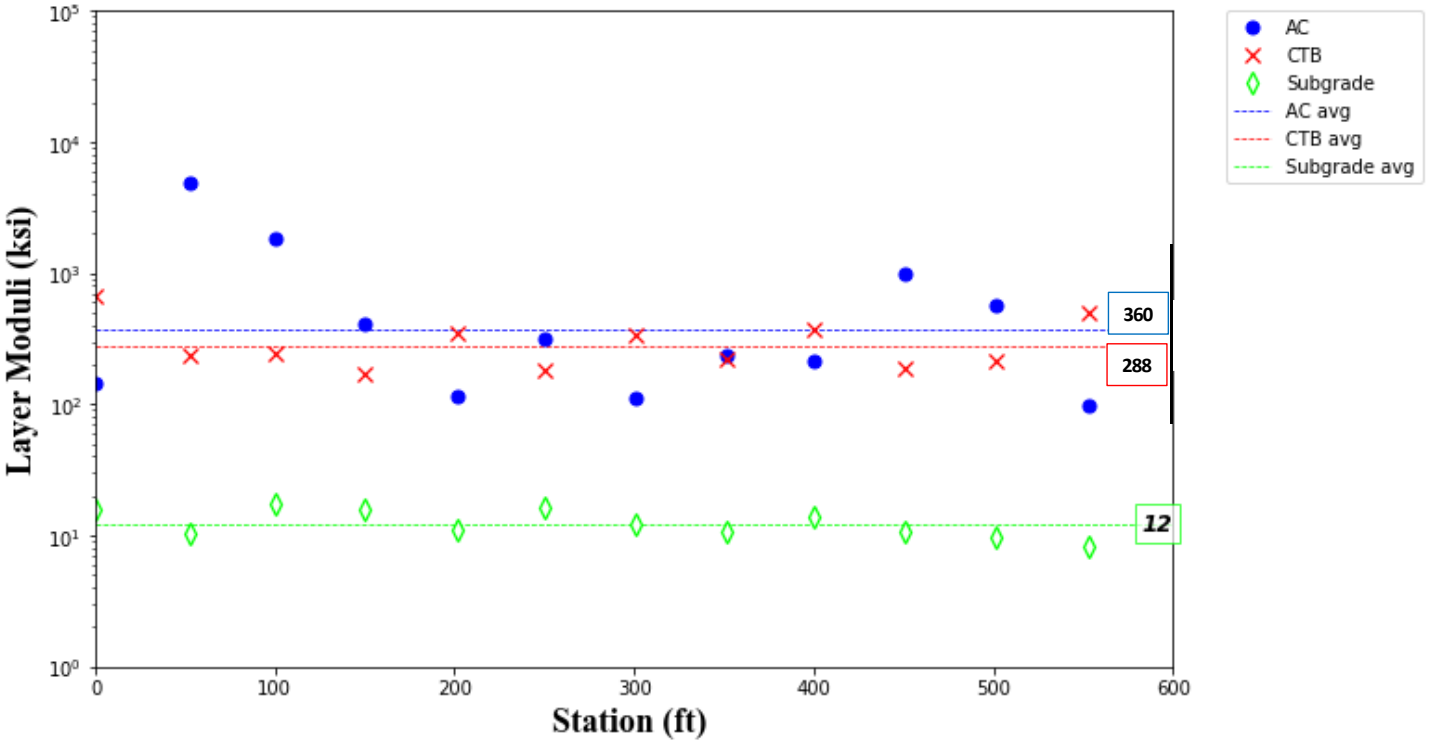


Figure D-68. Backcalculated Layer Moduli for TXY G 10R

Appendix E – ELMOD Structural Adequacy Evaluation

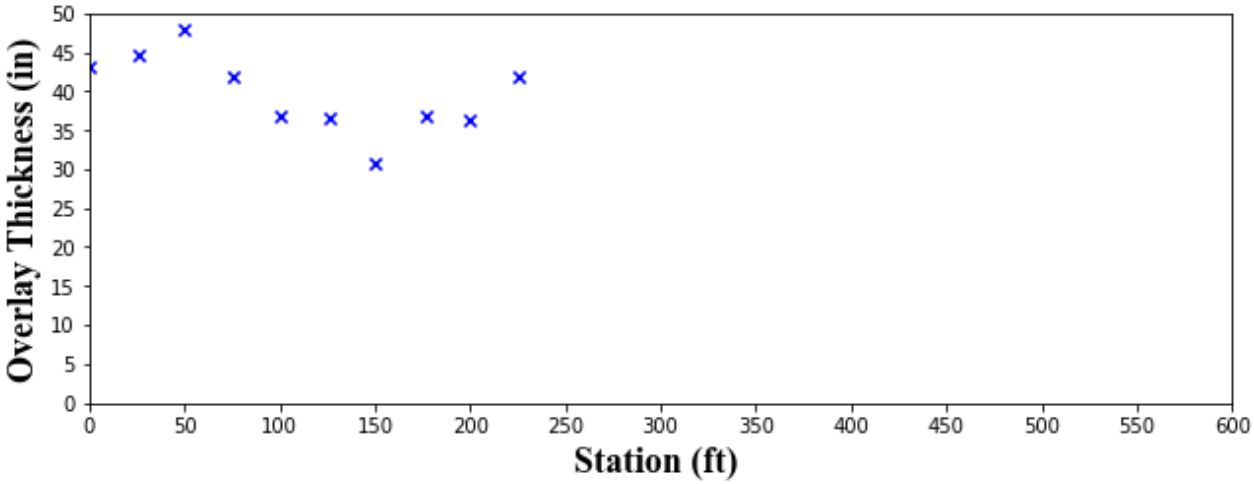


Figure E-1. Estimated Overlay Thickness for INT TERMINAL APRON R1

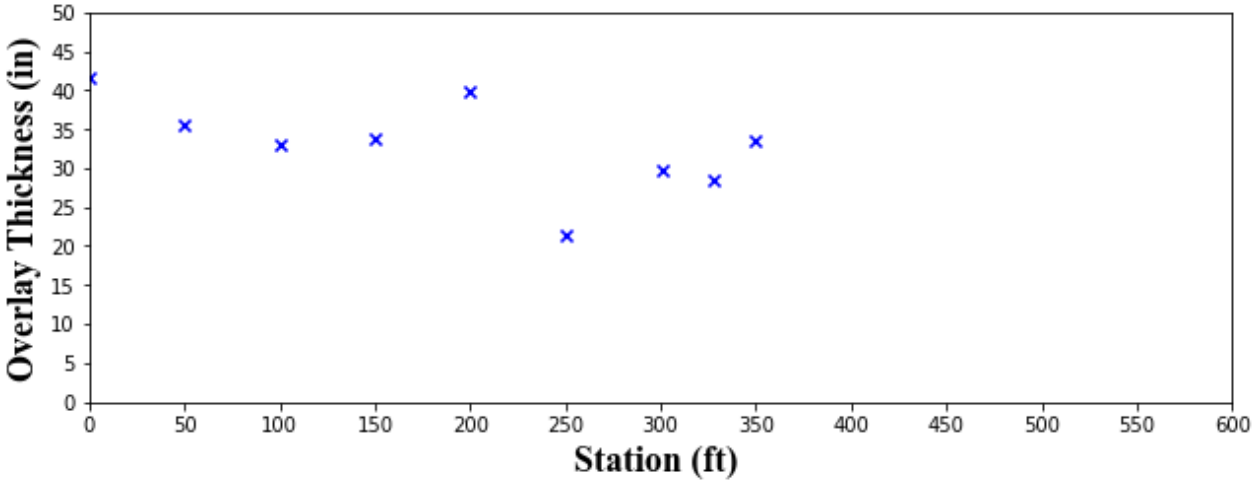


Figure E-2. Estimated Overlay Thickness for INT TERMINAL APRON R2

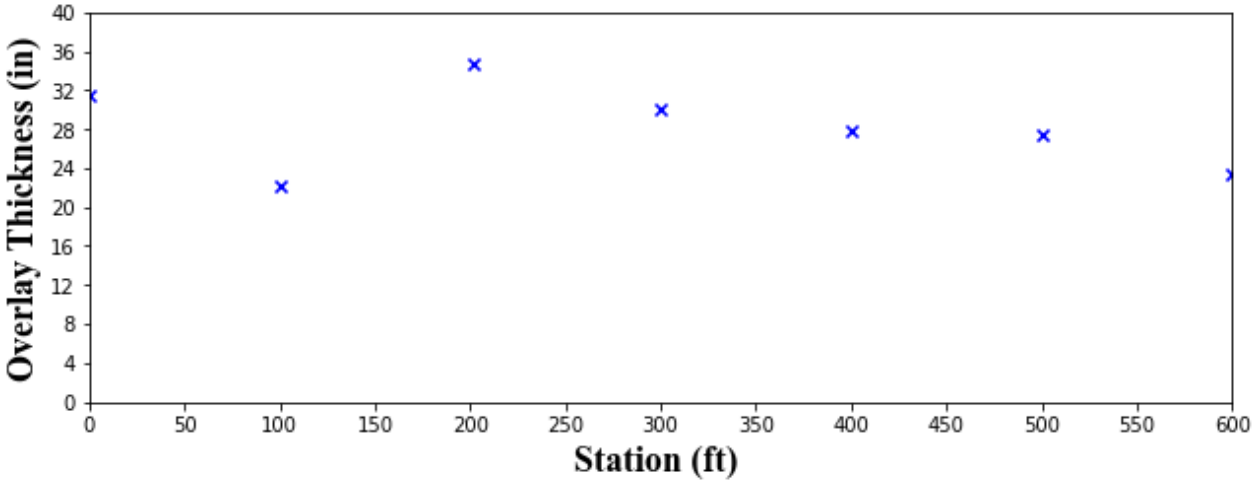


Figure E-3. Estimated Overlay Thickness for INT TERMINAL APRON R3

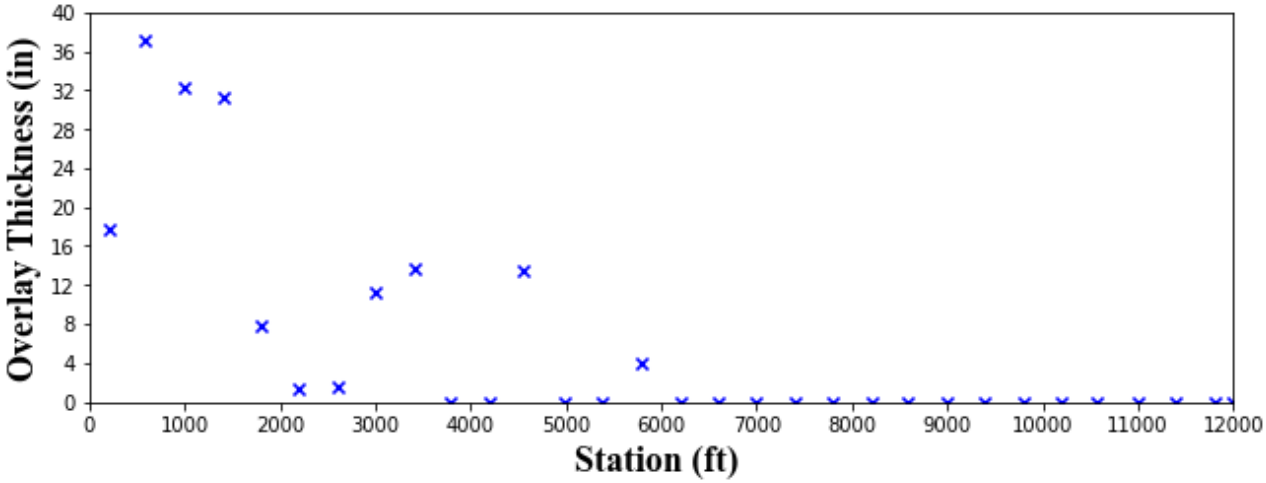


Figure E-4. Estimated Overlay Thickness for RWY 8L26R 10L

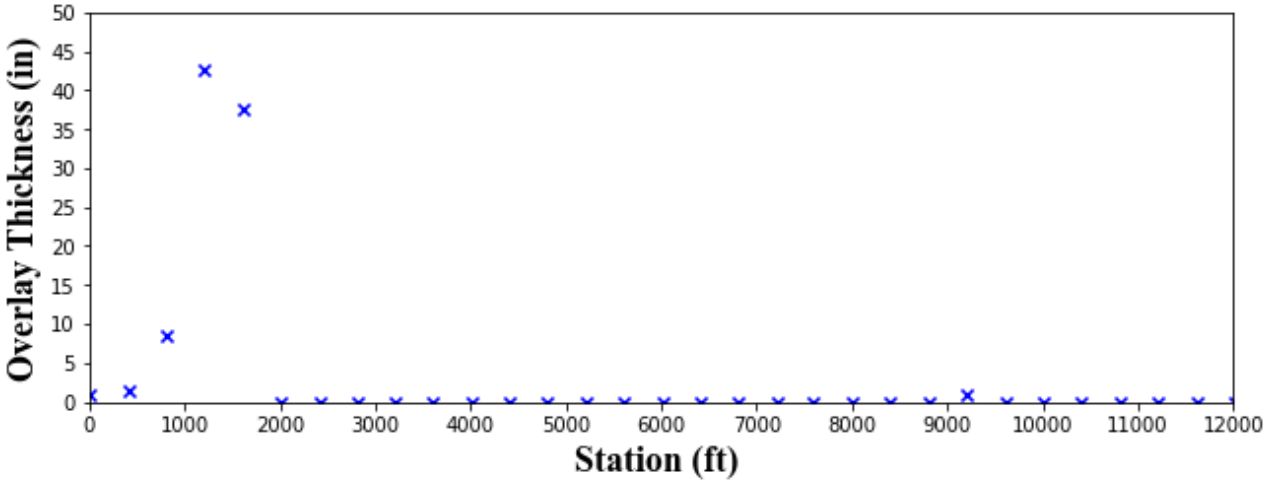


Figure E-5. Estimated Overlay Thickness for RWY 8L26R 10R

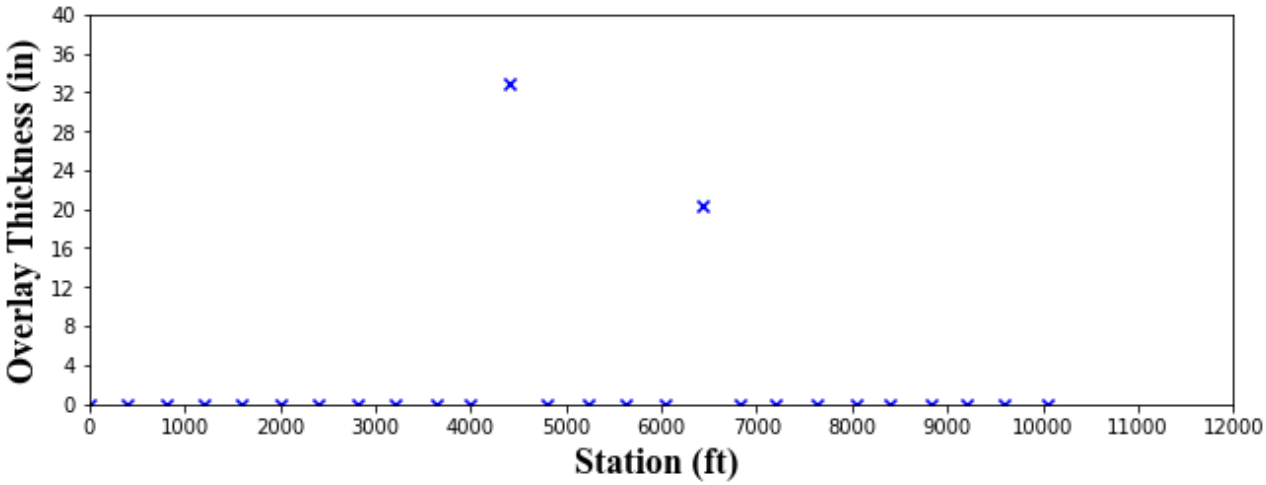


Figure E-6. Estimated Overlay Thickness for RWY 8R26L 10L

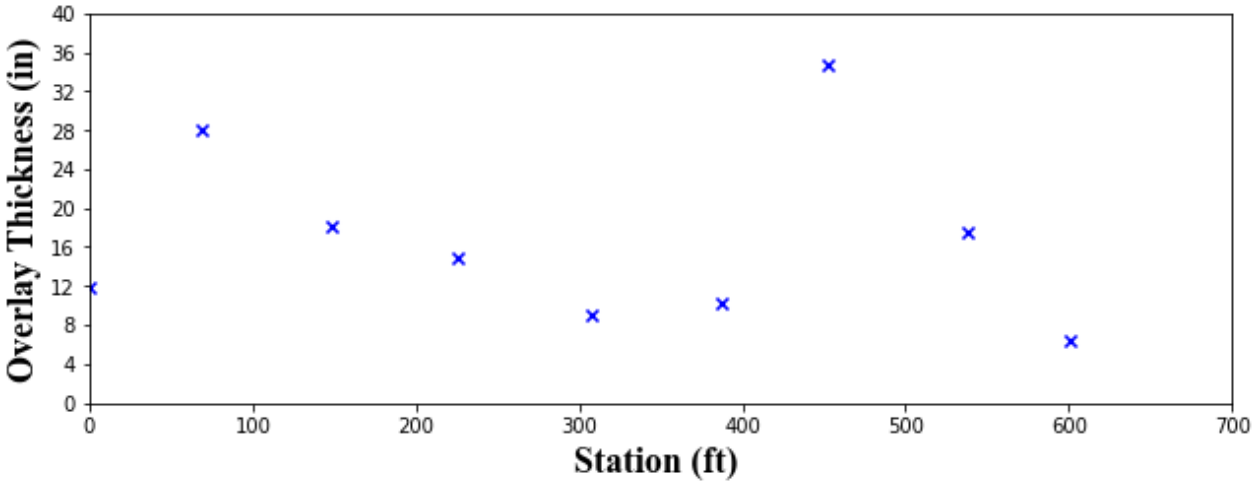


Figure E-7. Estimated Overlay Thickness for TERMINAL1 APRON R1

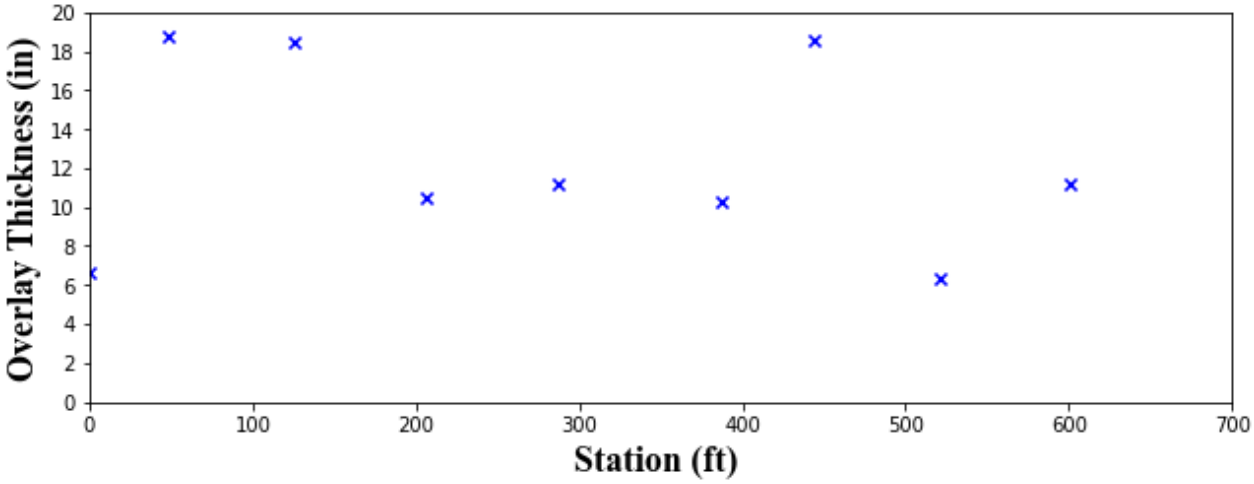


Figure E-8. Estimated Overlay Thickness for TERMINAL1 APRON R2

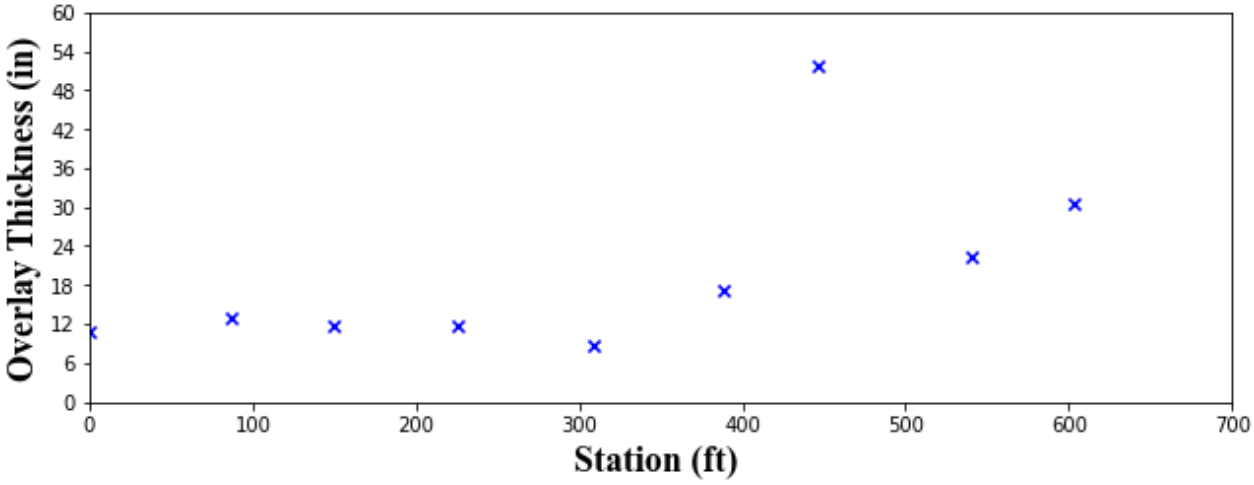


Figure E-9. Estimated Overlay Thickness for TERMINAL1 APRON R3

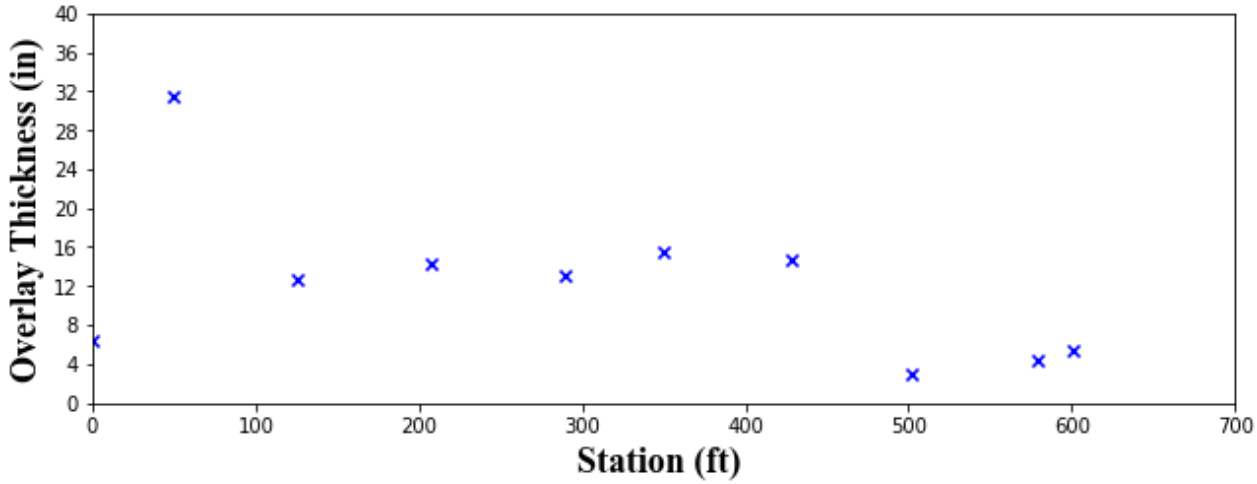


Figure E-10. Estimated Overlay Thickness for TERMINAL1 APRON R4

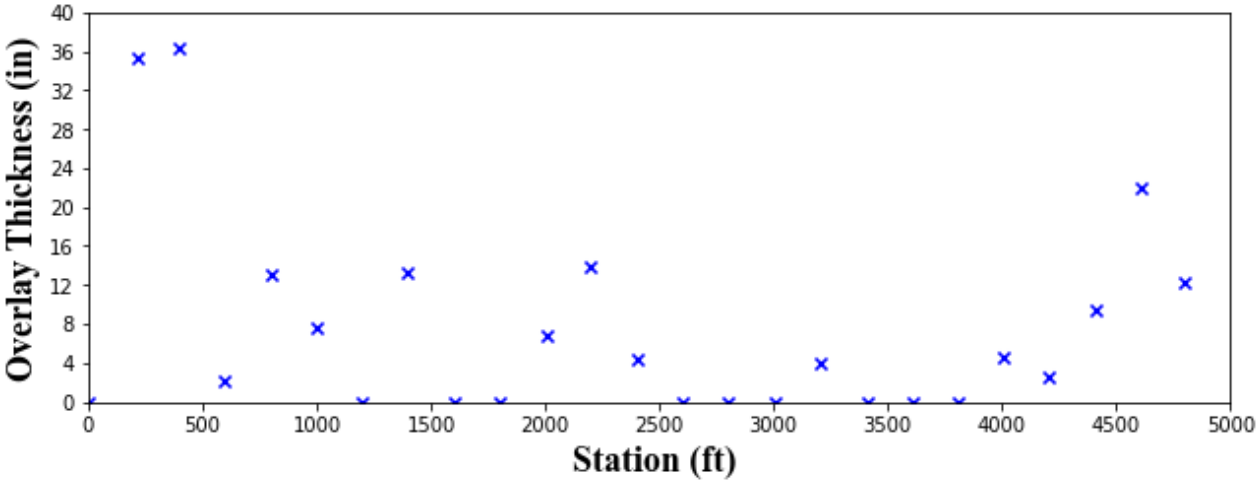


Figure E-11. Estimated Overlay Thickness for TERMINAL2 4 R1

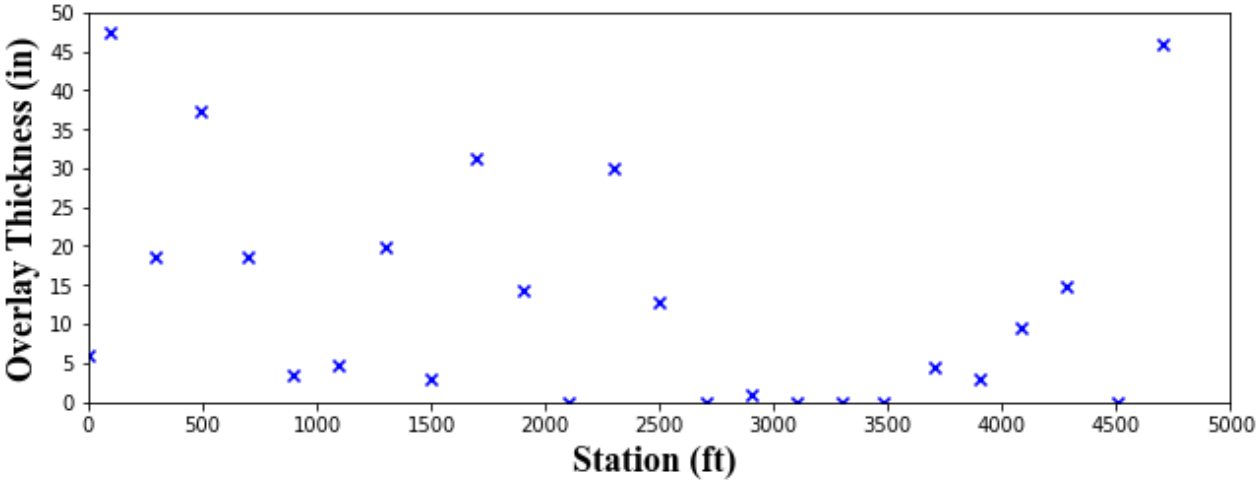


Figure E-12. Estimated Overlay Thickness for TERMINAL2 4 R2

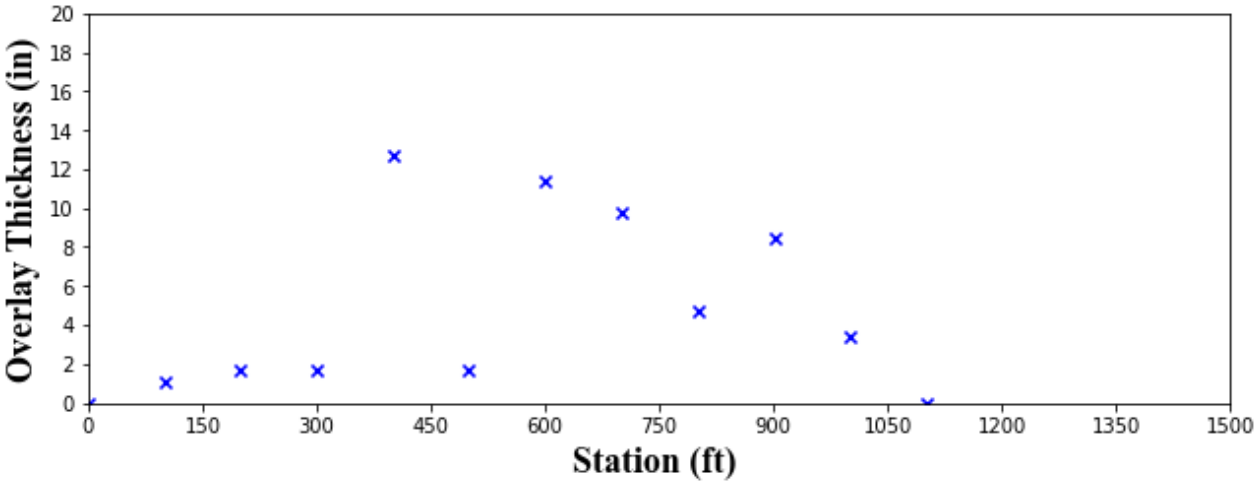


Figure E-13. Estimated Overlay Thickness for TERMINAL2 4 R3

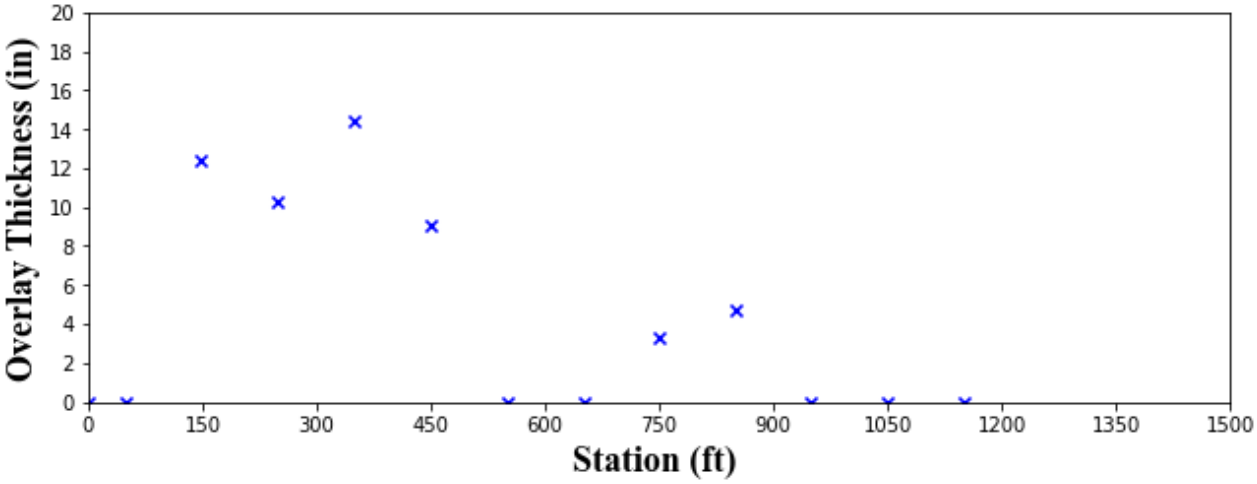


Figure E-14. Estimated Overlay Thickness for TERMINAL2 4 R4

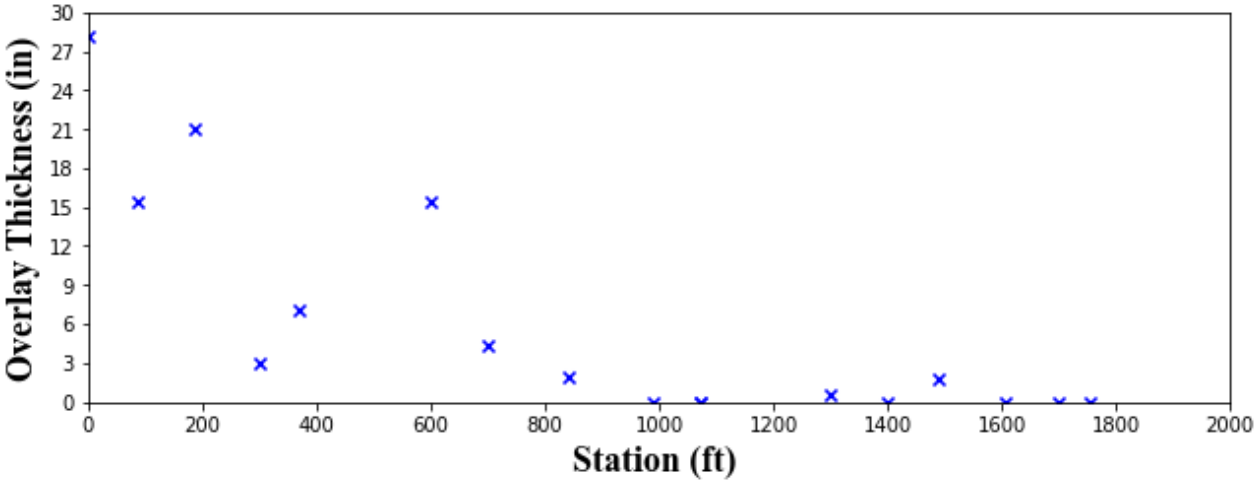


Figure E-15. Estimated Overlay Thickness for TWY D 10L

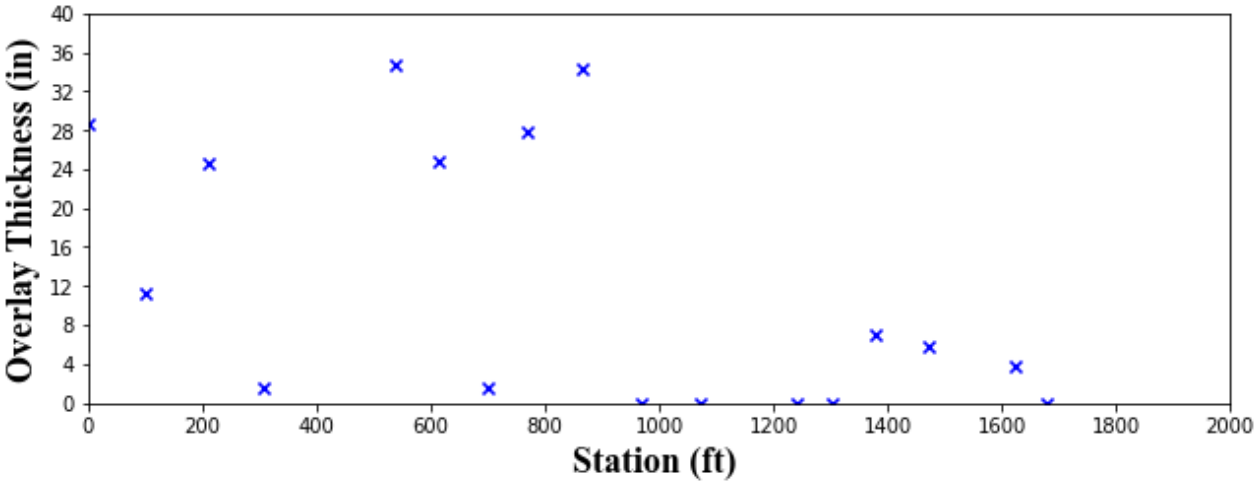


Figure E-16. Estimated Overlay Thickness for TWY D 10R

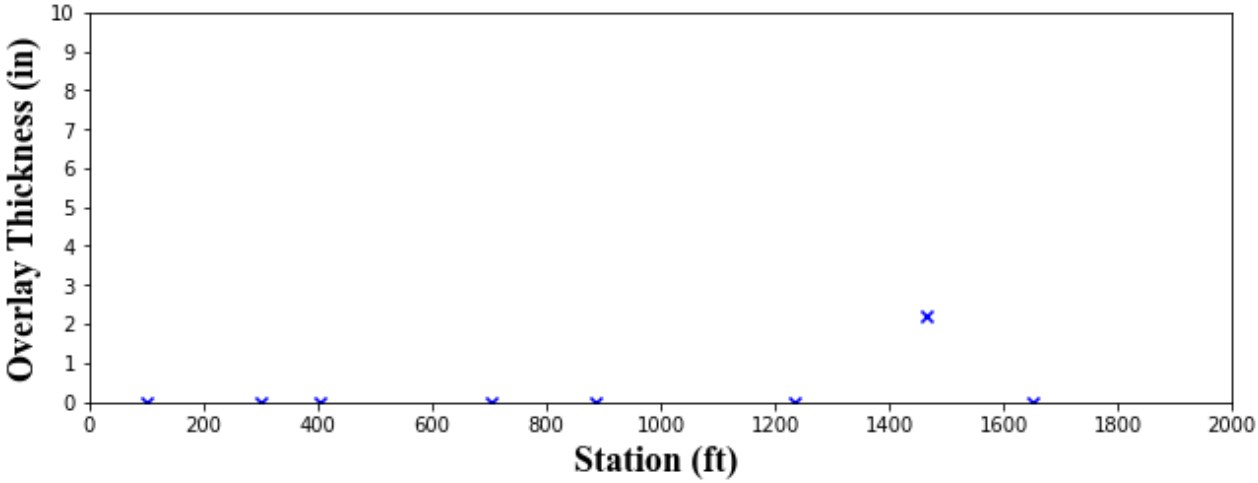


Figure E-17. Estimated Overlay Thickness for TWY F 10L

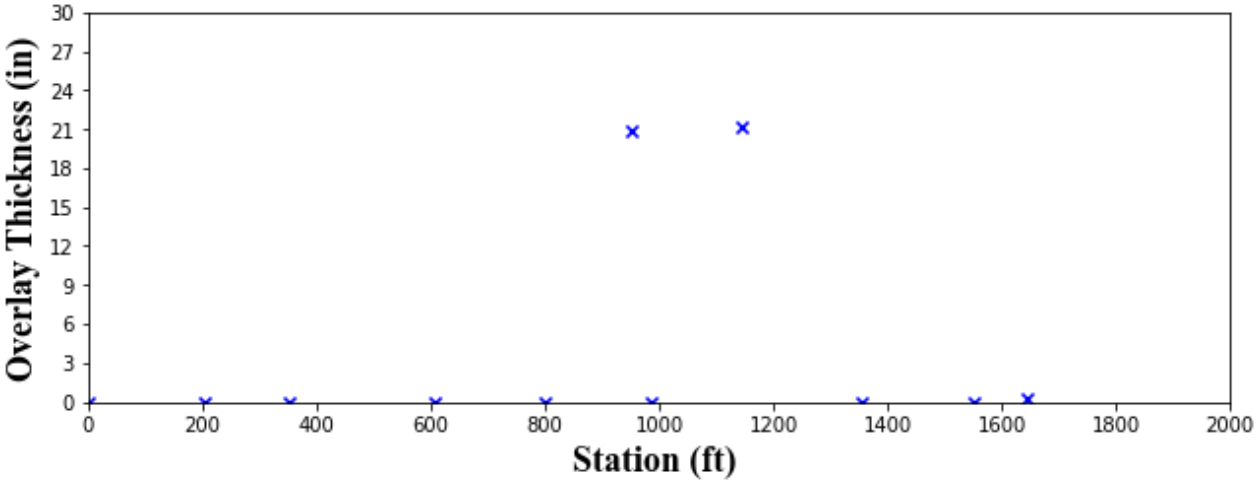


Figure E-18. Estimated Overlay Thickness for TWY F 10R

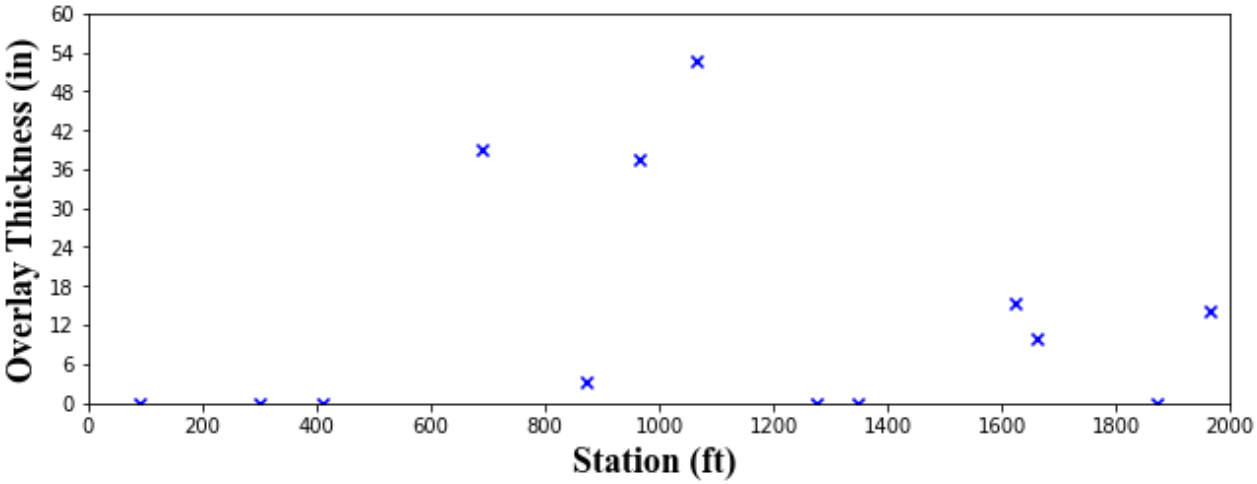


Figure E-19. Estimated Overlay Thickness for TWY K 10L

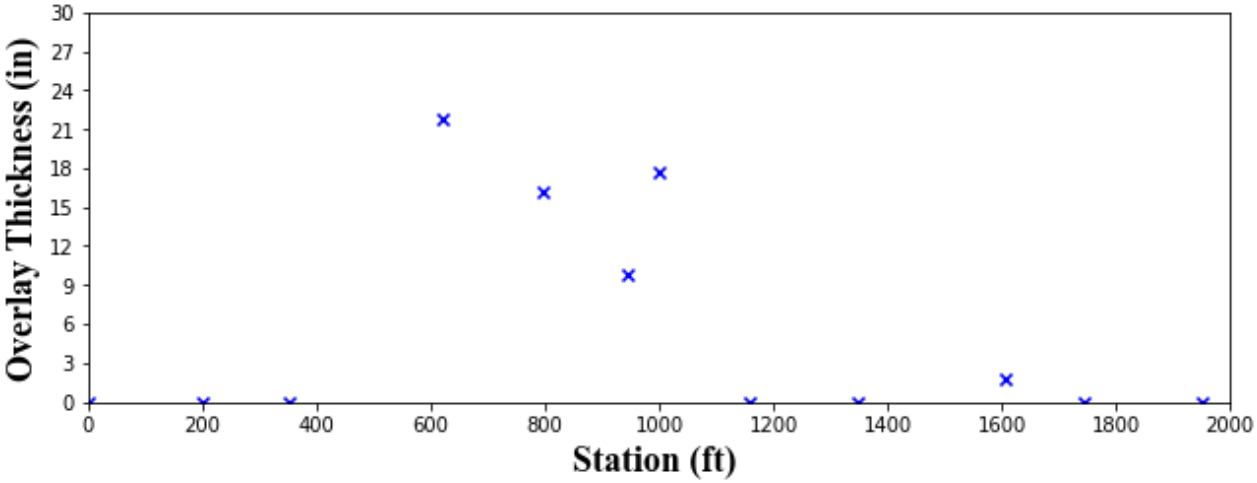


Figure E-20. Estimated Overlay Thickness for TWY K 10R

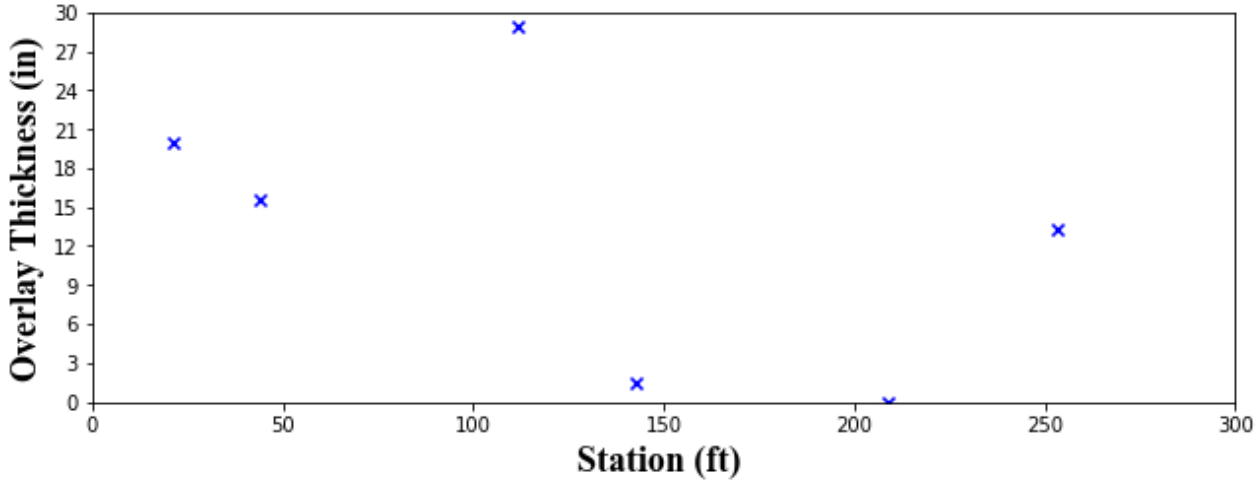


Figure E-21. Estimated Overlay Thickness for TWY L 10L

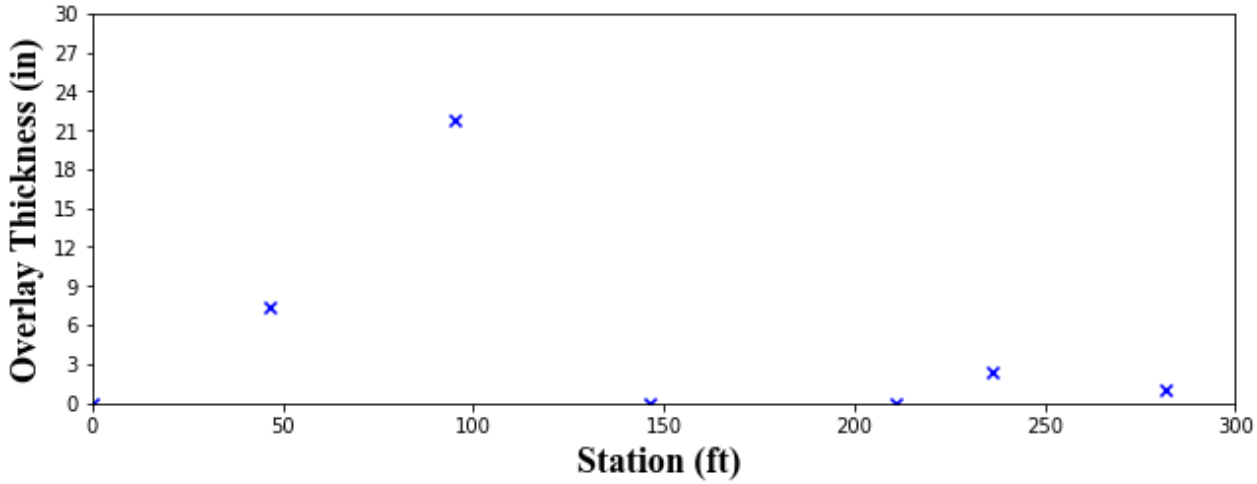


Figure E-22. Estimated Overlay Thickness for TWY L 10R

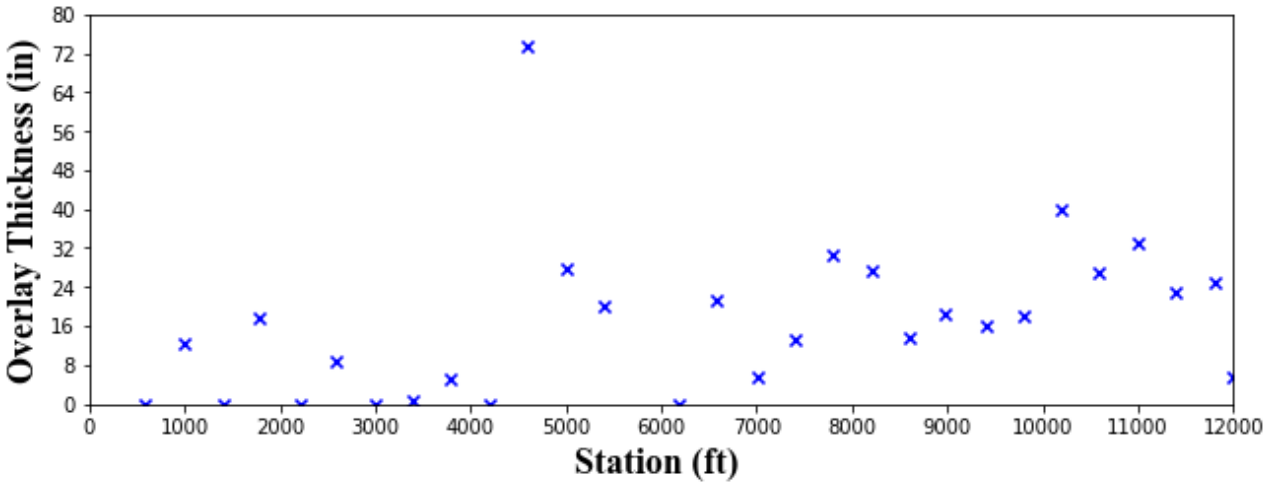


Figure E-23. Estimated Overlay Thickness for TWY N 10L

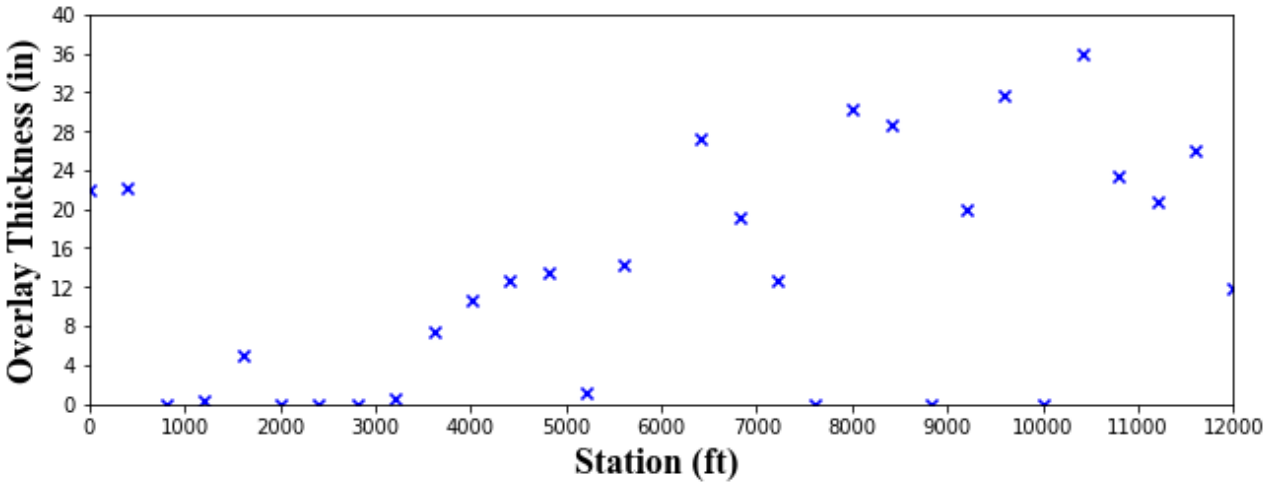


Figure E-24. Estimated Overlay Thickness for TWY N 10R

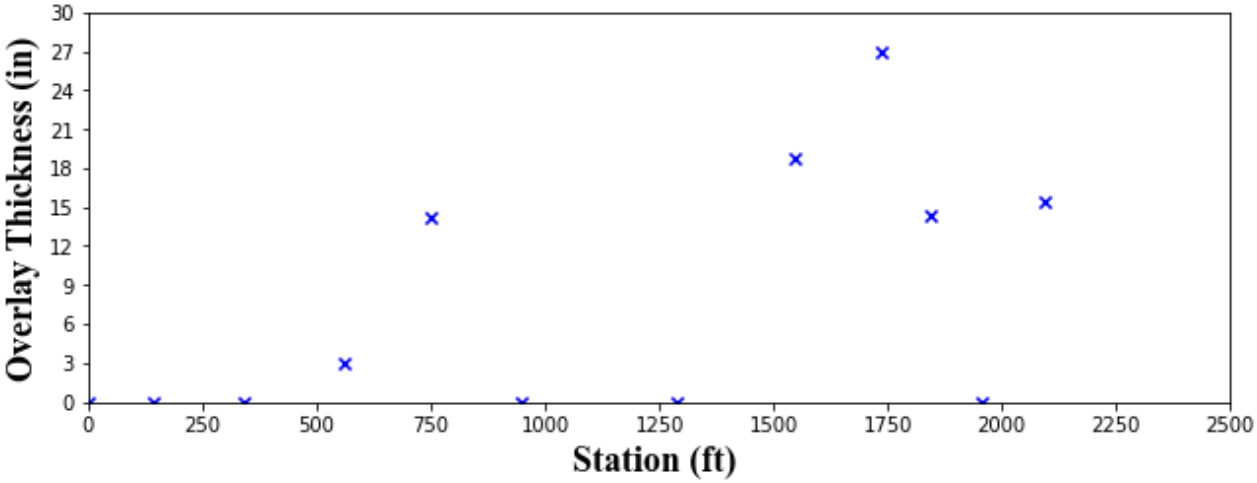


Figure E-25. Estimated Overlay Thickness for TWY P 10L

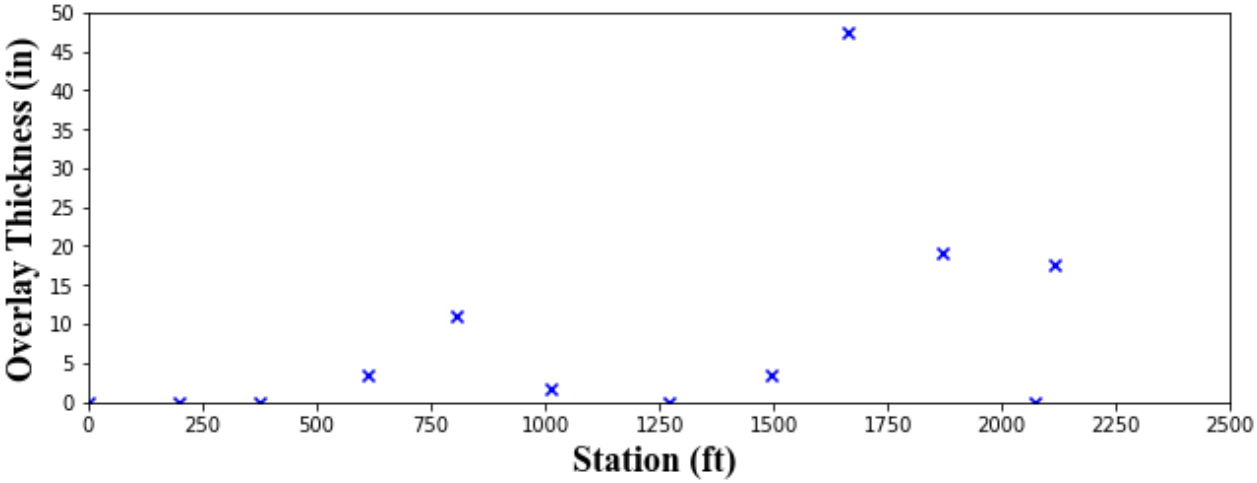


Figure E-26. Estimated Overlay Thickness for TWY P 10R

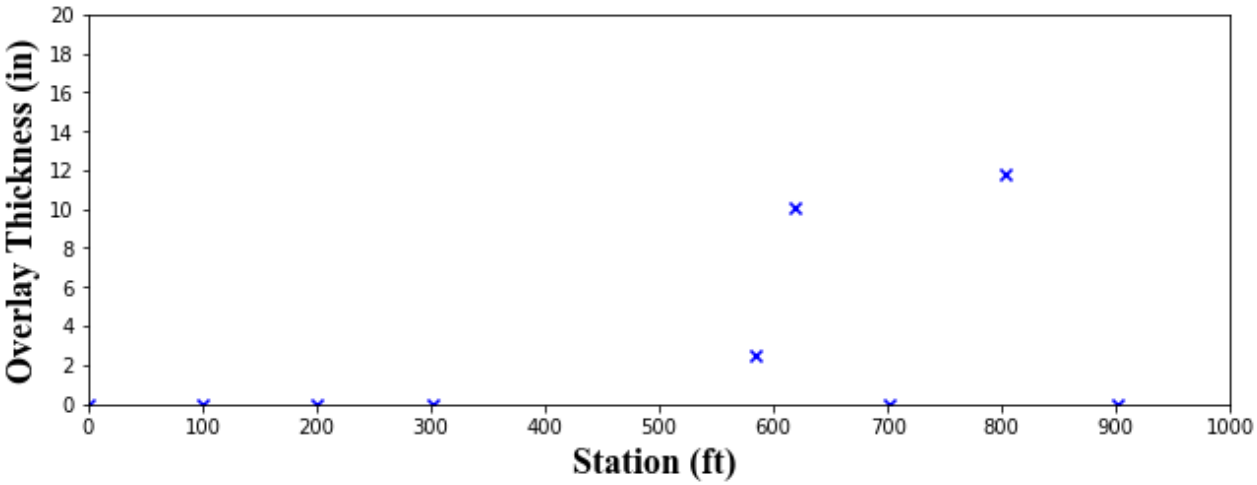


Figure E-27. Estimated Overlay Thickness for TWY Q 10R

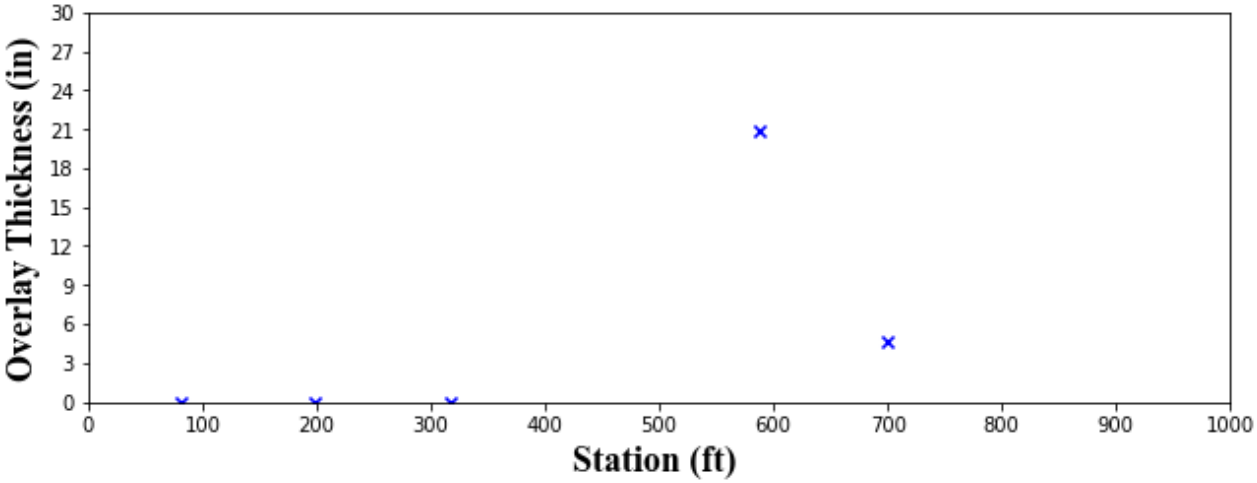


Figure E-28. Estimated Overlay Thickness for TWY R 10L

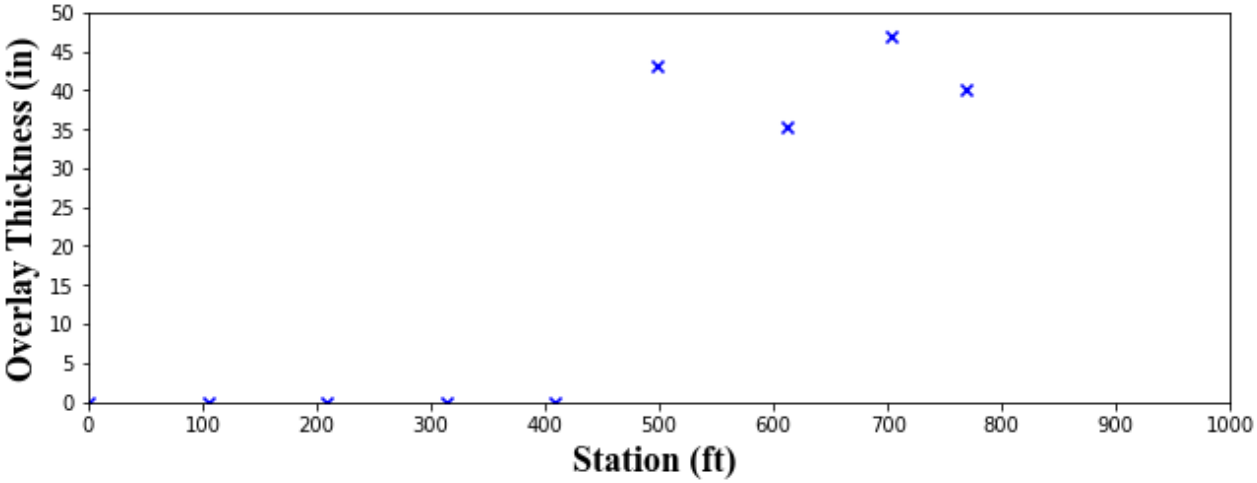


Figure E-29. Estimated Overlay Thickness for TWY R 10R

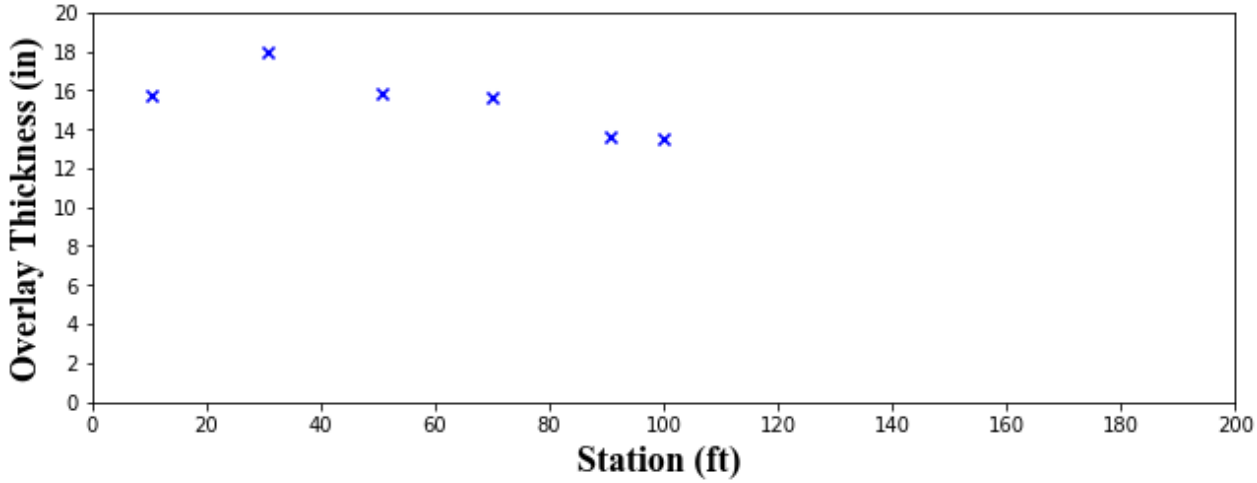


Figure E-30. Estimated Overlay Thickness for TWY S1 10L

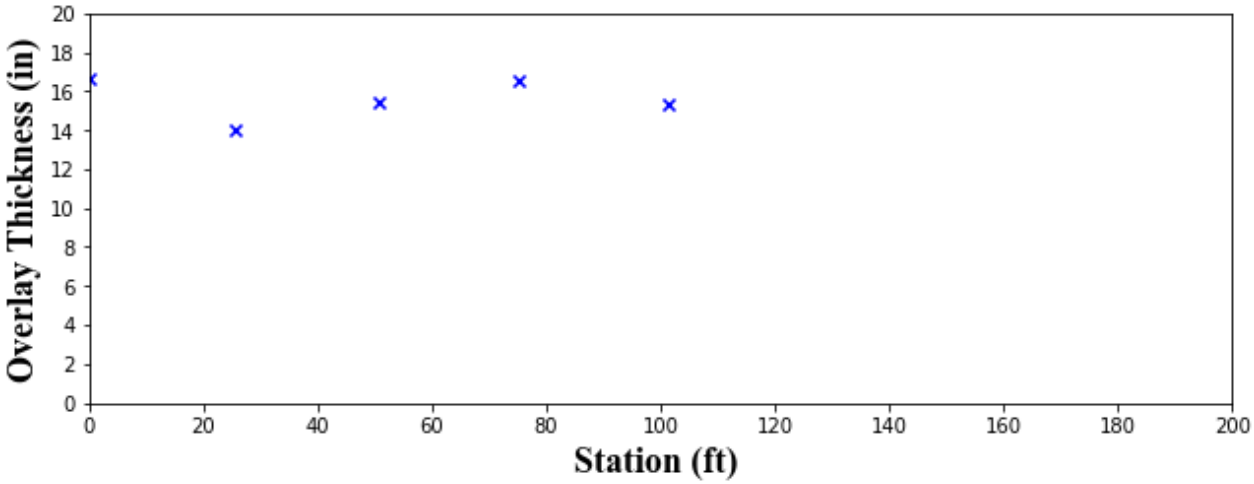


Figure E-31. Estimated Overlay Thickness for TWY S1 10R

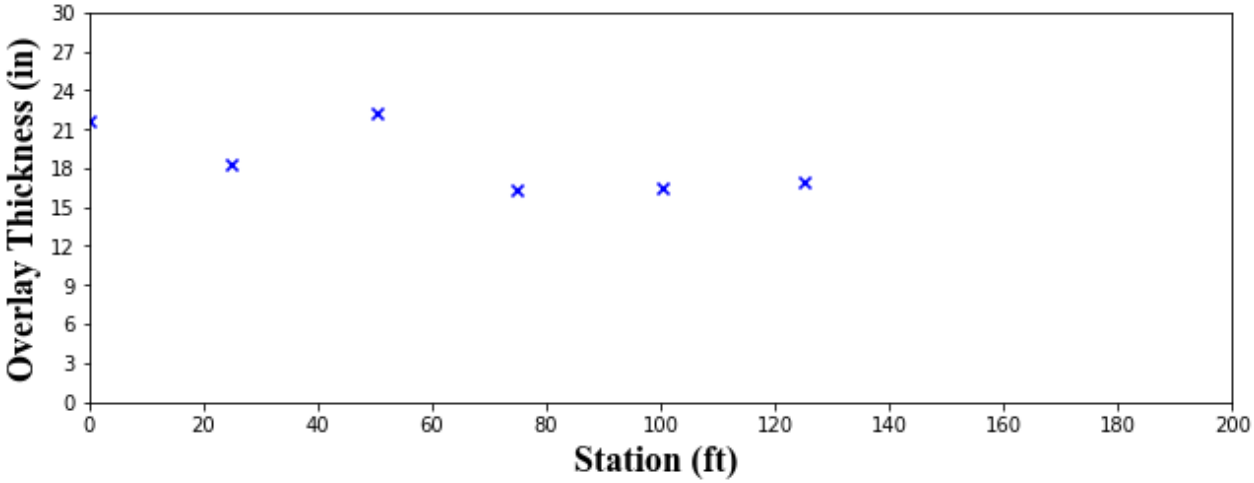


Figure E-32. Estimated Overlay Thickness for TWY S3 10L

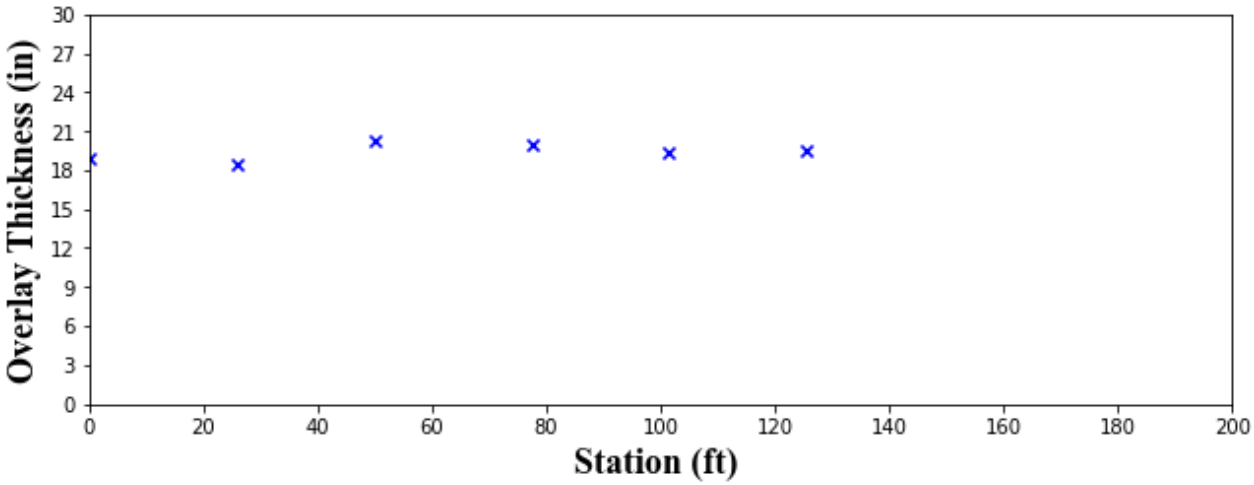


Figure E-33. Estimated Overlay Thickness for TWY S3 10R

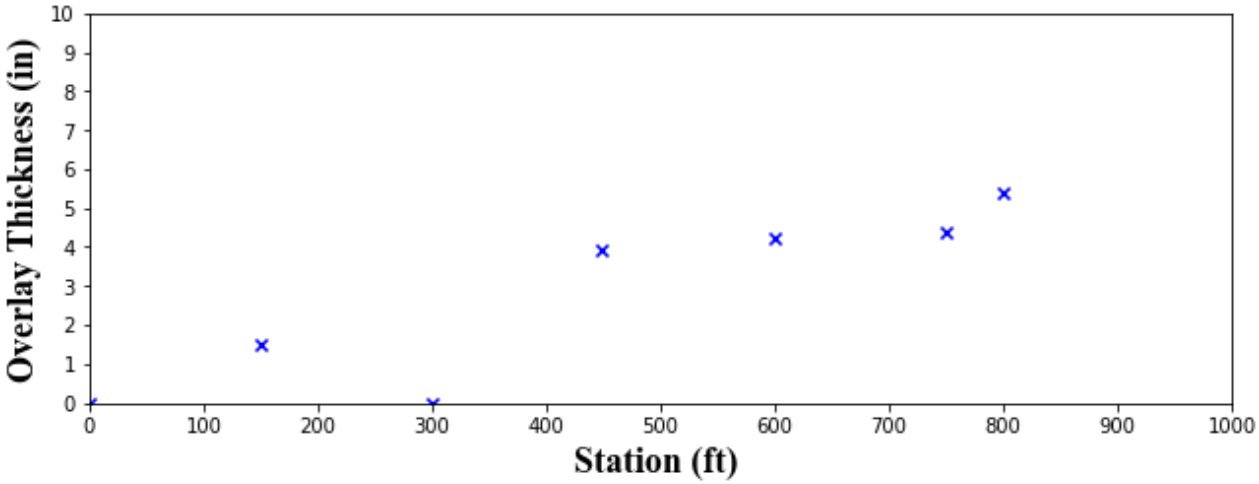


Figure E-34. Estimated Overlay Thickness for TWY S5 10L

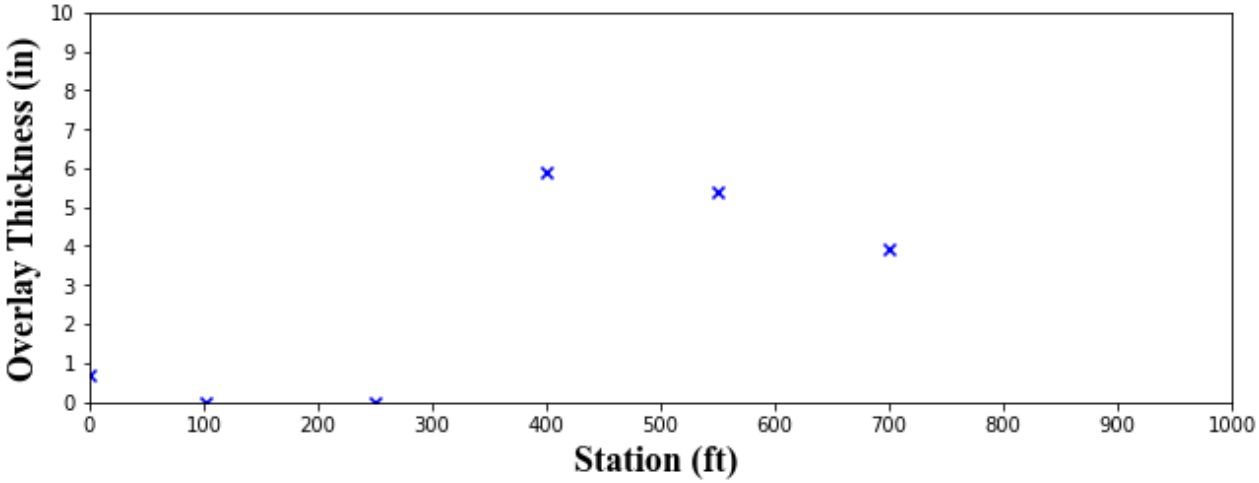


Figure E-35. Estimated Overlay Thickness for TWY S5 10R

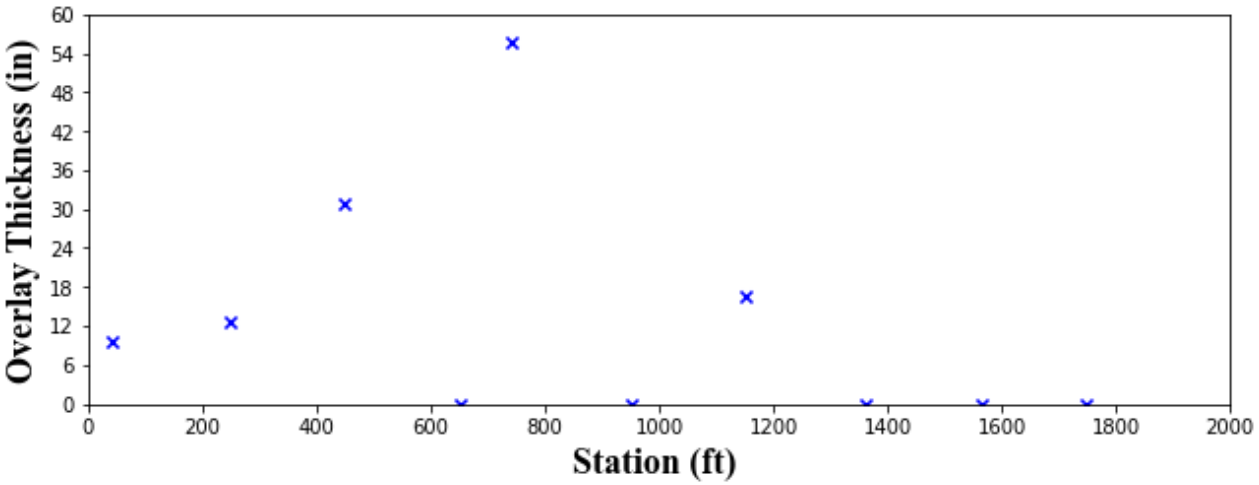


Figure E-36. Estimated Overlay Thickness for TWY U 10L

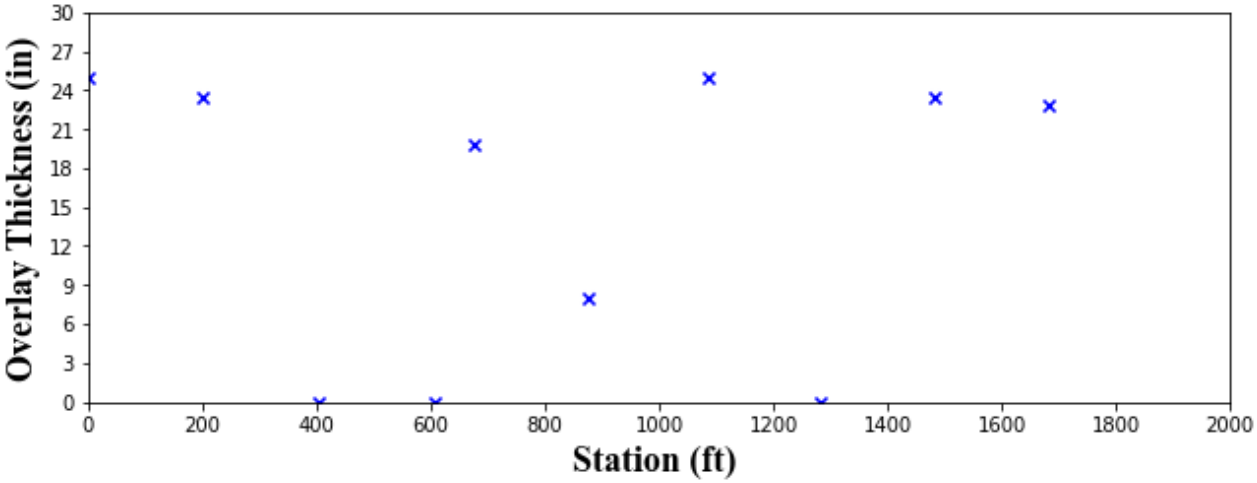


Figure E-37. Estimated Overlay Thickness for TWY U 10R

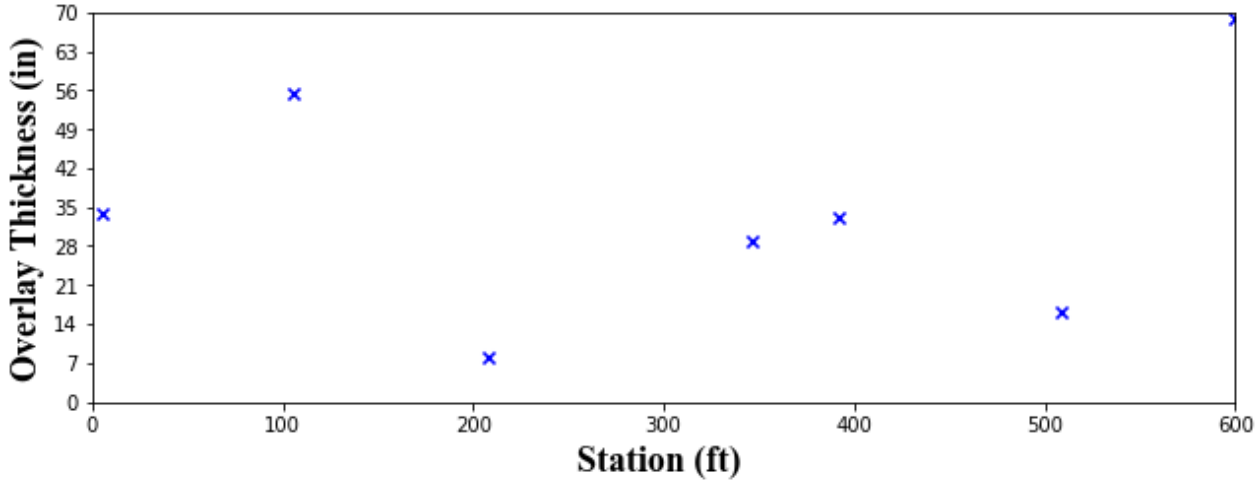


Figure E-38. Estimated Overlay Thickness for TWY V 10L

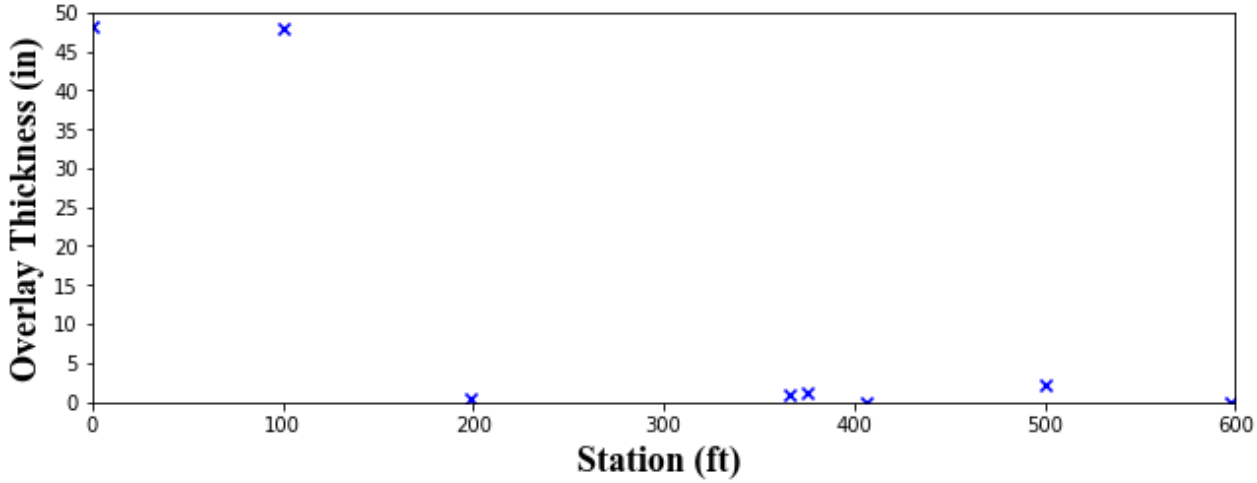


Figure E-39. Estimated Overlay Thickness for TWY V 10R

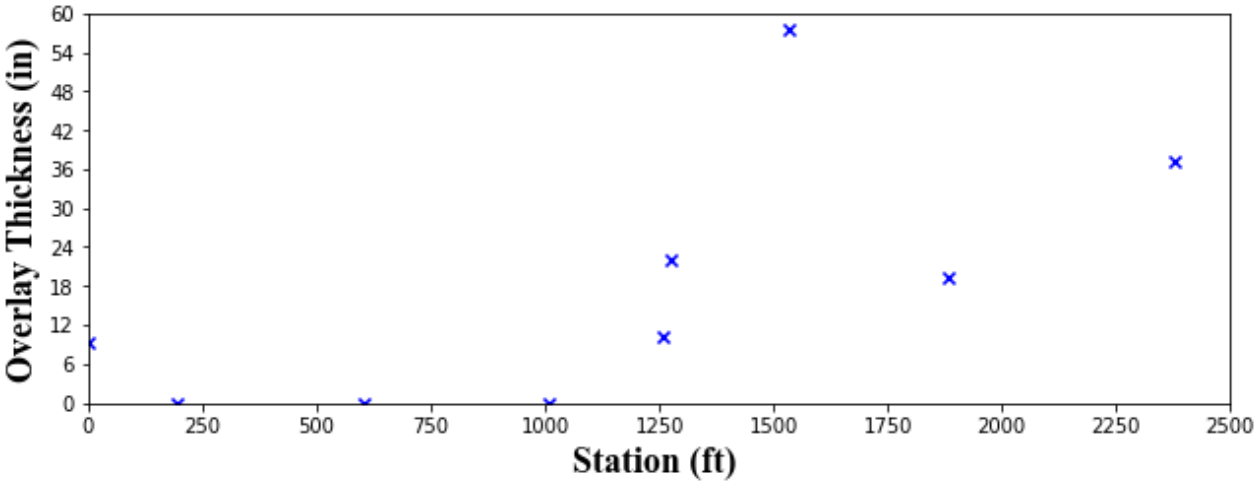


Figure E-40. Estimated Overlay Thickness for TWY W 10L

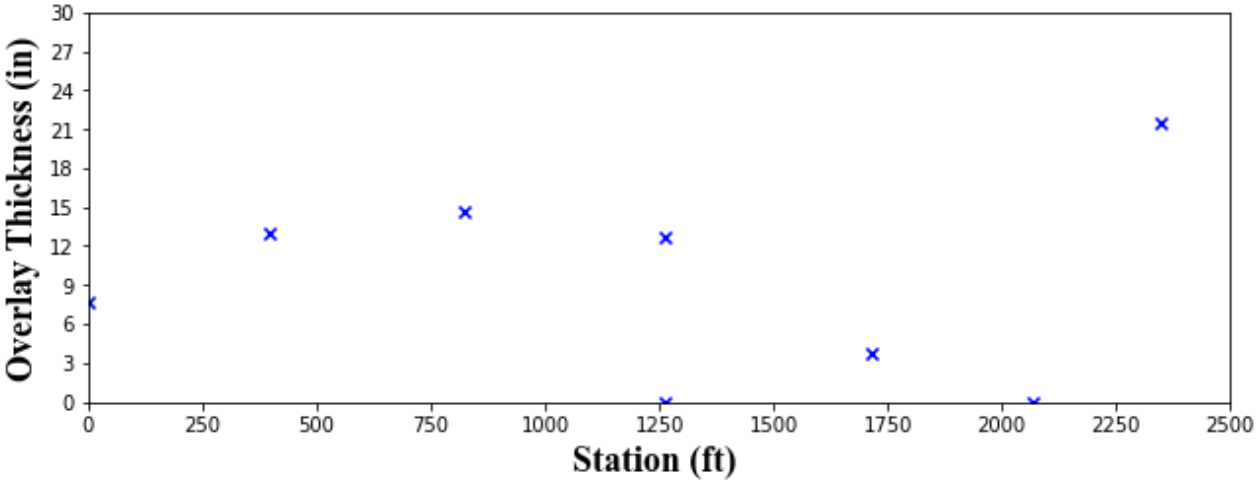


Figure E-41. Estimated Overlay Thickness for TWY W 10R

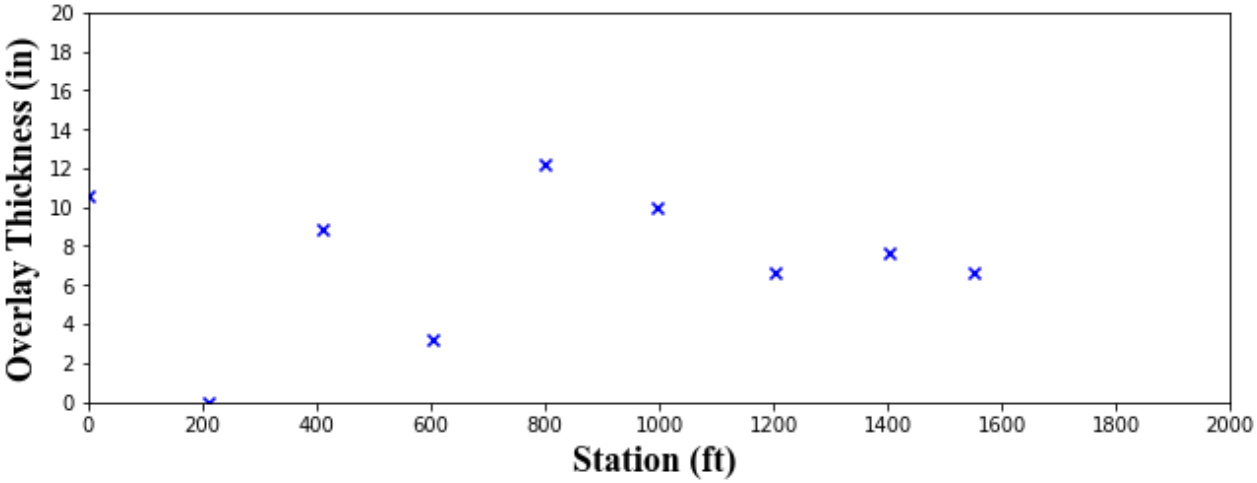


Figure E-42. Estimated Overlay Thickness for TWY Y 10L

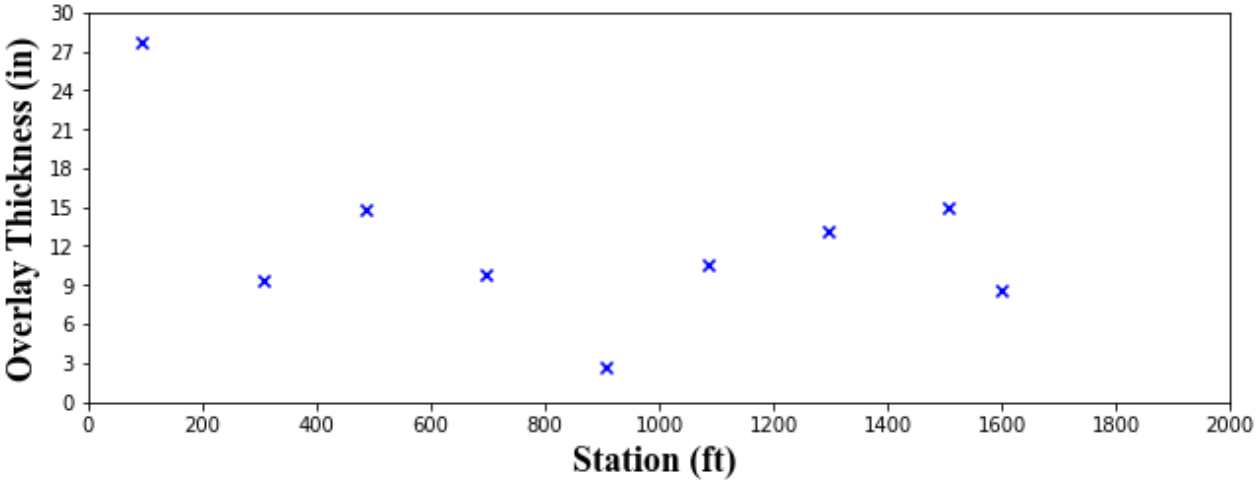


Figure E-43. Estimated Overlay Thickness for TWY Y 10R

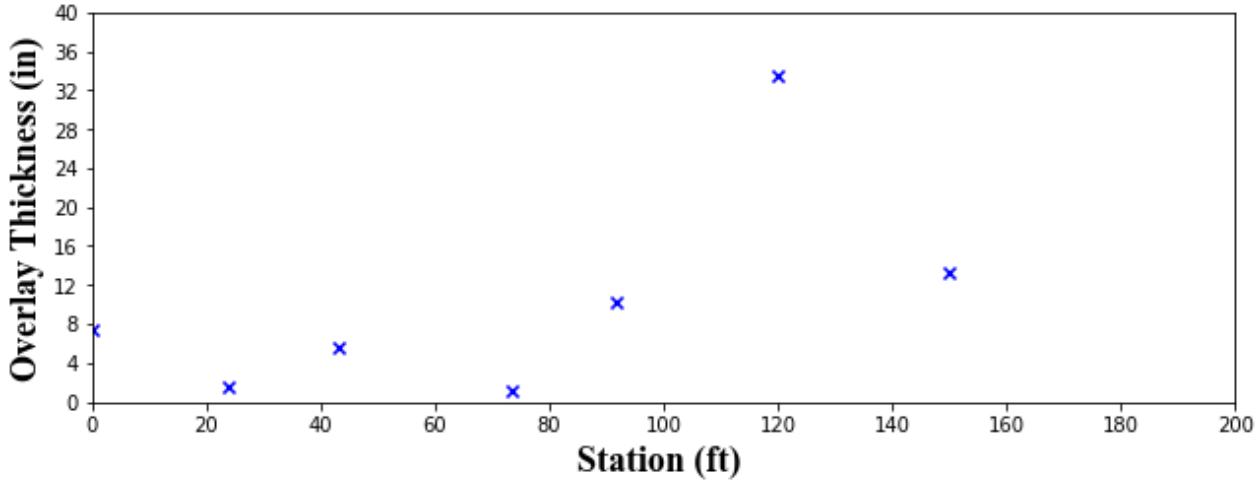


Figure E-44. Estimated Overlay Thickness for TWY Y1 10L

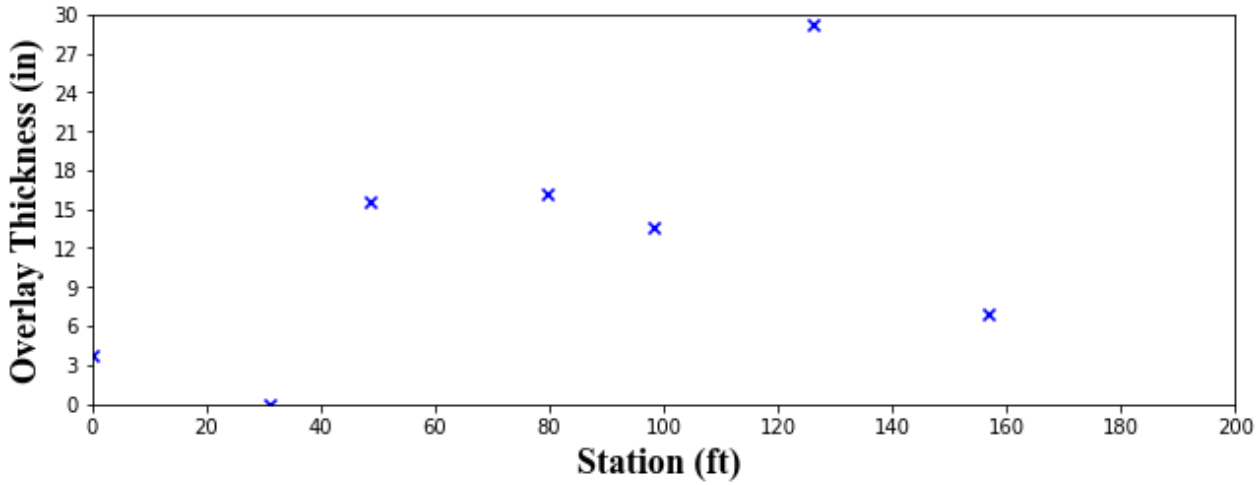


Figure E-45. Estimated Overlay Thickness for TWY Y1 10R

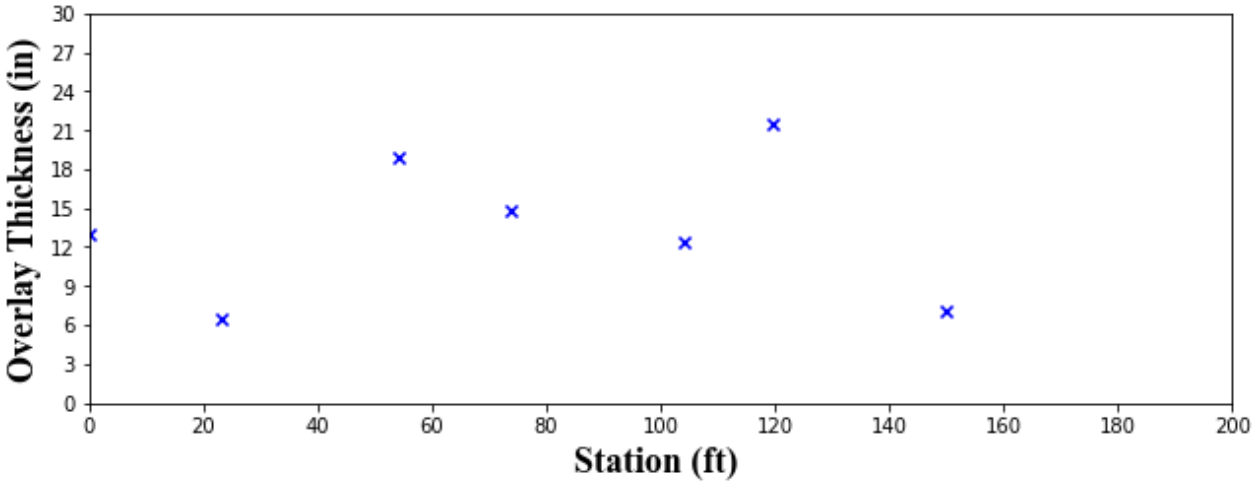


Figure E-46. Estimated Overlay Thickness for TWY Y2 10L

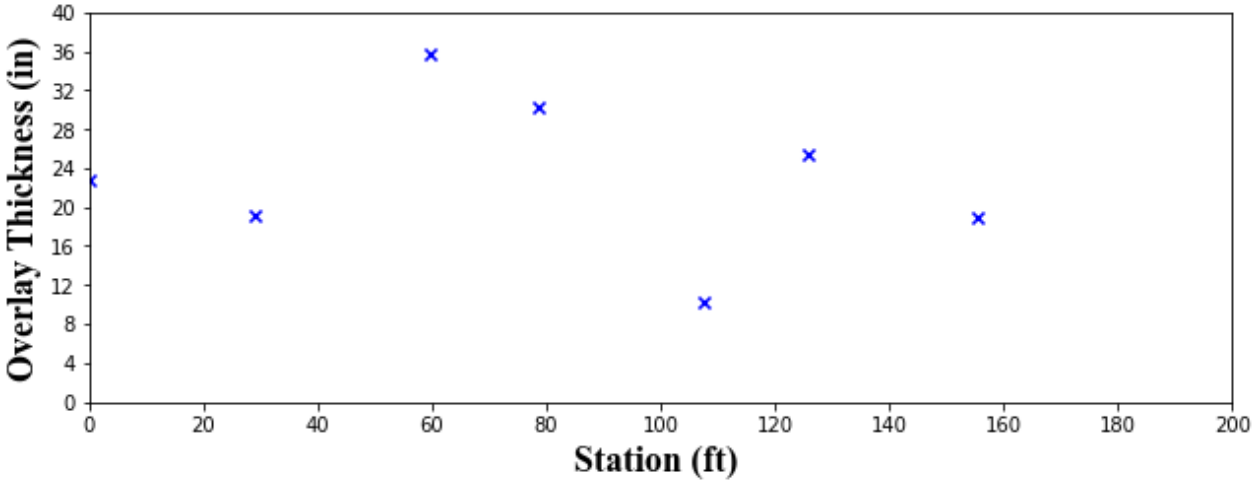


Figure E-47. Estimated Overlay Thickness for TWY Y2 10R

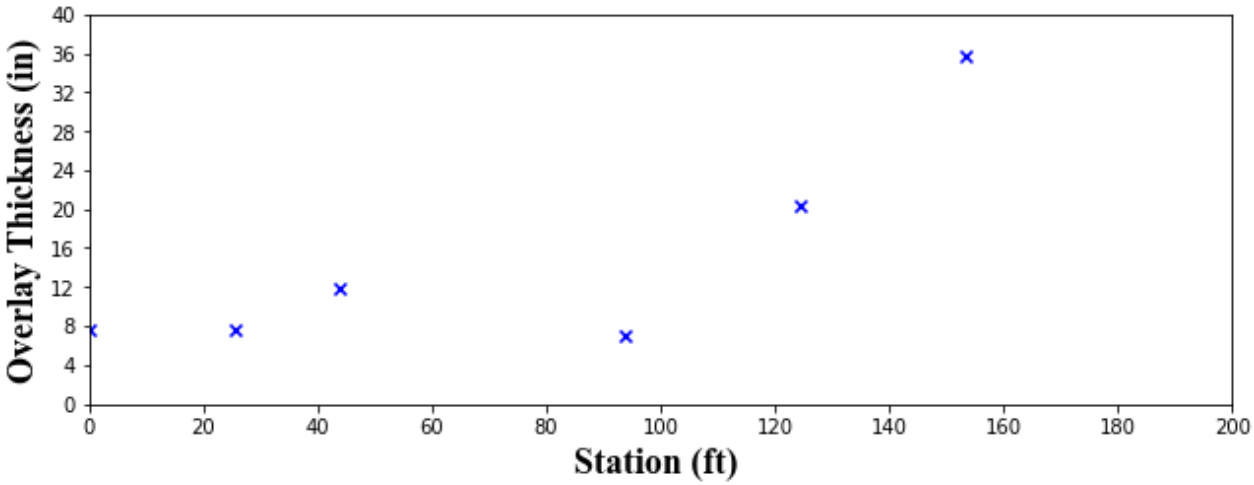


Figure E-48. Estimated Overlay Thickness for TWY Y3 10L

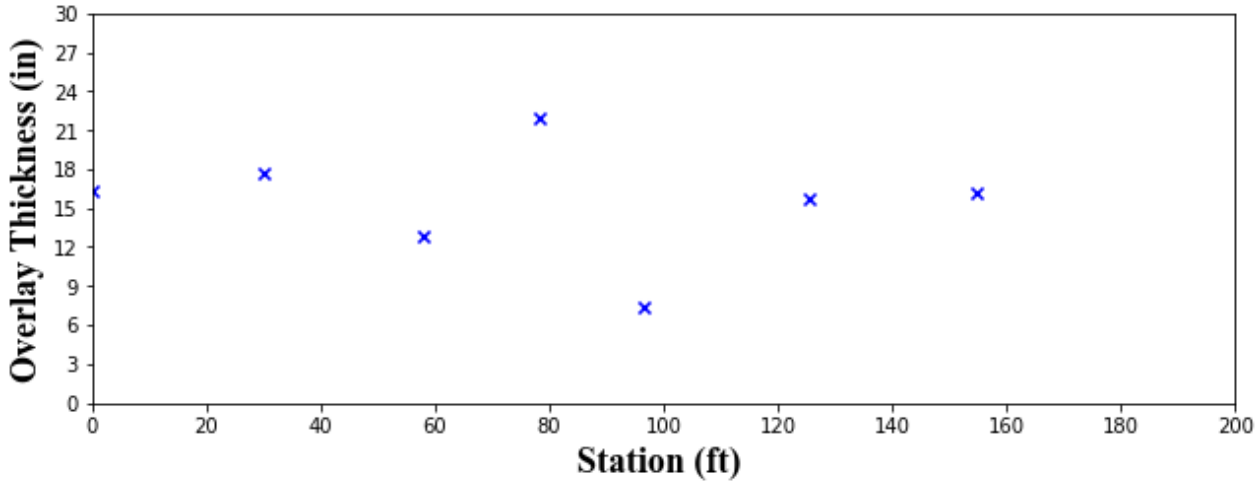


Figure E-49. Estimated Overlay Thickness for TWY Y3 10R

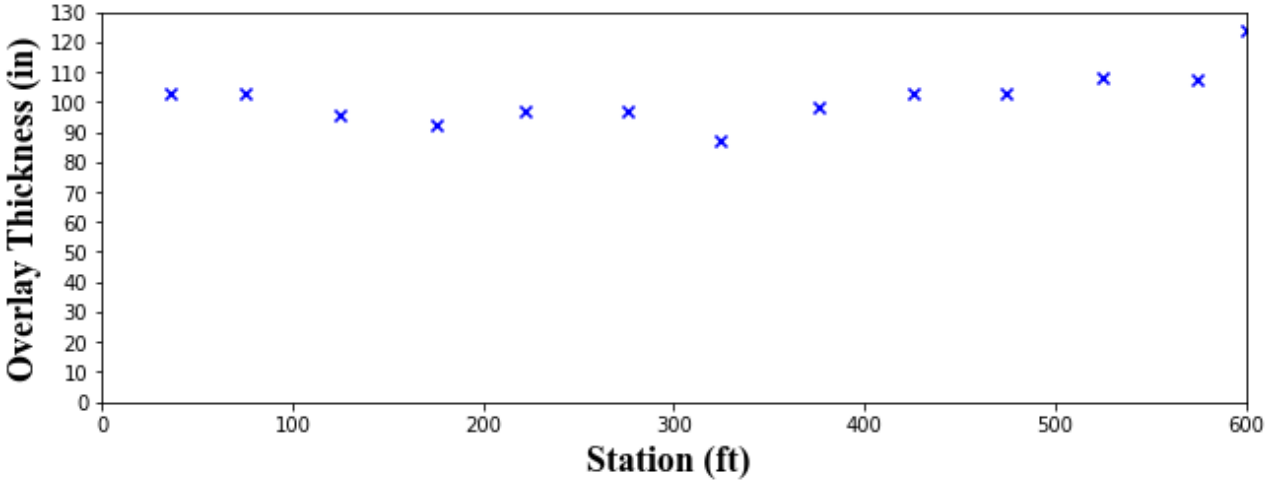


Figure E-50. Estimated Overlay Thickness for TXL G 10L

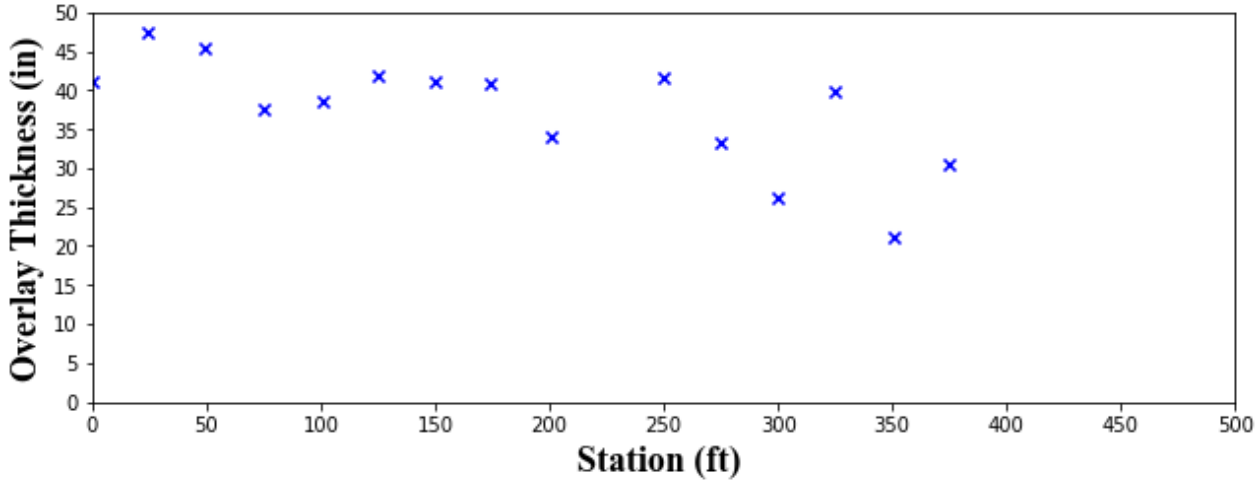


Figure E-51. Estimated Overlay Thickness for TXL H 10L

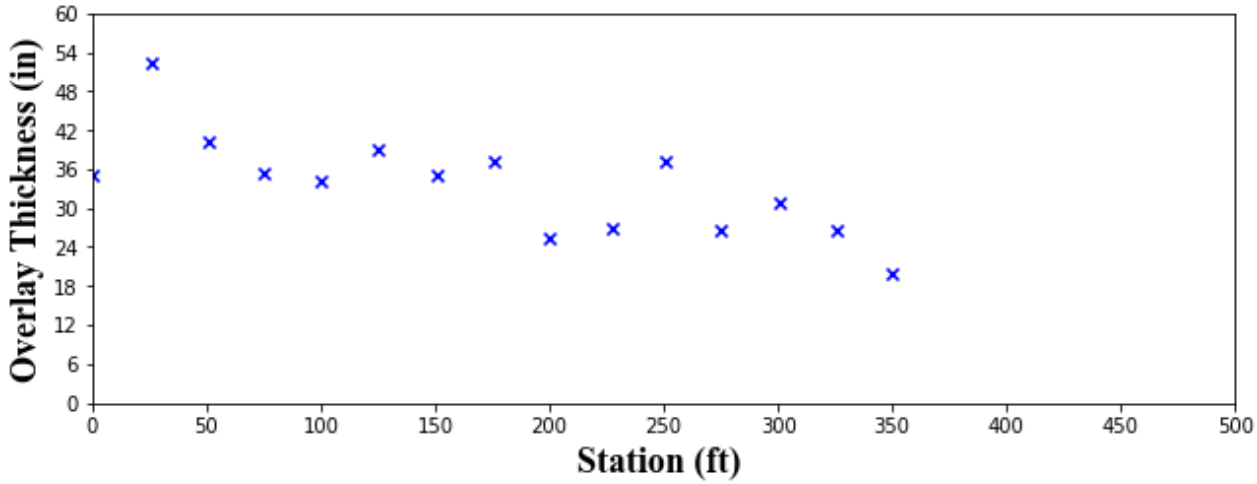


Figure E-52. Estimated Overlay Thickness for TXL H 10R

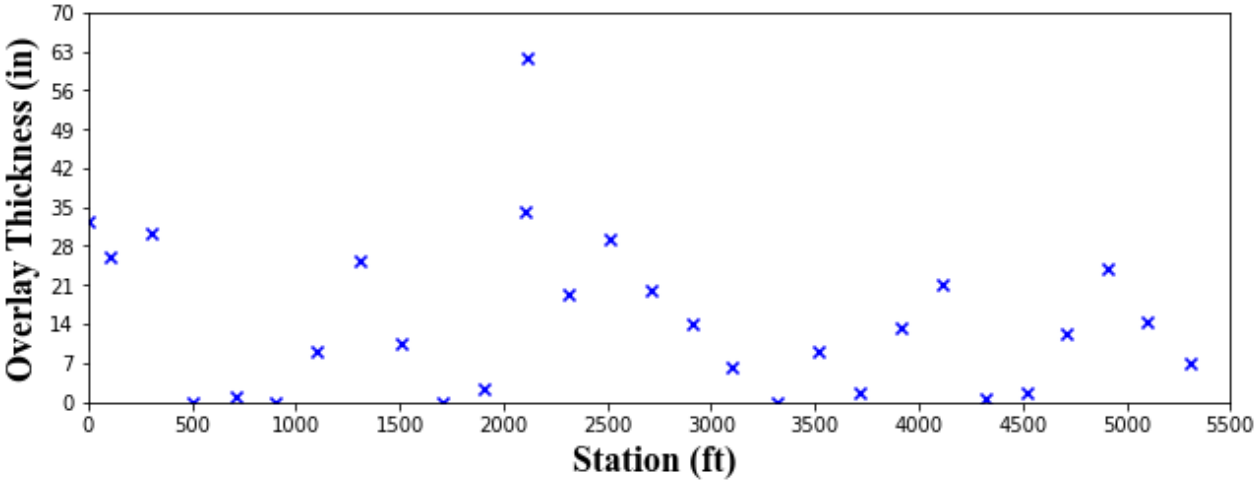


Figure E-53. Estimated Overlay Thickness for TXL N1 10L

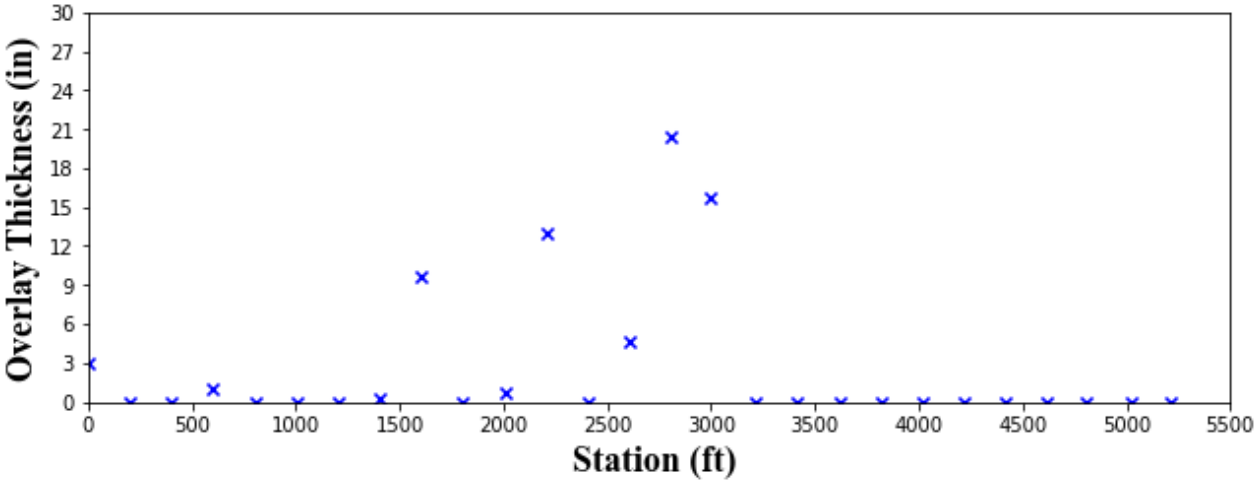


Figure E-54. Estimated Overlay Thickness for TXL N1 10R

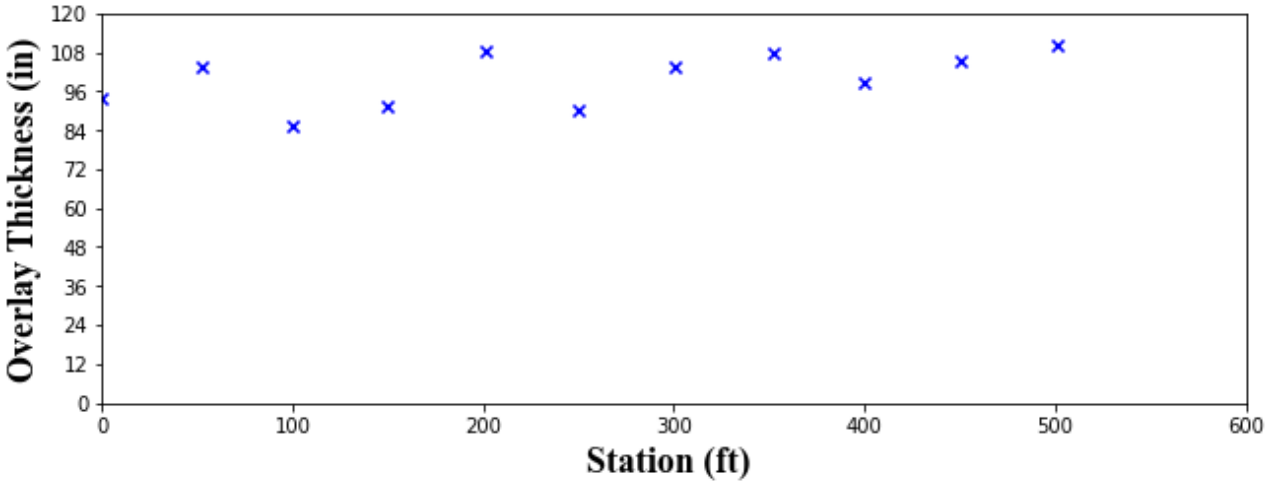


Figure E-55. Estimated Overlay Thickness for TXY G 10R

Appendix F – Pavement Condition Distress Survey

February 7, 2020

A limited distress survey was conducted on all tested lines through digital photographs that were automatically collected at 25-ft intervals. A brief summary of the limited distress survey is presented below.

Runway 8L-26R

From Sta. 0+00 to Sta. 120+25, the PCC pavement surface appears to be in good condition with no distresses noted. Rubber build-up was noted from approximately Sta. 5+50 to Sta. 43+00 and from approximately Sta. 76+00 to Sta. 104+00, which may be concealing distresses.

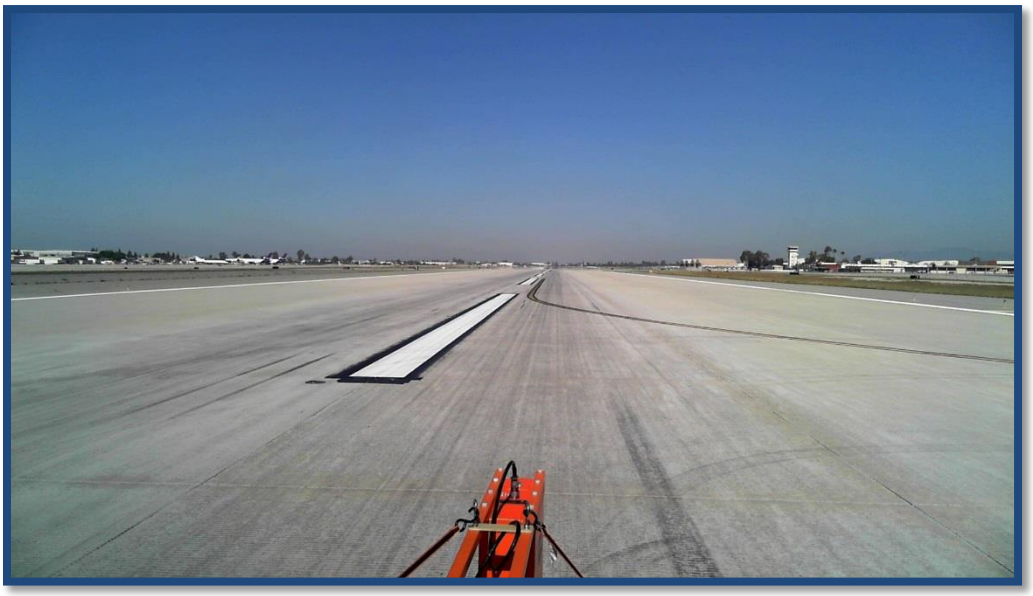


Figure F.1. Runway 8L-26R Representative Pavement Condition (Sta. 59+75)

Runway 8R-26L

From Sta. 0+00 to Sta. 100+50, the PCC pavement surface appears to be in fairly good condition with a localized sealed corner crack noted at Sta. 17+25, 18+75, and 19+75; and sealed transverse crack noted at Sta. 23+00; and sealed longitudinal crack noted at Sta. 91+25. Rubber build-up was noted from approximately Sta. 5+50 to Sta. 58+00, which may be concealing distresses.

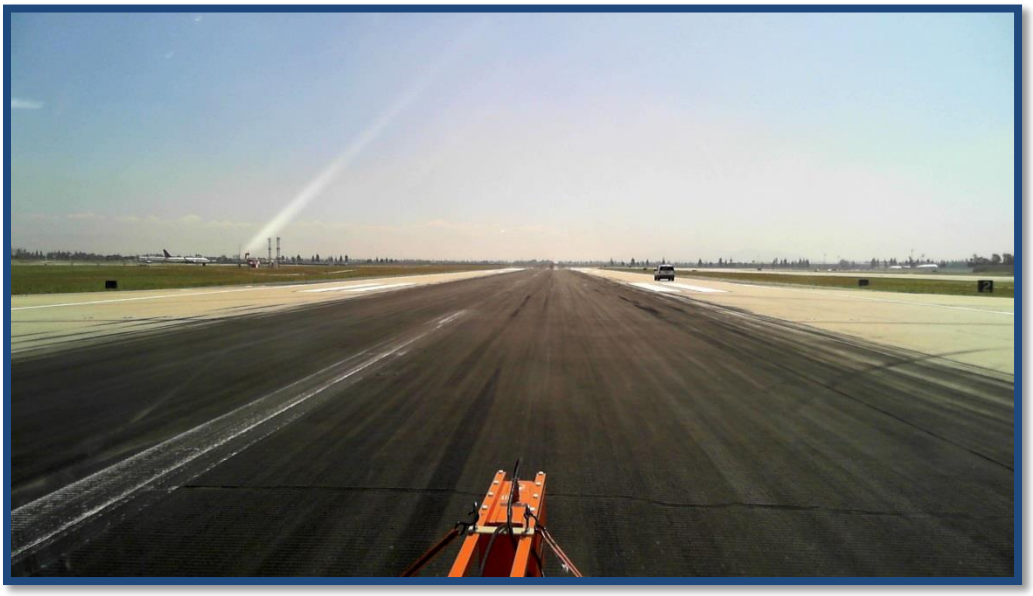


Figure F.2. Runway 8R-26L Representative Pavement Condition (Sta. 23+00)

Taxiway N

From Sta. 0+00 to Sta. 105+50, the PCC pavement surface appears to be in fairly good condition with a localized longitudinal crack noted at approximately Sta. 1+25. A pavement change was noted at approximately Sta. 45+00. From Sta. 105+50 to Sta. 120+00, the PCC pavement surface appears to be in fairly poor condition with localized transverse and longitudinal cracks noted.

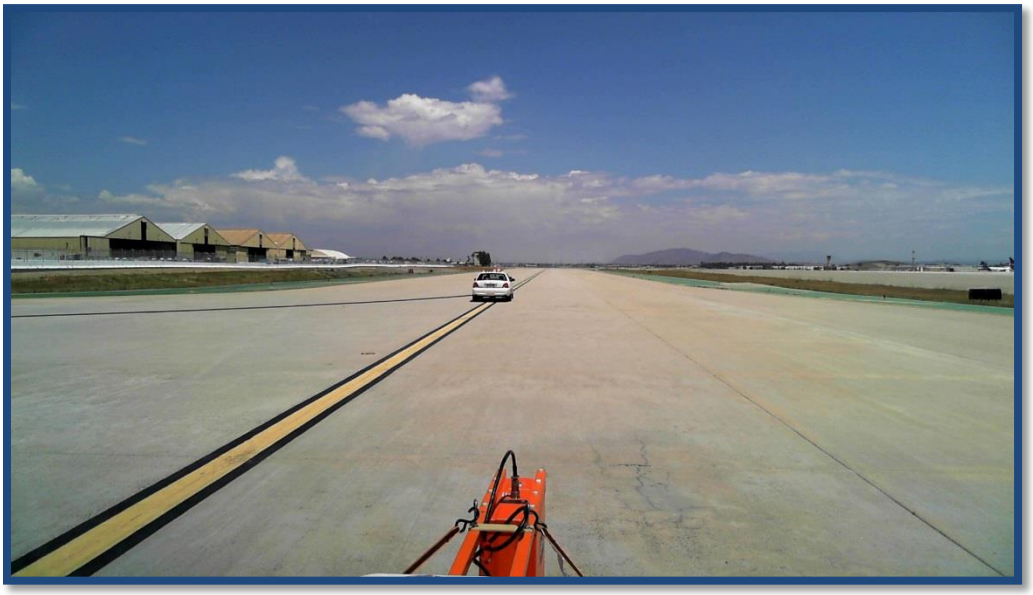


Figure F.3. Taxiway N Representative Pavement Condition (Sta. 1+25)

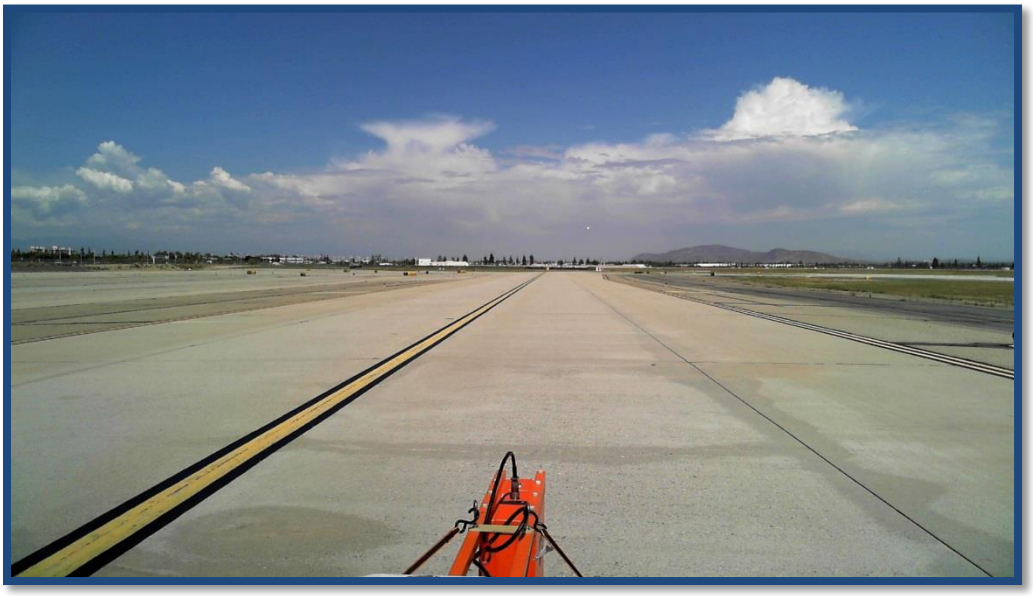


Figure F.4. Taxiway N Representative Pavement Condition (Sta. 110+00)

Taxiway S

From Sta. 0+00 to Sta. 41+00, the PCC pavement surface appears to be in fairly good condition with a localized transverse crack noted at approximately Sta. 6+00. From Sta. 41+00 to Sta. 98+75, the PCC pavement surface to the right of the centerline appears to be in fairly poor condition with longitudinal and transverse cracks noted. The pavement surface to the left of the centerline appears to be in slightly better condition with localized longitudinal and transverse cracks noted.



Figure F.5. Taxiway S Representative Pavement Condition (Sta. 6+00)



Figure F.6. Taxiway S Representative Pavement Condition (Sta. 46+75)

Taxiway W (5/28/2019)

From Sta. 0+00 to Sta. 3+15, the PCC pavement surface appears to be in fairly good condition with a localized sealed transverse crack noted at approximately Sta. 1+25.

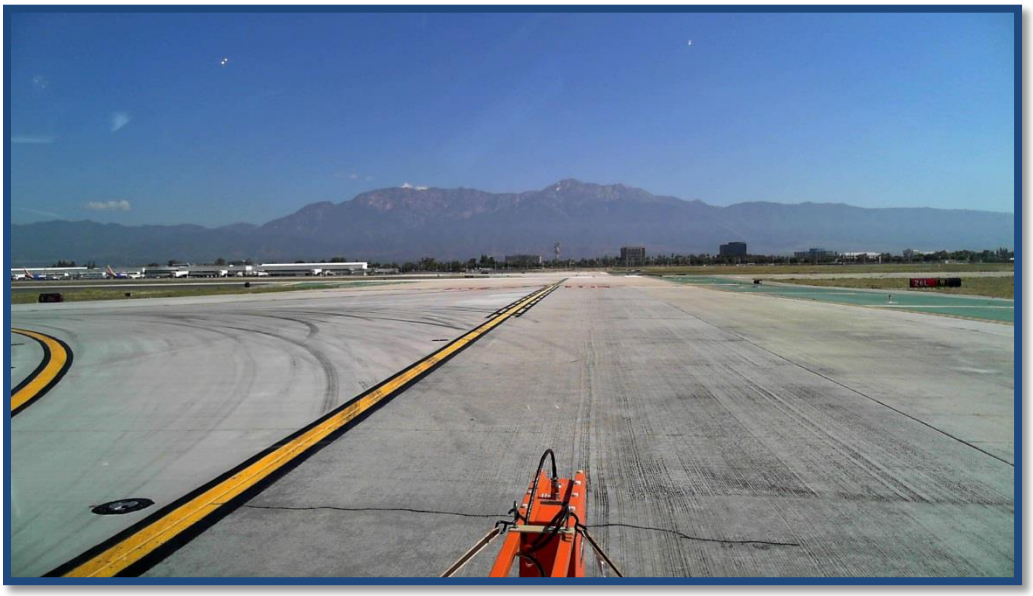


Figure F.7. Taxiway W Representative Pavement Condition (Sta. 1+25)

Taxiway W (6/8/2019)

From Sta. 0+00 to Sta. 11+00, the PCC pavement surface appears to be in fairly good condition with localized transverse cracks noted.



Figure F.8. Taxiway W Representative Pavement Condition (Sta. 1+50)

Taxiway D (6/2/2019)

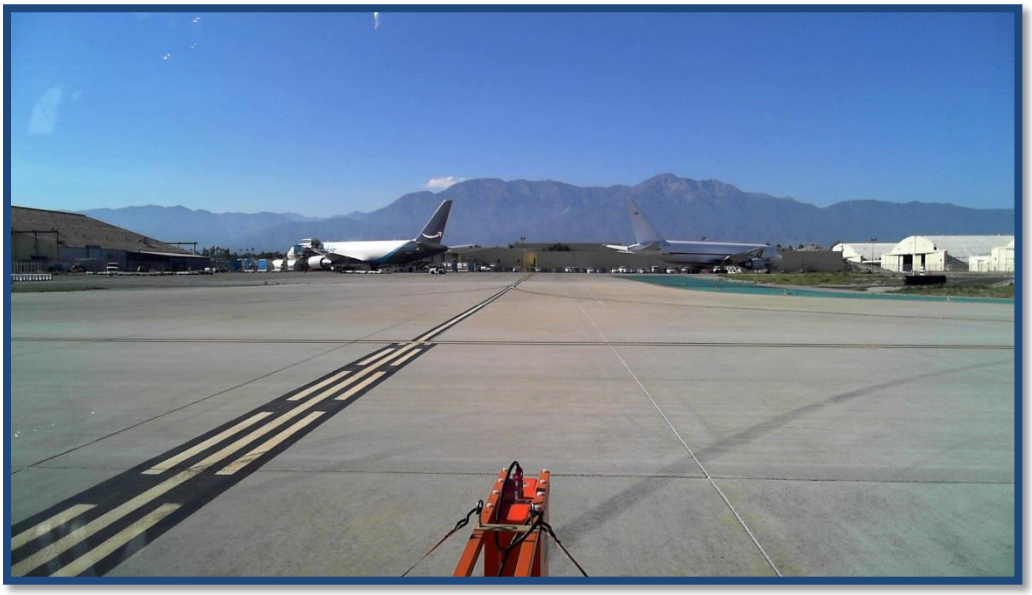
From Sta. 0+00 to Sta. 7+35, the PCC pavement surface appears to be in fairly good condition with localized transverse and map cracking noted.



Figure F.9. Taxiway D Representative Pavement Condition (Sta. 2+00)

Taxiway D (6/8/2019)

From Sta. 0+00 to Sta. 9+50, the PCC pavement surface appears to be in fairly good condition with no noticeable distresses.



.

Figure F.10. Taxiway D Representative Pavement Condition (Sta. 7+01)

Taxiway F (06/02/2019)

From Sta. 0+00 to Sta. 9+90, the PCC pavement surface appears to be in fairly good condition with longitudinal and transverse cracks noted.



Figure F.11. Taxiway F Representative Pavement Condition (Sta. 2+00)

Taxiway F (06/08/2019)

From Sta. 0+00 to Sta. 7+00, the PCC pavement surface appears to be in fairly good condition with localized transverse cracks noted at approximately Sta. 3+75.

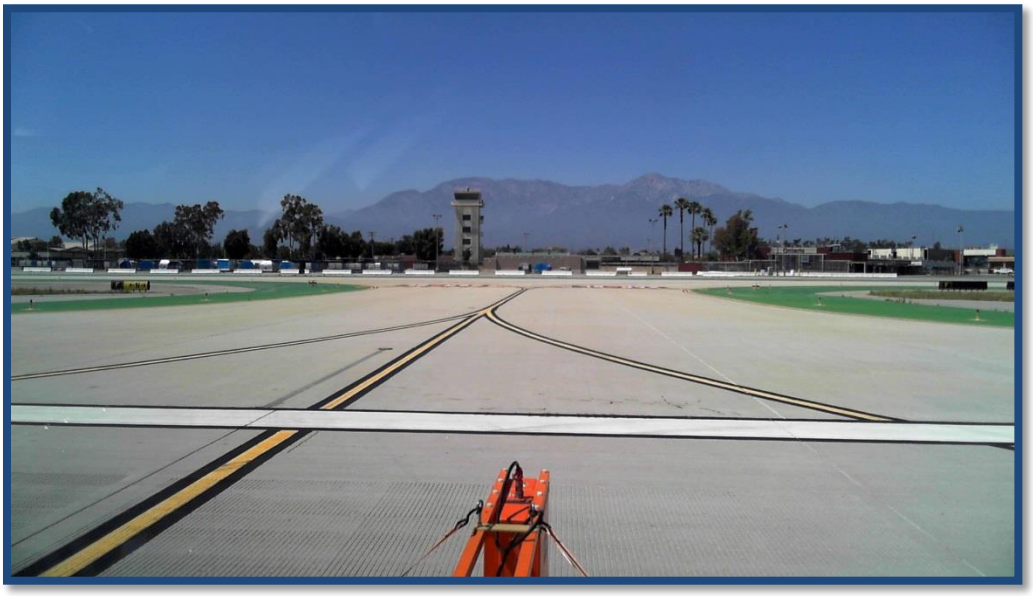


Figure F.12. Taxiway F Representative Pavement Condition (Sta. 3+75)

Taxiway K (06/02/2019)

From Sta. 0+00 to Sta. 10+00, the PCC pavement surface appears to be in fairly good condition with transverse cracks noted.



Figure F.13. Taxiway K Representative Pavement Condition (Sta. 5+75)

Taxiway K (06/08/2019)

From Sta. 0+00 to Sta. 10+20, the PCC pavement surface appears to be in good condition with no noticeable distresses.



Figure F.14. Taxiway K Representative Pavement Condition (Sta. 7+99)

Taxiway L (06/08/2019)

From Sta. 0+00 to Sta. 3+00, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

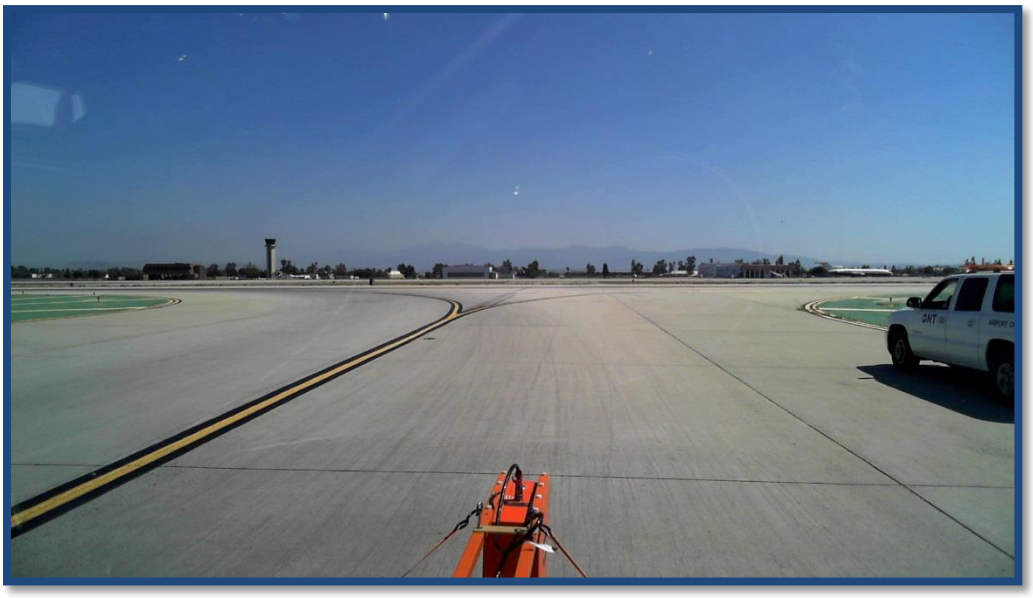


Figure F.15. Taxiway L Representative Pavement Condition (Sta. 2+25)

Taxiway P (06/02/2019)

From Sta. 0+00 to Sta. 10+10, the PCC pavement surface appears to be in good condition with no noticeable distresses.



Figure F.16. Taxiway P Representative Pavement Condition (Sta. 6+50)

Taxiway P (06/08/2019)

From Sta. 0+00 to Sta. 10+45, the PCC pavement surface appears to be in good condition with a localized patch noted at approximately Sta. 1+98.

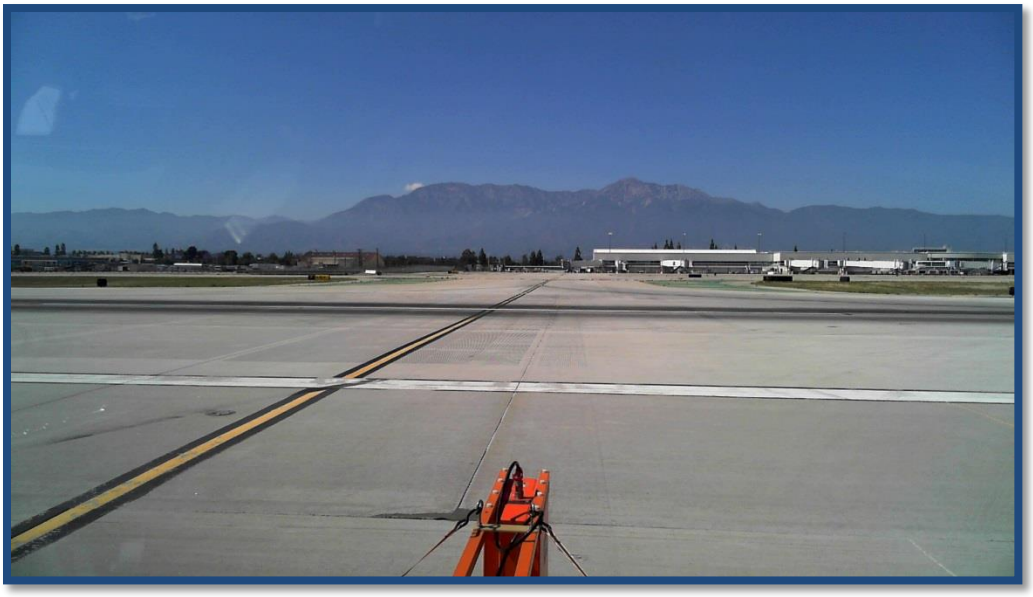


Figure F.17. Taxiway P Representative Pavement Condition (Sta. 1+98)

Taxiway Q

From Sta. 0+00 to Sta. 9+50, the PCC pavement surface appears to be in fairly good condition with a localized transverse crack noted.



Figure F.18. Taxiway Q Representative Pavement Condition (Sta. 6+30)

Taxiway S1

From Sta. 0+00 to Sta. 1+00, the AC pavement surface appears to be in fairly poor condition with longitudinal and transverse cracks noted.



Figure F.19. Taxiway S1 Representative Pavement Condition (Sta. 0+00)

Taxiway S2

From Sta. 0+00 to Sta. 1+45, the PCC pavement surface appears to be in fairly good condition with a localized transverse crack noted at Sta. 1+05.



Figure F.20. Taxiway S2 Representative Pavement Condition (Sta. 1+05)

Taxiway S3

From Sta. 0+00 to Sta. 1+45, the AC pavement surface appears to be in fairly poor condition with block cracks noted.



Figure F.21. Taxiway S3 Representative Pavement Condition (Sta. 1+25)

Taxiway S5

From Sta. 0+00 to Sta. 8+00, the AC pavement surface appears to be in fairly good condition with no noticeable cracks.



Figure F.22. Taxiway S5 Representative Pavement Condition (Sta. 5+00)

Taxiway R

From Sta. 0+00 to Sta. 3+00, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

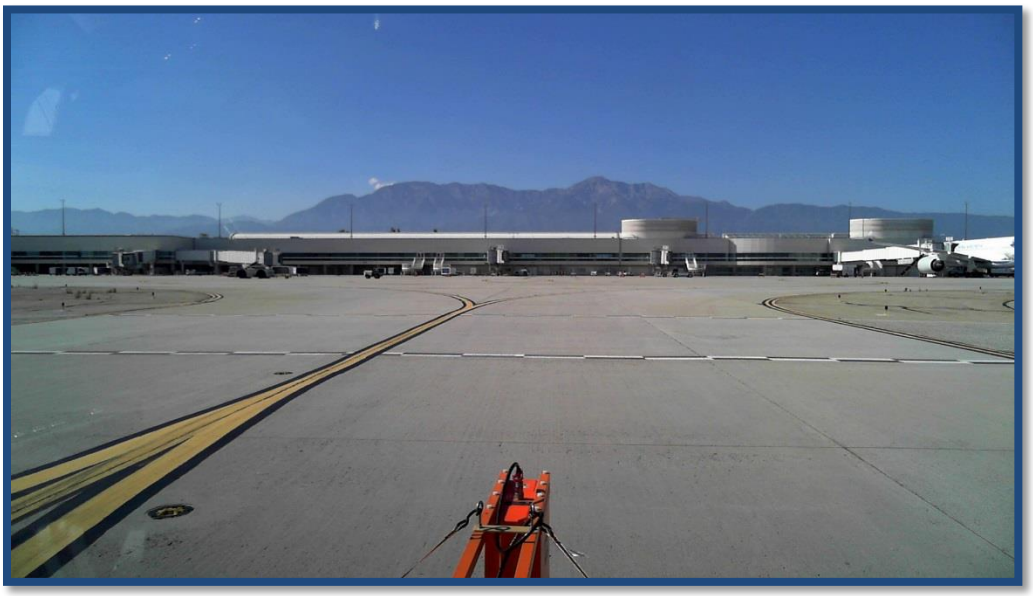


Figure F.23. Taxiway R Representative Pavement Condition (Sta. 5+48)

Taxiway T

From Sta. 0+00 to Sta. 4+40, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.



Figure F.24. Taxiway T Representative Pavement Condition (Sta. 1+50)

Taxiway U (6/2/2109)

From Sta. 0+00 to Sta. 6+50, the PCC pavement surface appears to be in fairly good condition with transverse cracks noted at approximately Sta. 2+75 and 4+75 of the left side of the centerline.



Figure F.25. Taxiway U Representative Pavement Condition (Sta. 2+75)

Taxiway U (6/8/2109)

From Sta. 0+00 to Sta. 10+90, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

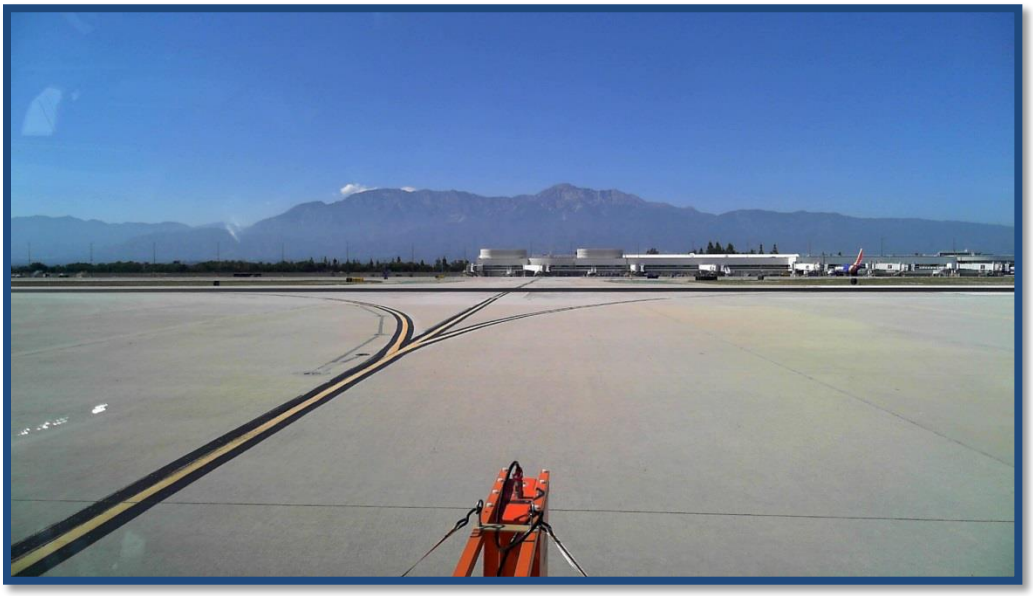


Figure F.26. Taxiway U Representative Pavement Condition (Sta. 1+25)

Taxiway V

From Sta. 0+00 to Sta. 6+40, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

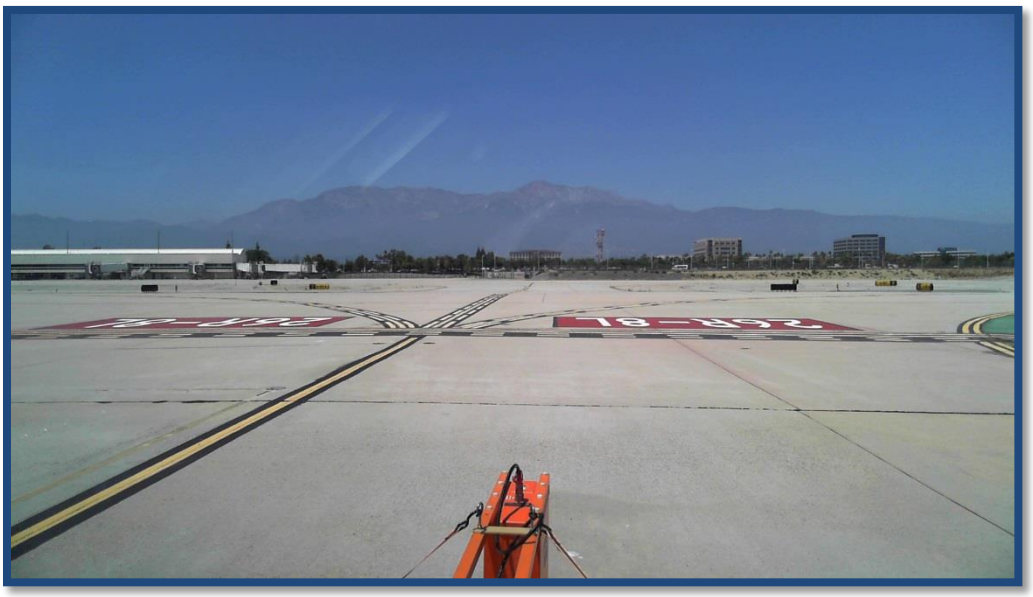


Figure F.27. Taxiway V Representative Pavement Condition (Sta. 1+00)

Taxiway W (06/02/2019)

From Sta. 0+00 to Sta. 3+25, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks. From Sta. 3+25 to Sta. 6+50 the PCC pavement surface appears to be in fairly poor condition with transverse cracks noted. From Sta. 6+50 to Sta. 12+70, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.



Figure F.28. Taxiway W Representative Pavement Condition (Sta. 4+05)

Taxiway W (06/08/2019)

From Sta. 0+00 to Sta. 6+00, the PCC pavement surface appears to be in fairly poor condition with transverse cracks noted. From Sta. 6+00 to Sta. 11+00 the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

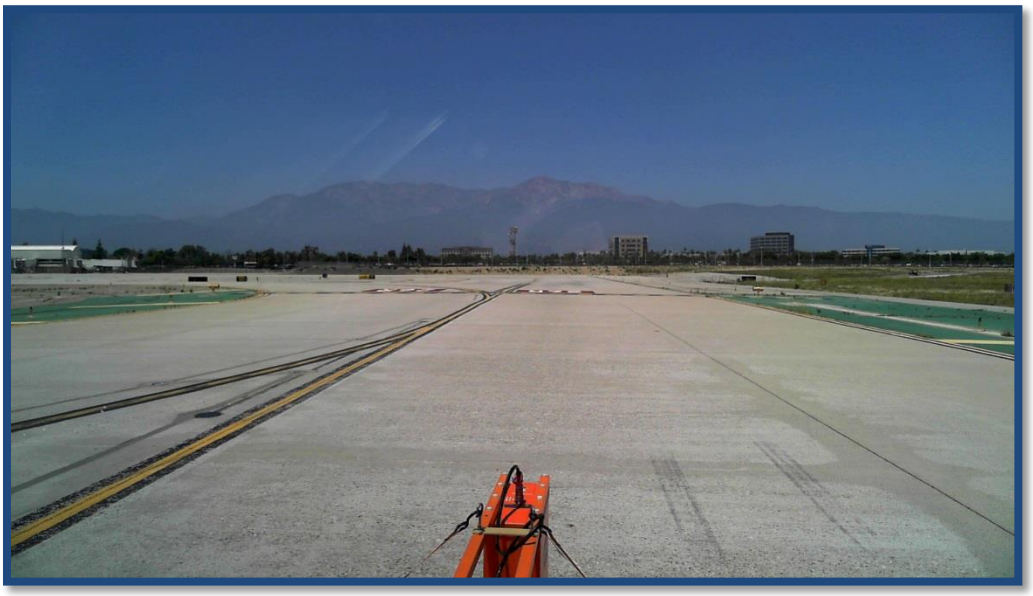


Figure F.29. Taxiway W Representative Pavement Condition (Sta. 4+50)

Taxiway Y

From Sta. 0+00 to Sta. 16+00, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.



Figure F.30. Taxiway Y Representative Pavement Condition (Sta. 6+87)

Taxiway Y1

From Sta. 0+00 to Sta. 1+65, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.



Figure F.31. Taxiway Y1 Representative Pavement Condition (Sta. 0+98)

Taxiway Y2

From Sta. 0+00 to Sta. 1+65, the PCC pavement surface appears to be in fairly good condition with a localized popout noted at approximately Station 1+64.

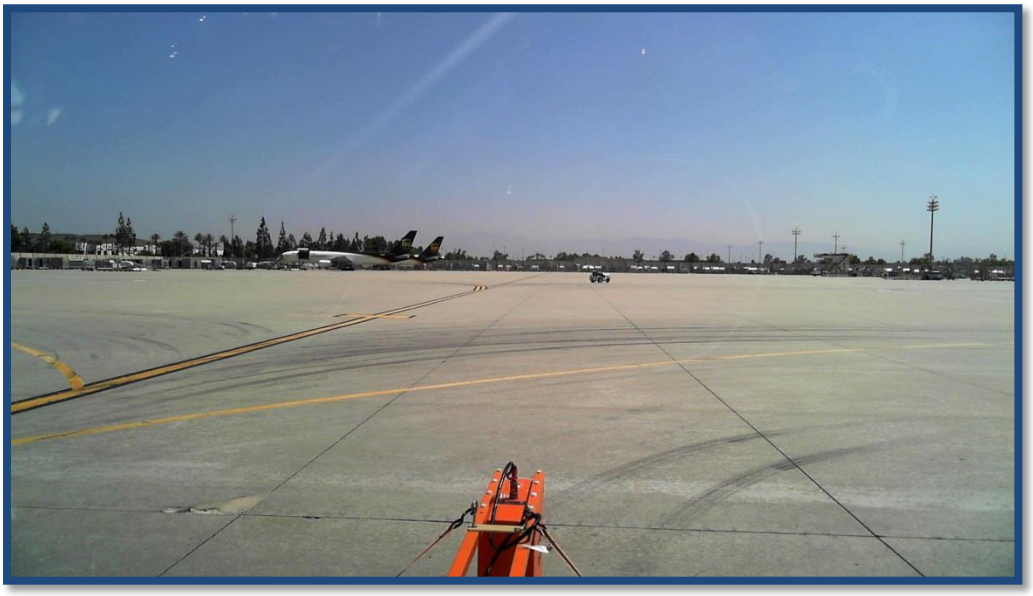


Figure F.32. Taxiway Y2 Representative Pavement Condition (Sta. 1+64)

Taxiway Y3

From Sta. 0+00 to Sta. 1+65, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

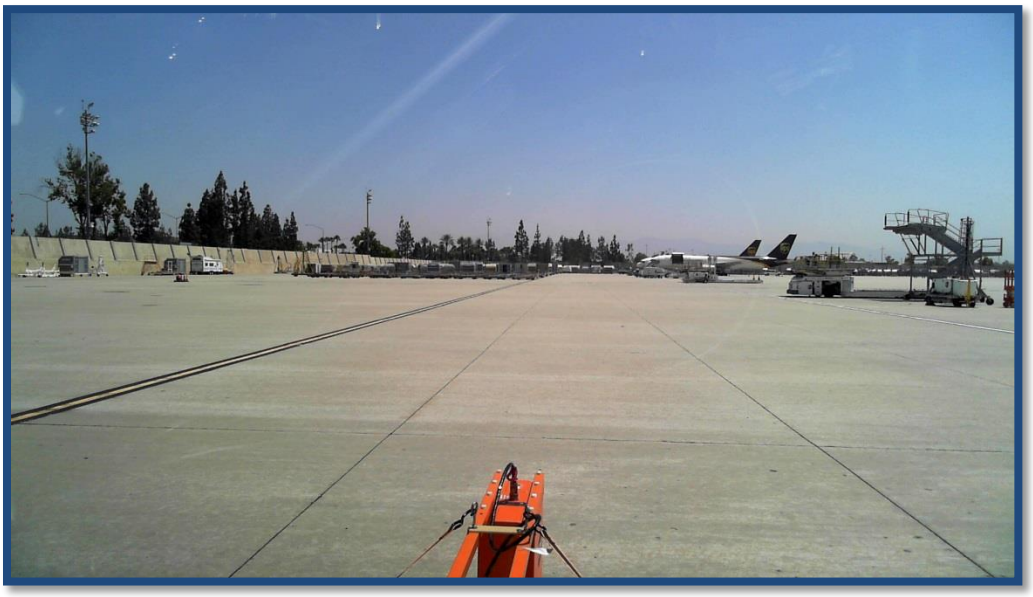


Figure F.33. Taxiway Y3 Representative Pavement Condition (Sta. 1+55)

Terminal 1 Apron (APTERM1-01)

From Sta. 0+00 to Sta. 6+00, the PCC pavement surface appears to be in fairly poor condition with transverse cracks, longitudinal cracks, and corner breaks noted.



Figure F.34. Terminal 1 Apron Representative Pavement Condition (Sta. 2+08)

Terminal 3 Apron (APTERM3-01)

From Sta. 0+00 to Sta. 11+50, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.



Figure F.35. Terminal 3 Apron Representative Pavement Condition (Sta. 5+50)

Atlantic Aviation Apron

The apron is in a serious condition. From station 0+00 to station 5+00, there are high severity longitudinal and transverse cracks. At station 5+00, there are high severity alligator cracking



Figure F.36. Atlantic Terminal Apron Representative Pavement Condition (Sta. 3+50)



Figure F.37. Atlantic Terminal Apron Representative Pavement Condition (Sta. 5+00)

CSA Terminal

The feature is in a fair condition. From station 0+00 to station to station 1+50, there are shattered slabs and severe joint seal damage and corner breaks. From station 1+50 to station 9+50, the condition is good with few medium severity corner breaks.



Figure F.38. CSA Terminal Representative Pavement Condition (Sta. 1+50)



Figure F.39. CSA Terminal Representative Pavement Condition (Sta. 8+00)

Taxiway G

From Station 0+00 to station 6+00, the taxiway is in good condition with low severity alligator cracking. From station 6+00 to the end of the feature, the pavement is in bad condition with high severity fatigue and block cracks.



Figure F.40. Taxiway G Representative Pavement Condition (Sta. 1+75)

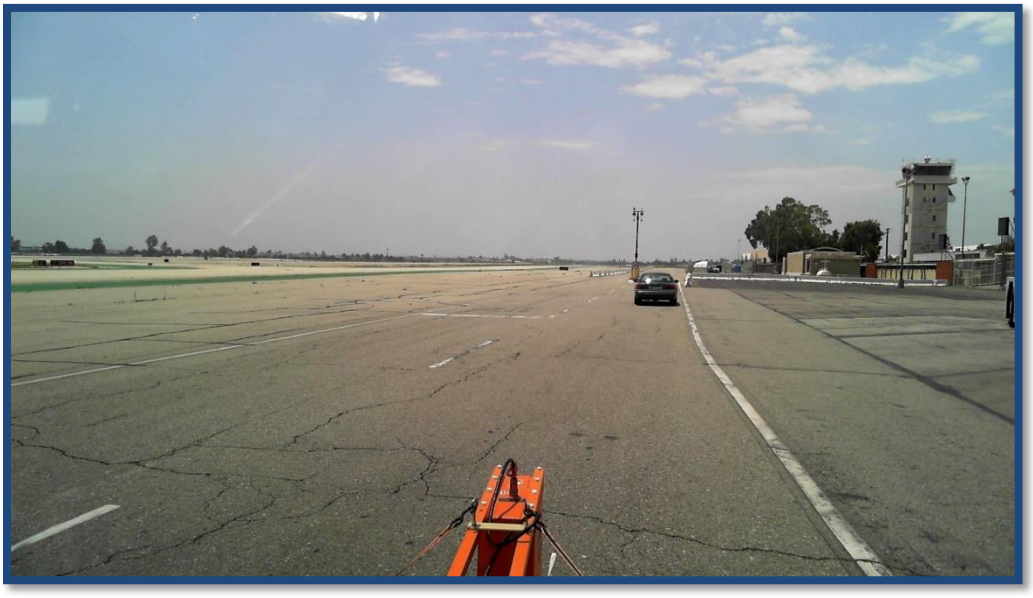


Figure F.41. Taxiway G Representative Pavement Condition (Sta. 9+75)

Taxiway H

The feature is in a bad condition with high severity weathering, medium severity fatigue cracking, and raveling.



Figure F.42. Taxiway H Representative Pavement Condition (Sta. 0+00)

Taxiway N1

This PCC Taxiway is in a very good condition. No distresses can be observed from the ROW images.



Figure F.43. Taxiway N1 Representative Pavement Condition (Sta. 48+00)

Terminal2_4

This PCC Terminal is in a very good condition. No distresses can be observed from the ROW images.

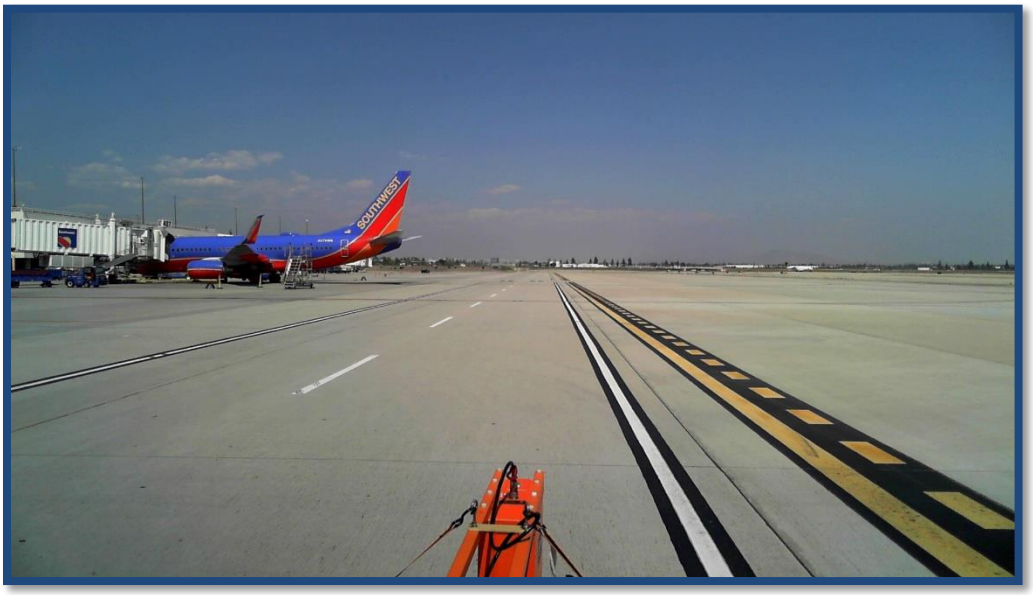


Figure F.44. Terminal2_4 Representative Pavement Condition (Sta. 36+00)

Appendix G – Fleet Mix Distribution Map

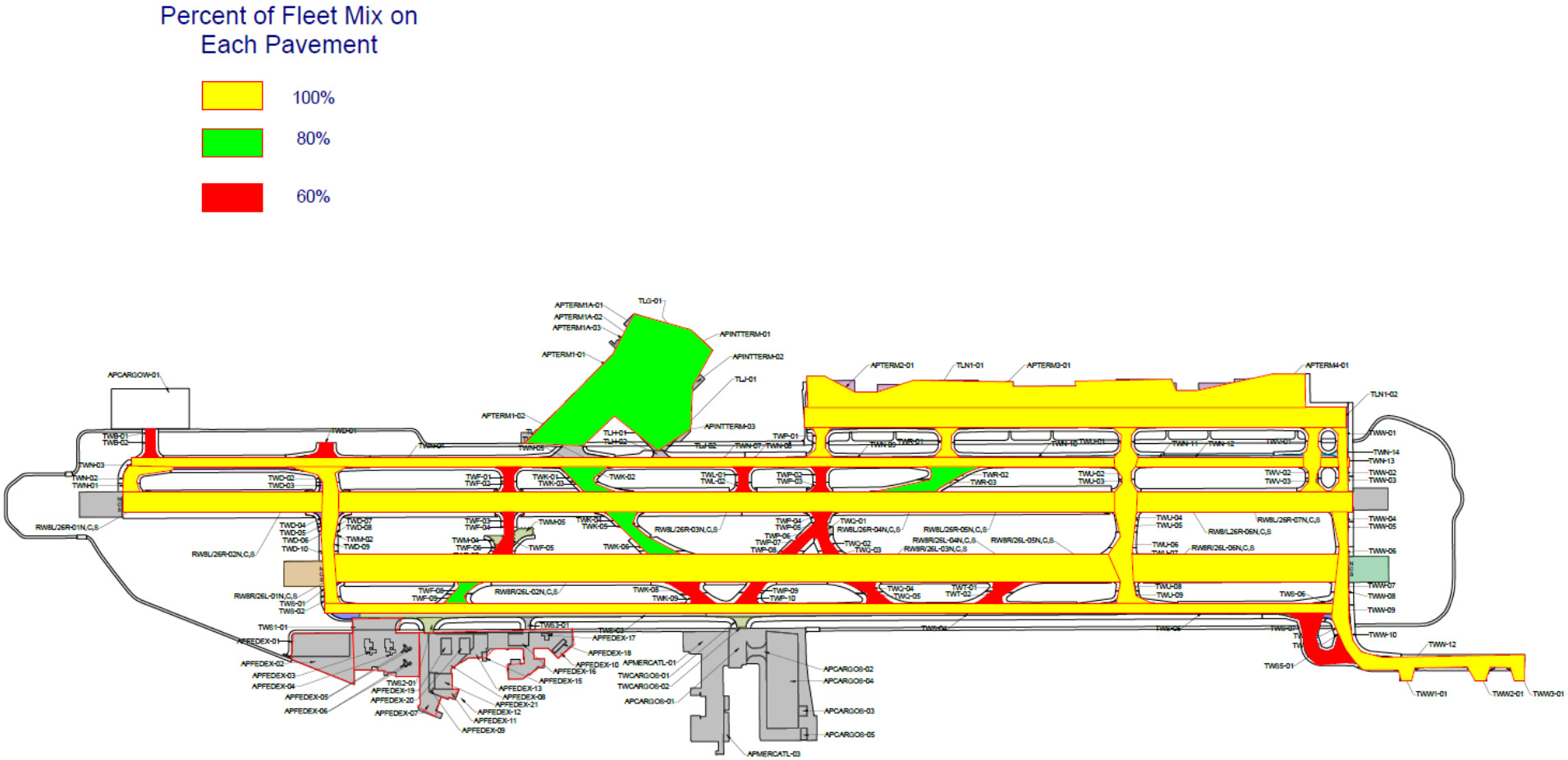


Figure G.1. Fleet Mix Distribution Map

Appendix H – Geotechnical Exploration Data

February 7, 2020

Table H.1. – Summary of Pavement Section Thickness

FIELD EXPLORATION ID	LOCATION	PAVEMENT		BASE		SUBGRADE	NOTES
		Type	Thickness (inches)	Description Type	Thickness (inches)		
Bore-01	Taxiway D	PCC	16	CSS	5.75	Silty SAND (SM)	
Bore -02	Taxilane S1	AC	3.75[1]	Poorly Graded Gravel (GP)	4	Silty SAND with GRAVEL (SM)	
Bore -03	International Terminal Gate 35	AC over PCC	3 over 5[1]	None	--	Silty SAND (SM)	
Bore -04	Taxiway K	PCC	15.5	CSS	5.5	Clayey SAND (SC)	
Bore -05	South Cargo Ramp	PCC	7.5	None	--	Silty SAND (SM)	
Bore -06	Runway 8R-26L	PCC	16.25	CSS	3.75 over 4.75	Silty SAND (SM)	Fabric observed between PCC and CSS layers
Core-01	Taxilane G	AC over PCC	5.5 over 6[1]	None	--	Silty SAND (SM)	
Core -02	Taxiway H	AC	4	Poorly Graded Gravel (GP)	4	Silty SAND with GRAVEL (SM)	
Core -03	International Terminal Gate 31	AC over PCC[2]	3 over 7.5	None	--	Silty SAND (SM)	Fabric observed between AC and PCC layers
Core -04	Taxiway P	PCC	16.5	CSS	6.75	Silty SAND (SM)	
Core -05	Taxiway Q	PCC	16.25	CSS	6.5	Silty SAND (SM)	
Core -06	Taxilane N1	PCC	15	CSS	2.5 over 10.5[1]	Silty SAND (SM); Brown	Two layers of CSS
Core -07	Taxilane S3	AC	3	Poorly Graded Gravel (GP)	3	Silty SAND with GRAVEL (SM)	
Core -08	Atlantic Aviation Apron	AC	3.5	CTB over Poorly graded GRAVEL with Silt & SAND (GP-GM)	CTB: 1.5 over 4 GP-GM: 3	Silty SAND with GRAVEL (SM)	Two layers of CTB
Core -09	Terminal 1 Gate 4	PCC	12	None	--	Silty SAND with GRAVEL (SM)	
Core -10	International Terminal Gate 35	AC	5	Poorly Graded Gravel (GP)	2	Silty SAND (SM)	

Notes:

1. Average thickness (bottom of core was not level).
2. Pavement fabric layer was observed between AC and PCC layers.

- PCC = Portland cement concrete; AC = asphalt concrete; CSS = cement-stabilized soil; CTB = cement-treated base.

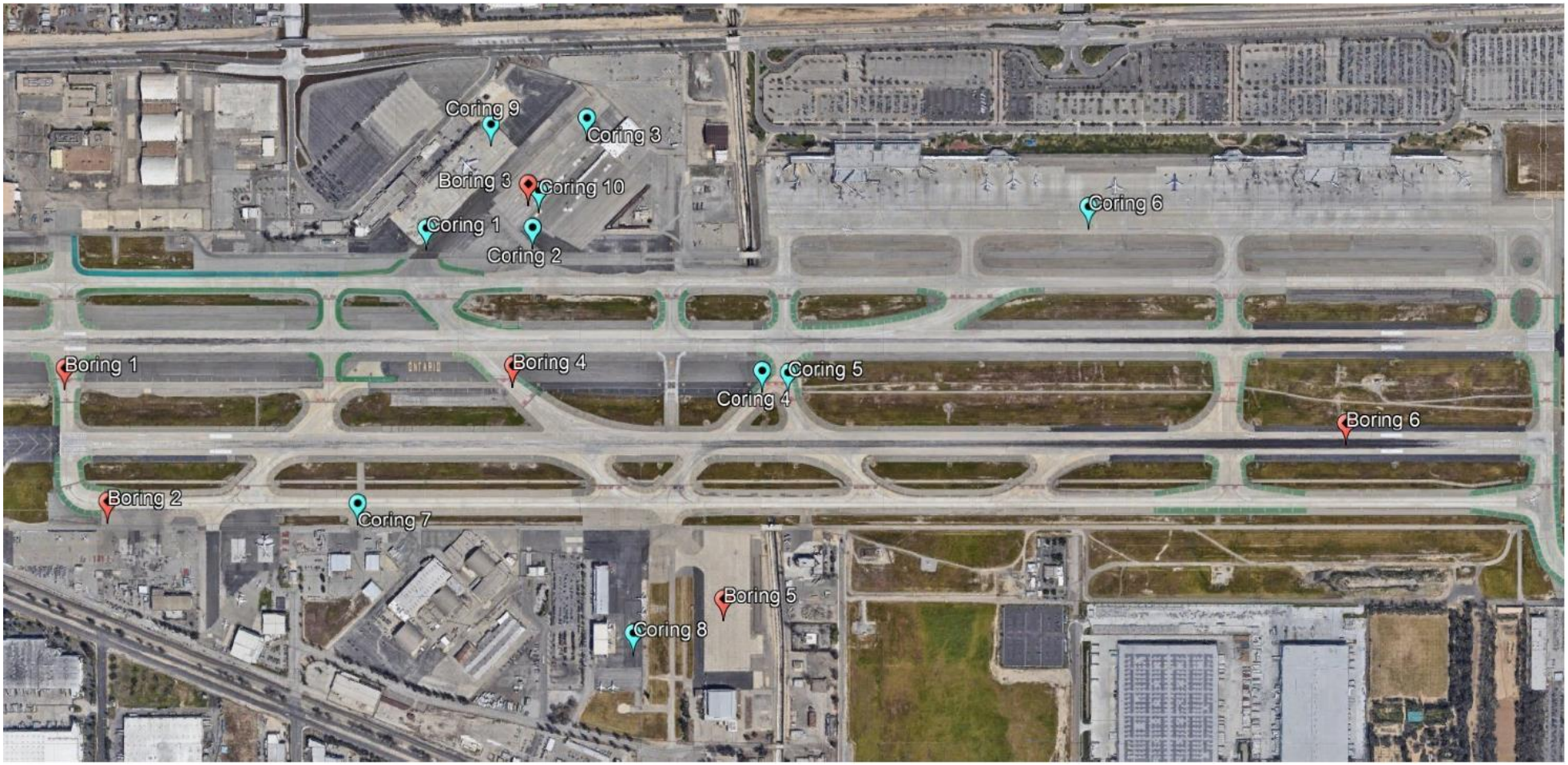


Figure H.1. Core and Boring Location Map

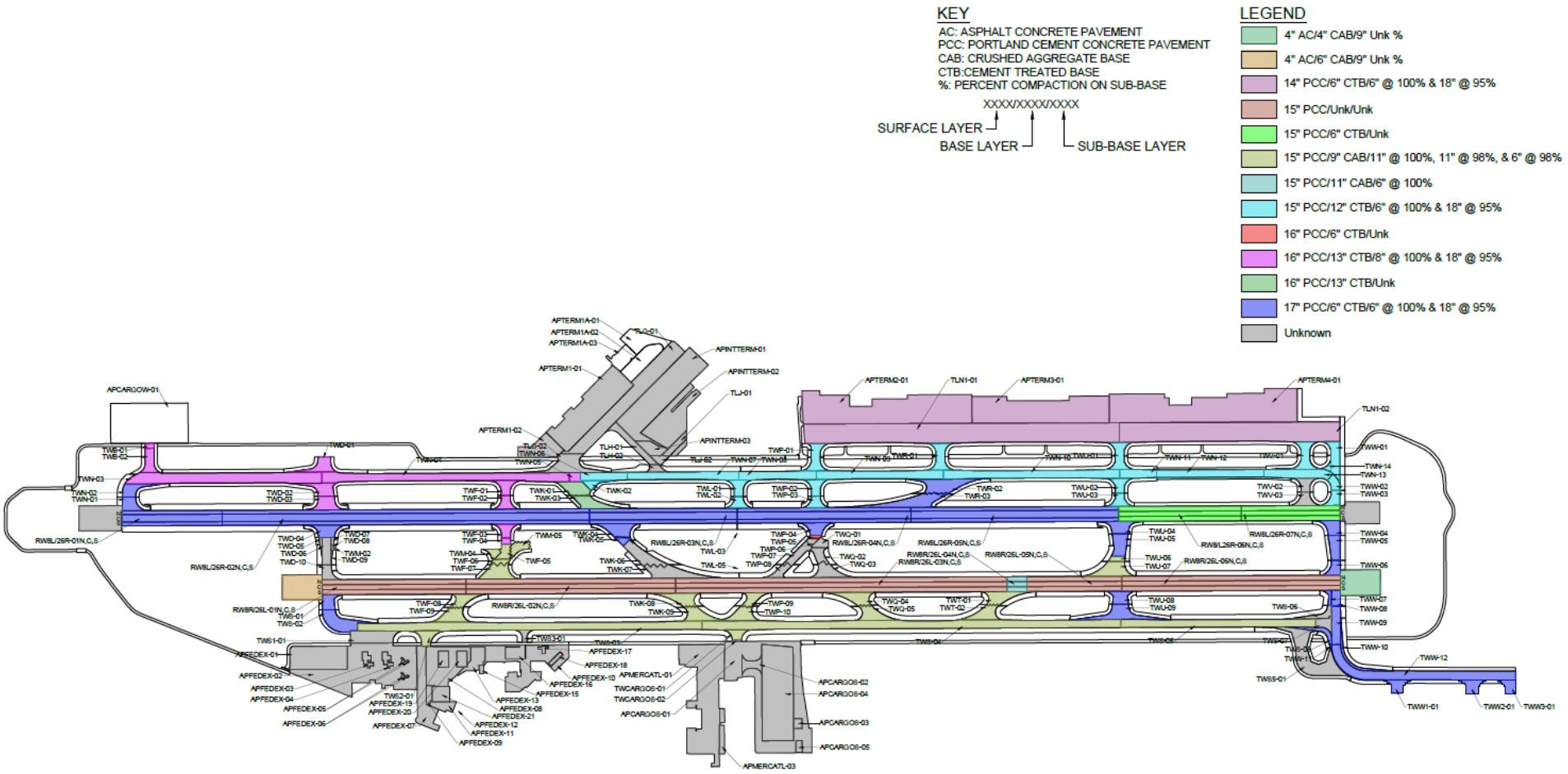


Figure H.2. Color-Coded As-Built Data

APPENDIX F

ENGINEER'S ESTIMATE OF MAINTENANCE COST

Engineer's Estimate of Maintenance Cost

Number	Branch	Pavement Type	Cost
1	APCARGOS	PCC	$ 1,495,713.70
2	APFEDEX	PCC	$ 622,607.76
3	APTERM1	PCC	$ 4,600,528.86
4	APTERM2,APTERM3,APTERM4	PCC	$ 729,970.54
5	BPRW8L	PCC	$ 247.50
6	RW8L/26R Keel	PCC	$ 366,894.29
7	RW8L/26R Outboard	PCC	$ 105,357.77
8	RW8R/26L Keel	PCC	$ 292,514.54
9	RW8R/26L Outboard	PCC	$ 288,055.56
10	TLG	PCC	$ 427.33
11	TLN1,TLN2	PCC	$ 101,987.19
12	TWB	PCC	$ 27,528.88
13	TWCARGOS	PCC	$ 14,463.11
14	TWD	PCC	$ 107,573.63
15	TWF	PCC	$ 333,735.74
16	TWK	PCC	$ 252,088.82
17	TWL	PCC	$ 46,230.03
18	TWM	PCC	$ 17,372.08
19	TWN	PCC	$ 744,104.61
20	TWP	PCC	$ 446,310.56
21	TWQ	PCC	$ 103,029.17
22	TWR	PCC	$ 40,968.78
23	TWS	PCC	$ 1,326,900.18
24	TWS2	PCC	$ 194,416.20
25	TWT	PCC	$ 60,818.46
26	TWU	PCC	$ 181,027.38
27	TWV	PCC	$ 118,936.13
28	TWW	PCC	$ 336,604.79
29	TWW1,TWW2,TWW3	PCC	$ 26,105.67
30	APCARGOS	AC	$ 3,297,904.21
31	APFEDEX	AC	$ 3,054,177.35
32	APINTERM	AC	$ 767,513.36
33	APMERCATL	AC	$ 2,598,142.80
34	APTERM2	AC	$ 21,381.27
35	BPRW26L	AC	$ 73,190.24
36	BPRW26R	AC	$ 59,801.28
37	BPRW8L	AC	$ 2,293.77
38	BPRW8R	AC	$ 136,857.15
39	SHAPTERM4	AC	$ 15,877.51
40	SHRW8L	AC	$ 534,931.71
41	SHRW08R	AC	$ 5,587,820.01
42	SHTLN1,SHTLN2,SHTLN3,SHTLN4,SHTLN5	AC	$ 195,698.58
43	SHTWB	AC	$ 3,713.40
44	SHTWD	AC	$ 7,303.34
45	SHTWF	AC	$ 219.70
46	SHTWK	AC	$ 9,904.68
47	SHTWN	AC	$ 600,905.59
48	SHTWP	AC	$ 73,316.30
49	SHTWQ	AC	$ 20,318.17
50	SHTWS	AC	$ 578,964.72
51	SHTWU	AC	$ 10,666.79
52	SHTWW	AC	$ 82,109.88
53	TLG	AC	$ 71,781.05
54	TLH	AC	$ 26,793.01
55	TLJ	AC	$ 2,447.40
56	TWS1	AC	$ 150,120.30
57	TWS3	AC	$ 150,120.30
58	VSR East	AC	$ 1,441,440.00
59	VSR North	AC	$ 1,832,562.60
60	VSR South	AC	$ 648,945.00
61	VSR West	AC	$ 2,149,620.00
		Total	**$ 37,189,360.74**

Note: Refer to section 6.4 for the explanation of these values

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: APCARGOS

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	113	$ 2,825.00
	M	Crack Seal (Corner)	EA	$25.00	36	$ 900.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	1,602	$ 16,017.97
	M	Crack Seal (Linear)	LF	$10.00	154	$ 1,539.51
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	2,005	$ 10,022.86
	M	Joint Seal	LF	$5.00	278	$ 1,390.66
	H	Joint Seal	LF	$5.00	26	$ 127.53
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	620	$ 620,000.00
	M	Partial Depth Patch	EA	$1,000.00	57	$ 57,000.00
	H	Partial Depth Patch	EA	$1,000.00	3	$ 3,000.00
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	51	$ 102,000.00
	M	Partial Depth Patch	EA	$2,000.00	13	$ 26,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	10	$ 200,000.00
	M	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	84	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	26	$ 13,086.35
	M	Partial Depth Patch (Linear)	LF	$500.00	18	$ 9,206.56
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	18	$ 18,000.00
	M	Partial Depth Patch	EA	$1,000.00	11	$ 11,000.00
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 113,311.64
					Contigency (20%):	$ 249,285.62
					Total Cost:	**$ 1,495,713.70**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: APFEDEX

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	201	$ 2,014.97
	M	Crack Seal (Linear)	LF	$10.00	63	$ 633.72
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,404	$ 7,018.80
	M	Joint Seal	LF	$5.00	93	$ 466.67
	H	Joint Seal	LF	$5.00	1,947	$ 9,733.87
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	3	$ 3,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	M	Slab Replacement	EA	$20,000.00	20	$ 400,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	83	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	14	$ 7,229.52
	M	Partial Depth Patch (Linear)	LF	$500.00	1	$ 500.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 47,167.25
					Contigency (20%):	$ 103,767.96
					Total Cost:	**$ 622,607.76**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **APTERM1**

Date Prepared: 2/5/2020

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	79	$ 1,975.00
	M	Crack Seal (Corner)	EA	$25.00	31	$ 775.00
	H	Full Depth Patch	EA	$3,000.00	8	$ 24,000.00
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	3,490	$ 34,900.00
	M	Crack Seal (Linear)	LF	$10.00	1,395	$ 13,950.00
	H	Slab Replacement (Linear)	LF	$2,000.00	177	$ 354,726.85
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,949	$ 9,745.00
	M	Joint Seal	LF	$5.00	1,433	$ 7,165.00
	H	Joint Seal	LF	$5.00	131	$ 653.31
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	3	$ 3,000.00
	M	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	52	$ 1,040,000.00
	M	Slab Replacement	EA	$20,000.00	56	$ 1,120,000.00
	H	Slab Replacement	EA	$20,000.00	22	$ 440,000.00
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	880	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	257	$ 128,500.00
	M	Partial Depth Patch (Linear)	LF	$500.00	423	$ 211,500.00
	H	Partial Depth Patch (Linear)	LF	$500.00	37	$ 18,358.98
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	38	$ 38,000.00
	M	Partial Depth Patch	EA	$1,000.00	11	$ 11,000.00
	H	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 348,524.91
					Contigency (20%):	$ 766,754.81
					Total Cost:	**$ 4,600,528.86**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: APTERM2,APTERM3,APTERM4

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	9	$ 225.00
	M	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	6,410	$ 64,097.79
	M	Crack Seal (Linear)	LF	$10.00	1,218	$ 12,182.32
	H	Slab Replacement (Linear)	LF	$2,000.00	24	$ 47,457.98
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	3,300	$ 16,500.42
	M	Joint Seal	LF	$5.00	1,038	$ 5,188.05
	H	Joint Seal	LF	$5.00	187	$ 935.17
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	15	$ 15,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	2	$ 4,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	9	$ 180,000.00
	M	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	389	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	233	$ 116,361.86
	M	Partial Depth Patch (Linear)	LF	$500.00	56	$ 28,034.40
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	17	$ 17,000.00
	M	Partial Depth Patch	EA	$1,000.00	6	$ 6,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 55,300.80
					Contigency (20%):	$ 121,661.76
					Total Cost:	**$ 729,970.54**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **BPRW8L**

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00		$ -
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00		$ -
	M	Joint Seal	LF	$5.00	37	$ 187.50
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A		$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00		$ -
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 18.75
					Contigency (20%):	$ 41.25
					Total Cost:	**$ 247.50**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **RW8L/26R Keel**

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	3	$ 75.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	2,584	$ 25,839.70
	M	Crack Seal (Linear)	LF	$10.00	40	$ 402.06
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	2,491	$ 12,454.80
	M	Joint Seal	LF	$5.00	5,692	$ 28,461.06
	H	Joint Seal	LF	$5.00	795	$ 3,975.46
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	8	$ 8,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	88	$ 176,000.00
	M	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	1	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	330	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	24	$ 11,812.39
	M	Partial Depth Patch (Linear)	LF	$500.00	12	$ 5,929.76
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 27,795.02
					Contigency (20%):	$ 61,149.05
					Total Cost:	**$ 366,894.29**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **RW8L/26R Outboard**

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	3,151	$ 31,505.82
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A	15	$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	656	$ 3,279.29
	M	Joint Seal	LF	$5.00	150	$ 751.62
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	6	$ 12,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	101	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	47	$ 23,735.19
	M	Partial Depth Patch (Linear)	LF	$500.00	7	$ 3,494.58
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 7,981.65
					Contigency (20%):	$ 17,559.63
					Total Cost:	**$ 105,357.77**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **RW8R/26L Keel**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	1,585	$ 15,849.35
	M	Crack Seal (Linear)	LF	$10.00	202	$ 2,016.23
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	909	$ 4,546.61
	M	Joint Seal	LF	$5.00	939	$ 4,692.52
	H	Joint Seal	LF	$5.00	360	$ 1,798.75
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	106	$ 106,000.00
	M	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	20	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	3	$ 60,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	703	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	19	$ 9,698.47
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	12	$ 12,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 22,160.19
					Contigency (20%):	$ 48,752.42
					Total Cost:	**$ 292,514.54**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **RW8R/26L Outboard**

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	4,054	$ 40,542.37
	M	Crack Seal (Linear)	LF	$10.00	41	$ 409.19
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	9,792	$ 48,958.68
	M	Joint Seal	LF	$5.00	2,350	$ 11,749.25
	H	Joint Seal	LF	$5.00	1,281	$ 6,406.41
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	67	$ 67,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	6	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	660	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	68	$ 33,962.41
	M	Partial Depth Patch (Linear)	LF	$500.00	2	$ 1,145.60
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 21,822.39
					Contigency (20%):	$ 48,009.26
					Total Cost:	**$ 288,055.56**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TLG

Date Prepared: 2/5/2020

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	32	$ 323.74
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00		$ -
	M	Joint Seal	LF	$5.00		$ -
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A		$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00		$ -
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 32.37
					Contigency (20%):	$ 71.22
					Total Cost:	**$ 427.33**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **TLN1,TLN2**

Date Prepared: 2/5/2020

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	5	$ 125.00
	M	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	1,442	$ 14,415.07
	M	Crack Seal (Linear)	LF	$10.00	55	$ 545.82
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,716	$ 8,578.25
	M	Joint Seal	LF	$5.00	952	$ 4,762.49
	H	Joint Seal	LF	$5.00	505	$ 2,524.87
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	19	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	108	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	55	$ 27,596.75
	M	Partial Depth Patch (Linear)	LF	$500.00	25	$ 12,689.78
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	3	$ 3,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 7,726.30
					Contigency (20%):	$ 16,997.86
					Total Cost:	**$ 101,987.19**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **TWB**

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	20	$ 195.65
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	180	$ 900.52
	M	Joint Seal	LF	$5.00	51	$ 253.79
	H	Joint Seal	LF	$5.00	76	$ 379.40
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	49	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	24	$ 12,225.12
	M	Partial Depth Patch (Linear)	LF	$500.00	12	$ 5,850.73
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 2,085.52
					Contigency (20%):	$ 4,588.15
					Total Cost:	**$ 27,528.88**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TWCARGOS

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	101	$ 1,014.27
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	59	$ 294.34
	M	Joint Seal	LF	$5.00	62	$ 310.74
	H	Joint Seal	LF	$5.00	7	$ 33.69
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	13	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	17	$ 8,303.86
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 1,095.69
					Contigency (20%):	$ 2,410.52
					Total Cost:	**$ 14,463.11**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TWD

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	516	$ 5,161.60
	M	Crack Seal (Linear)	LF	$10.00	9	$ 91.66
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	610	$ 3,048.89
	M	Joint Seal	LF	$5.00	273	$ 1,367.12
	H	Joint Seal	LF	$5.00	206	$ 1,029.28
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	23	$ 23,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	6	$ 12,000.00
	M	Partial Depth Patch	EA	$2,000.00	2	$ 4,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	122	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	58	$ 29,148.89
	M	Partial Depth Patch (Linear)	LF	$500.00	3	$ 1,622.74
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 8,149.52
					Contigency (20%):	$ 17,928.94
					Total Cost:	**$ 107,573.63**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **TWF**

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	1,597	$ 15,972.90
	M	Crack Seal (Linear)	LF	$10.00	57	$ 569.07
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,167	$ 5,835.70
	M	Joint Seal	LF	$5.00	135	$ 673.56
	H	Joint Seal	LF	$5.00	30	$ 151.29
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	33	$ 33,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	5	$ 10,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	6	$ 120,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	170	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	127	$ 63,408.70
	M	Partial Depth Patch (Linear)	LF	$500.00	2	$ 1,218.89
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 25,283.01
					Contigency (20%):	$ 55,622.62
					Total Cost:	**$ 333,735.74**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: TWK

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	2,419	$ 24,189.12
	M	Crack Seal (Linear)	LF	$10.00	36	$ 363.86
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,673	$ 8,367.34
	M	Joint Seal	LF	$5.00	859	$ 4,294.32
	H	Joint Seal	LF	$5.00	320	$ 1,600.99
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	32	$ 32,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	10	$ 20,000.00
	M	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	278	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	94	$ 46,997.66
	M	Partial Depth Patch (Linear)	LF	$500.00	12	$ 6,113.09
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 19,097.64
					Contigency (20%):	$ 42,014.80
					Total Cost:	**$ 252,088.82**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **TWL**

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00		$ -
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	400	$ 2,000.27
	M	Joint Seal	LF	$5.00	400	$ 1,999.79
	H	Joint Seal	LF	$5.00	11	$ 53.47
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	6	$ 12,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	13	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	26	$ 12,944.21
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 3,502.27
					Contigency (20%):	$ 7,705.00
					Total Cost:	**$ 46,230.03**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TWM

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	100	$ 999.05
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	432	$ 2,161.62
	M	Joint Seal	LF	$5.00		$ -
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	8	$ 8,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	39	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00		$ -
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 1,316.07
					Contigency (20%):	$ 2,895.35
					Total Cost:	**$ 17,372.08**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: TWN

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	10	$ 250.00
	M	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	3,305	$ 33,051.18
	M	Crack Seal (Linear)	LF	$10.00	228	$ 2,283.62
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	5,218	$ 26,088.86
	M	Joint Seal	LF	$5.00	1,378	$ 6,890.52
	H	Joint Seal	LF	$5.00	435	$ 2,173.95
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	67	$ 67,000.00
	M	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	67	$ 134,000.00
	M	Partial Depth Patch	EA	$2,000.00	4	$ 8,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	14	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	3	$ 60,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	558	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	369	$ 184,633.39
	M	Partial Depth Patch (Linear)	LF	$500.00	17	$ 8,260.73
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	24	$ 24,058.36
	M	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 56,371.56
					Contigency (20%):	$ 124,017.44
					Total Cost:	**$ 744,104.61**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **TWP**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	12	$ 300.00
	M	Crack Seal (Corner)	EA	$25.00	6	$ 150.00
	H	Full Depth Patch	EA	$3,000.00	1	$ 3,000.00
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	746	$ 7,458.23
	M	Crack Seal (Linear)	LF	$10.00	37	$ 370.85
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,686	$ 8,430.98
	M	Joint Seal	LF	$5.00	752	$ 3,759.15
	H	Joint Seal	LF	$5.00	48	$ 237.56
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	25	$ 25,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	41	$ 82,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	3	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	9	$ 180,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	157	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	45	$ 22,407.28
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	3	$ 3,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 33,811.41
					Contigency (20%):	$ 74,385.09
					Total Cost:	**$ 446,310.56**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: TWQ

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	868	$ 8,678.39
	M	Crack Seal (Linear)	LF	$10.00	53	$ 526.31
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	593	$ 2,967.14
	M	Joint Seal	LF	$5.00	66	$ 330.88
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	31	$ 31,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	14	$ 28,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	85	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	11	$ 5,499.68
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 7,805.24
					Contigency (20%):	$ 17,171.53
					Total Cost:	**$ 103,029.17**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TWR

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	5	$ 125.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	16	$ 155.64
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	743	$ 3,715.64
	M	Joint Seal	LF	$5.00	300	$ 1,499.18
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	5	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	8	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	23	$ 11,748.92
	M	Partial Depth Patch (Linear)	LF	$500.00	18	$ 8,792.57
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 3,103.70
					Contigency (20%):	$ 6,828.13
					Total Cost:	**$ 40,968.78**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TWS

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	20	$ 500.00
	M	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	10,671	$ 106,713.95
	M	Crack Seal (Linear)	LF	$10.00	673	$ 6,728.46
	H	Slab Replacement (Linear)	LF	$2,000.00	10	$ 20,000.00
Durability Cracking (64)	L	Monitor	N/A	N/A	4	$ -
	M	Monitor	N/A	N/A	2	$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	3,701	$ 18,505.00
	M	Joint Seal	LF	$5.00	1,415	$ 7,075.00
	H	Joint Seal	LF	$5.00	531	$ 2,655.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	50	$ 50,000.00
	M	Partial Depth Patch	EA	$1,000.00	7	$ 7,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	15	$ 30,000.00
	M	Partial Depth Patch	EA	$2,000.00	2	$ 4,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	13	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	31	$ 620,000.00
	M	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	1,059	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	111	$ 55,500.00
	M	Partial Depth Patch (Linear)	LF	$500.00	57	$ 28,500.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	7	$ 7,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 100,522.74
					Contigency (20%):	$ 221,150.03
					Total Cost:	**$ 1,326,900.18**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TWS2

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	495	$ 4,950.00
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00	21	$ 42,000.00
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	67	$ 335.00
	M	Joint Seal	LF	$5.00		$ -
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	M	Slab Replacement	EA	$20,000.00	3	$ 60,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	12	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00		$ -
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 14,728.50
					Contigency (20%):	$ 32,402.70
					Total Cost:	**$ 194,416.20**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TWT

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	281	$ 2,808.56
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	239	$ 1,196.53
	M	Joint Seal	LF	$5.00	14	$ 69.50
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	8	$ 16,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	31	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00		$ -
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 4,607.46
					Contigency (20%):	$ 10,136.41
					Total Cost:	**$ 60,818.46**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TWU

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	3	$ 75.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	307	$ 3,068.63
	M	Crack Seal (Linear)	LF	$10.00	11	$ 111.05
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	863	$ 4,314.95
	M	Joint Seal	LF	$5.00	350	$ 1,750.61
	H	Joint Seal	LF	$5.00	157	$ 786.67
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	41	$ 41,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	27	$ 54,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	116	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	53	$ 26,666.04
	M	Partial Depth Patch (Linear)	LF	$500.00	5	$ 2,369.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 13,714.20
					Contigency (20%):	$ 30,171.23
					Total Cost:	**$ 181,027.38**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TWV

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	575	$ 5,753.41
	M	Crack Seal (Linear)	LF	$10.00	32	$ 319.27
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	310	$ 1,548.27
	M	Joint Seal	LF	$5.00	156	$ 778.88
	H	Joint Seal	LF	$5.00	38	$ 188.48
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	20	$ 20,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	10	$ 20,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	4	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	76	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	1	$ 514.82
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 9,010.31
					Contigency (20%):	$ 19,822.69
					Total Cost:	**$ 118,936.13**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TWW

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	5	$ 125.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	1,573	$ 15,727.18
	M	Crack Seal (Linear)	LF	$10.00	21	$ 208.61
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	2,235	$ 11,173.52
	M	Joint Seal	LF	$5.00	1,365	$ 6,824.17
	H	Joint Seal	LF	$5.00	266	$ 1,329.31
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	82	$ 82,000.00
	M	Partial Depth Patch	EA	$1,000.00	6	$ 6,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	29	$ 58,000.00
	M	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	5	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	508	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	53	$ 26,319.96
	M	Partial Depth Patch (Linear)	LF	$500.00	3	$ 1,727.54
	H	Partial Depth Patch (Linear)	LF	$500.00	1	$ 568.33
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 25,500.36
					Contigency (20%):	$ 56,100.80
					Total Cost:	**$ 336,604.79**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **TWW1,TWW2,TWW3**

Date Prepared: 2/5/2020

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00		$ -
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	557	$ 2,783.19
	M	Joint Seal	LF	$5.00	59	$ 294.07
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	181	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	13	$ 6,674.76
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 1,977.70
					Contigency (20%):	$ 4,350.94
					Total Cost:	**$ 26,105.67**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **APCARGOS**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	19,750	$ 79,000.00
	M	Full Depth Reconstruction	SF	$17.50	5,000	$ 87,500.00
	H	Full Depth Reconstruction	SF	$17.50	95,458	$ 1,670,515.00
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	42,068	$ 33,654.40
	M	Full Depth Reconstruction	SF	$17.50	6,274	$ 109,795.00
	H	Full Depth Reconstruction	SF	$17.50	27,779	$ 486,132.50
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	273	$ 545.38
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	36,770	$ 9,192.50
	M	Seal Coat	SF	$0.25	35,202	$ 8,800.50
	H	Seal Coat	SF	$0.25	53,108	$ 13,277.00
					Mobilization (10%):	$ 249,841.23
					Contigency (20%):	$ 549,650.70
					Total Cost:	**$ 3,297,904.21**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **APFEDEX**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	192,370	$ 769,480.00
	M	Full Depth Reconstruction	SF	$17.50	19,000	$ 332,500.00
	H	Full Depth Reconstruction	SF	$17.50	28,600	$ 500,500.00
Bleeding (42)	L	Monitor	N/A	N/A	3500.00	$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	300,395	$ 240,316.00
	M	Full Depth Reconstruction	SF	$17.50	14,750	$ 258,125.00
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	1,405	$ 2,810.22
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	1,995	$ 9,975.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A	300	$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	571,628	$ 142,907.00
	M	Seal Coat	SF	$0.25	91,040	$ 22,760.00
	H	Seal Coat	SF	$0.25	137,590	$ 34,397.50
					Mobilization (10%):	$ 231,377.07
					Contigency (20%):	$ 509,029.56
					Total Cost:	**$ 3,054,177.35**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **APINTERM**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	12,200	$ 48,800.00
	M	Full Depth Reconstruction	SF	$17.50	16,600	$ 290,500.00
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	205,688	$ 164,550.40
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	2,348	$ 4,696.62
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	291,610	$ 72,902.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 58,144.95
					Contigency (20%):	$ 127,918.89
					Total Cost:	**$ 767,513.36**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **APMERCATL**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	51,830	$ 207,320.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50	16,500	$ 288,750.00
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	91,500	$ 73,200.00
	M	Full Depth Reconstruction	SF	$17.50	77,800	$ 1,361,500.00
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	350	$ 1,750.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	72,690	$ 18,172.50
	M	Seal Coat	SF	$0.25	48,900	$ 12,225.00
	H	Seal Coat	SF	$0.25	21,490	$ 5,372.50
					Mobilization (10%):	$ 196,829.00
					Contigency (20%):	$ 433,023.80
					Total Cost:	**$ 2,598,142.80**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **APTERM2**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	12,860	$ 10,288.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00	2,873	$ 5,745.26
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	82	$ 164.67
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 1,619.79
					Contigency (20%):	$ 3,563.55
					Total Cost:	**$ 21,381.27**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **BPRW26L**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	5,373	$ 10,745.99
	M	Crack Seal (Linear)	LF	$2.00	435	$ 870.41
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	3,650	$ 18,250.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	102,323	$ 25,580.75
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 5,544.72
					Contigency (20%):	$ 12,198.37
					Total Cost:	**$ 73,190.24**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **BPRW26R**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	56,630	$ 45,304.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 4,530.40
					Contigency (20%):	$ 9,966.88
					Total Cost:	**$ 59,801.28**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **BPRW8L**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	869	$ 1,737.70
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 173.77
					Contigency (20%):	$ 382.29
					Total Cost:	**$ 2,293.77**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **BPRW8R**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00	1,946	$ 3,891.72
	H	Crack Seal (Linear)	LF	$2.00	19	$ 37.94
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	19,950	$ 99,750.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 10,367.97
					Contigency (20%):	$ 22,809.53
					Total Cost:	**$ 136,857.15**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHAPTERM4**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	2,000	$ 1,600.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	1,401	$ 2,801.17
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	30,509	$ 7,627.25
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 1,202.84
					Contigency (20%):	$ 2,646.25
					Total Cost:	**$ 15,877.51**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHRW8L**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	125,670	$ 100,536.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00	6	$ 12.92
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	10,840	$ 21,680.88
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	1,940	$ 9,700.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	1,093,286	$ 273,321.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 40,525.13
					Contigency (20%):	$ 89,155.29
					Total Cost:	**$ 534,931.71**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHRW08R**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	309,885	$ 247,908.00
	M	Full Depth Reconstruction	SF	$10.50	357,062	$ 3,749,151.00
	H	Full Depth Reconstruction	SF	$10.50	9,995	$ 104,947.50
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	7,514	$ 15,028.28
	M	Crack Seal (Linear)	LF	$2.00	217	$ 433.95
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	2	$ 10.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	462,873	$ 115,718.25
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 423,319.70
					Contigency (20%):	$ 931,303.34
					Total Cost:	**$ 5,587,820.01**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **SHTLN1,SHTLN2,SHTLN3,SHTLN4,SHTLN5**

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	220	$ 880.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	126,180	$ 100,944.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	180,030	$ 45,007.50
	M	Seal Coat	SF	$0.25	5,700	$ 1,425.00
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 14,825.65
					Contigency (20%):	$ 32,616.43
					Total Cost:	**$ 195,698.58**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **SHTWB**

Date Prepared: 2/5/2020

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	1,407	$ 2,813.18
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 281.32
					Contigency (20%):	$ 618.90
					Total Cost:	**$ 3,713.40**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWD**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	1,500	$ 1,200.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	197	$ 394.08
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	15,755	$ 3,938.75
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 553.28
					Contigency (20%):	$ 1,217.22
					Total Cost:	**$ 7,303.34**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWF**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	76	$ 151.44
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	3	$ 15.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 16.64
					Contigency (20%):	$ 36.62
					Total Cost:	**$ 219.70**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWK**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	7,820	$ 6,256.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	624	$ 1,247.55
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 750.35
					Contigency (20%):	$ 1,650.78
					Total Cost:	**$ 9,904.68**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWN**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	420,585	$ 336,468.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	7,326	$ 14,652.37
	M	Crack Seal (Linear)	LF	$2.00	215	$ 430.14
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	650	$ 3,250.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	401,724	$ 100,431.00
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 45,523.15
					Contigency (20%):	$ 100,150.93
					Total Cost:	**$ 600,905.59**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWP**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	15,993	$ 12,794.40
	M	Full Depth Reconstruction	SF	$10.50	3,600	$ 37,800.00
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	200	$ 1,000.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	15,793	$ 3,948.25
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 5,554.27
					Contigency (20%):	$ 12,219.38
					Total Cost:	**$ 73,316.30**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWQ**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	*Severity*	*Recommended Repair*	*Units*	*Repair Unit Price*	*Quantity*	*Estimated Repair Cost*
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	15,731	$ 12,584.80
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	11,231	$ 2,807.75
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 1,539.26
					Contigency (20%):	$ 3,386.36
					Total Cost:	**$ 20,318.17**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWS**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	245,020	$ 196,016.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00	200	$ 1,000.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	25,694	$ 51,388.89
	M	Crack Seal (Linear)	LF	$2.00	456	$ 912.00
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	285	$ 1,425.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	751,471	$ 187,867.75
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 43,860.96
					Contigency (20%):	$ 96,494.12
					Total Cost:	**$ 578,964.72**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWU**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	3,923	$ 3,138.40
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	19,770	$ 4,942.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 808.09
					Contigency (20%):	$ 1,777.80
					Total Cost:	**$ 10,666.79**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWW**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	39,480	$ 31,584.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	2,158	$ 4,315.66
	M	Crack Seal (Linear)	LF	$2.00	1,249	$ 2,498.62
	H	Crack Seal (Linear)	LF	$2.00	38	$ 75.67
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	119	$ 595.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	92,542	$ 23,135.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 6,220.45
					Contigency (20%):	$ 13,684.98
					Total Cost:	**$ 82,109.88**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **TLG**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	1,950	$ 7,800.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	45,290	$ 36,232.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	50	$ 100.09
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	40,990	$ 10,247.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 5,437.96
					Contigency (20%):	$ 11,963.51
					Total Cost:	**$ 71,781.05**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **TLH**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	140	$ 560.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	7,050	$ 5,640.00
	M	Full Depth Reconstruction	SF	$17.50	200	$ 3,500.00
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	269	$ 537.73
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	40,240	$ 10,060.00
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 2,029.77
					Contigency (20%):	$ 4,465.50
					Total Cost:	**$ 26,793.01**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **TLJ**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	700	$ 560.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	110	$ 219.09
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	4,300	$ 1,075.00
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 185.41
					Contigency (20%):	$ 407.90
					Total Cost:	**$ 2,447.40**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **TWS1**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	20,400	$ 81,600.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	23,500	$ 18,800.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	53,310	$ 13,327.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 11,372.75
					Contigency (20%):	$ 25,020.05
					Total Cost:	**$ 150,120.30**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **TWS3**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	20,400	$ 81,600.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	23,500	$ 18,800.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	53,310	$ 13,327.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 11,372.75
					Contigency (20%):	$ 25,020.05
					Total Cost:	**$ 150,120.30**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: VSR East

RS&H

Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
Northern Taxiway W connection to newly constructed area of VSR East behind Runway 26R Blast Pad			$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ -		$ 14.00	$ 470,400.00
Newly constructed area of VSR East East of Runway 26R Blast Pad			$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ -		$ 14.00	$ -
Newly constructed area of VSR East behind Runway 26R Blast Pad to southern Taxiway W connection	1,400		$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ -		$ 14.00	$ 621,600.00
Sub Total		**$**		**-**	**$**		**-**	**$**		**-**	**$**		**1,092,000.00**
Mobilization (10%):		**$ 109,200.00**											
Contingency (20%):		**$ 240,240.00**											
Total		**$ 1,441,440.00**											

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: VSR North

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
Taxiway B to Taxilane G			$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ 196,800.00		$ 14.00	$ 688,800.00
Taxilane G to 150' before Taxilane H			$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ -		$ 14.00	$ 151,200.00
150' before Taxilane H to Taxilane H	4,100		$ 2.00	$ -		$ 0.25	$ 450.00	49,200	$ 4.00	$ -		$ 14.00	$ 25,200.00
200' after Taxilane H			$ 2.00	$ 1,200.00		$ 0.25	$ 1,200.00	-	$ 4.00	$ -		$ 14.00	$ -
200' after Taxilane H to Cucamonga Channel Bridge	450		$ 2.00	$ -		$ 0.25	$ -	-	$ 4.00	$ 93,600.00	49,200	$ 14.00	$ -
Cucamonga Channel Bridge to Terminal Way Gate (North - South)	150		$ 2.00	$ 6,300.00		$ 0.25	$ 3,780.00	-	$ 4.00	$ -	10,800	$ 14.00	$ -
Taxiway P to Taxiway R	200	-	$ 2.00	$ 2,200.00	-	$ 0.25	$ 5,500.00	23,400	$	$ 88,000.00		$ 14.00	$ -
Taxiway R to Taxiway U	975	-	$ 2.00	$ 12,800.00	1,800	$ 0.25	$ 16,000.00		$ 4.00	$ -	1,800	$ 14.00	$ -
Taxiway U to Taxiway W	630	- 600	$ 2.00	$ 7,400.00	4,800	$ 0.25	$ 13,875.00		$	$ 74,000.00		$ 14.00	$ -
	1,100												
Sub Total	1,600	**$**		**29,900.00**	$5,120		**40,805.00**	**$**		**452,400.00**	**$**		**865,200.00**
	3,150				-						-		
Mobilization (10%):	1,850	**$ 138,830.50**			22,000			22,000	4.00				
	1,100							-					
Contingency (20%):	6,400	**$ 305,427.10**			64,000								
											-		
Total	3,700	**$ 1,832,562.60**			55,500			18,500	4.00				
								-			-		
											-		

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: VSR South

RS&H

Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
VSR West to Taxiway S1			$ 2.00	$ 2,200.00		$ 0.25	$ 4,125.00		$ 4.00	$ -		$ 14.00	$ -
Taxiway S1 to Taxiway S2			$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ 18,000.00		$ 14.00	$ 63,000.00
Taxiway S2 to End of FedEx Apron			$ 2.00	$ 5,400.00		$ 0.25	$ 10,125.00		$ 4.00	$ -		$ 14.00	$ 37,800.00
End of FedEx Apron to Taxiway Cargo South	550		$ 2.00	$ 9,300.00		$ 0.25	$ 11,625.00	4,500	$ 4.00	$ -		$ 14.00	$ -
Cucamonga Channel Bridge to Taxiway S5	300 1,250		$ 2.00	$ 36,800.00	16,500	$ 0.25	$ 17,250.00			$ 276,000.00		$ 14.00	$ -
Sub Total	1,550	1,100	**$**	**53,700.00**	**$**		**43,125.00**	**$**				**$**	**100,800.00**
Mobilization (10%):	4,600	**$ 49,162.50**			40,500			-			4,500		
Contingency (20%):		**$ 108,157.50**			46,500			-	4.00		2,700		
Total		18,400 **$ 648,945.00**			69,000			69,000 -			-		
								294,000.00			-		

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: VSR West

RS&H

Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
Taxiway B to Flood Control Bridge #1			$ 2.00	$ 1,000.00		$ 0.25	$ -		$ 4.00	$ -		$ 14.00	$ 70,000.00
#1 Bridge to #2 Bridge. West of Runway 8L Blast Pad			$ 2.00	$ 3,400.00		$ 0.25	$ 8,500.00		$ 4.00	$ -		$ 14.00	$ -
Flood Control Bridge #2 to VSR South Connection	1,000		$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ -		$ 14.00	$ 1,545,600.00
Sub Total	1,700	**$**		**4,400.00**	**$**		**8,500.00**	**$**		**-**	**$**		**1,615,600.00**
Mobilization (10%):	4,600	**$ 162,850.00**									5,000		
Contingency (20%):	500	**$ 358,270.00**			34,000			-					
Total	1,700	**$ 2,149,620.00**			-						110,400		
	-				-						-		

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

APPENDIX G

10 YEAR "NO ACTION" ANALYSIS

TABLE C-1: RUNWAY 10 YEAR "NO ACTION" RESULTS

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
BPRW26L	01E	73.0	72.3	71.7	71.0	70.4	69.7	69.0	68.4	67.7	67.1
BPRW26R	01E	69.0	66.9	64.8	62.7	60.7	58.6	56.5	54.4	52.3	50.2
BPRW8L	01W	97.0	96.8	96.6	96.4	96.2	96.0	95.8	95.6	95.4	95.2
	02W	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
BPRW8R	01W	74.0	73.4	72.7	72.1	71.5	70.8	70.2	69.5	68.9	68.3
RW8L/26R	01C	95.0	94.7	94.3	94.0	93.7	93.3	93.0	92.6	92.3	92.0
	01N	99.0	98.9	98.9	98.8	98.7	98.7	98.6	98.5	98.5	98.4
	01S	99.0	98.9	98.9	98.8	98.7	98.7	98.6	98.5	98.5	98.4
	02C	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	02N	99.0	98.9	98.9	98.8	98.7	98.7	98.6	98.5	98.5	98.4
	02S	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	03C	88.0	87.2	86.4	85.6	84.8	84.0	83.2	82.3	81.5	80.7
	03N	99.0	98.9	98.9	98.8	98.7	98.7	98.6	98.5	98.5	98.4
	03S	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	04C	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	04N	98.0	97.9	97.7	97.6	97.5	97.3	97.2	97.1	96.9	96.8
	04S	99.0	98.9	98.9	98.8	98.7	98.7	98.6	98.5	98.5	98.4
	05C	87.0	86.1	85.3	84.4	83.5	82.6	81.8	80.9	80.0	79.1
	05N	98.0	97.9	97.7	97.6	97.5	97.3	97.2	97.1	96.9	96.8
	05S	98.0	97.9	97.7	97.6	97.5	97.3	97.2	97.1	96.9	96.8
	06C	61.0	59.8	58.6	57.4	56.3	55.1	53.9	52.7	51.5	50.3
	06N	87.0	86.6	86.2	85.8	85.4	85.0	84.6	84.2	83.8	83.4
	06S	77.0	76.3	75.6	74.9	74.2	73.5	72.8	72.1	71.4	70.7
	07C	63.0	61.9	60.8	59.6	58.5	57.4	56.2	55.1	54.0	52.9
	07N	84.0	83.5	83.0	82.5	82.1	81.6	81.1	80.6	80.1	79.6
	07S	74.0	73.2	72.4	71.6	70.8	70.0	69.3	68.5	67.7	66.9
RW8R/26L	01C	81.0	80.5	80.1	79.6	79.1	78.6	78.1	77.7	77.2	76.7
	01N	85.0	84.6	84.3	83.9	83.5	83.1	82.7	82.4	82.0	81.6
	01S	78.0	77.5	76.9	76.3	75.8	75.2	74.7	74.1	73.6	73.0
	02C	73.0	72.3	71.6	71.0	70.3	69.6	68.9	68.3	67.6	66.9
	02N	77.0	76.4	75.9	75.3	74.7	74.1	73.5	73.0	72.4	71.8
	02S	74.0	73.4	72.7	72.0	71.4	70.7	70.1	69.4	68.8	68.1
	03C	70.0	69.3	68.5	67.7	67.0	66.2	65.5	64.7	64.0	63.2
	03N	85.0	84.6	84.3	83.9	83.5	83.1	82.7	82.4	82.0	81.6
	03S	78.0	77.5	76.9	76.3	75.8	75.2	74.7	74.1	73.6	73.0
	04C	51.0	49.5	48.0	46.5	45.0	43.5	42.1	40.6	39.1	37.6
	04N	80.0	79.4	78.8	78.2	77.6	77.0	76.4	75.7	75.1	74.5
	04S	71.0	70.1	69.2	68.4	67.5	66.6	65.7	64.8	63.9	63.1
	05C	55.0	53.9	52.7	51.6	50.5	49.4	48.2	47.1	46.0	44.8
	05N	74.0	73.4	72.7	72.0	71.4	70.7	70.1	69.4	68.8	68.1

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	05S	77.0	76.4	75.9	75.3	74.7	74.1	73.5	73.0	72.4	71.8
	06C	73.0	72.3	71.6	71.0	70.3	69.6	68.9	68.3	67.6	66.9
	06N	83.0	82.6	82.2	81.7	81.3	80.9	80.4	80.0	79.6	79.2
	06S	83.0	82.6	82.2	81.7	81.3	80.9	80.4	80.0	79.6	79.2
SHRW8L	01N	66.0	64.6	63.2	61.7	60.3	58.9	57.5	56.0	54.6	53.2
	02N	82.0	80.8	79.6	78.4	77.2	75.9	74.7	73.5	72.3	71.1
	04N	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	05S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	06N	94.0	93.6	93.3	92.9	92.6	92.2	91.9	91.5	91.2	90.8
	07N	91.0	90.5	89.9	89.4	88.9	88.3	87.8	87.3	86.7	86.2
	09N	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	11N	69.0	67.2	65.3	63.5	61.6	59.8	58.0	56.1	54.3	52.4
	11S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	12N	69.0	67.2	65.3	63.5	61.6	59.8	58.0	56.1	54.3	52.4
	13S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	14N	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	15N	65.0	62.9	60.8	58.8	56.7	54.6	52.5	50.5	48.4	46.3
	15S	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	16N	82.0	81.2	80.5	79.7	79.0	78.2	77.5	76.7	76.0	75.2
	17S	69.0	67.2	65.3	63.5	61.6	59.8	58.0	56.1	54.3	52.4
	18N	92.0	91.5	90.9	90.4	89.9	89.3	88.8	88.2	87.7	87.2
	18S	70.0	68.2	66.4	64.7	62.9	61.1	59.3	57.5	55.8	54.0
	20N	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	20S	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	21N	66.0	64.6	63.2	61.7	60.3	58.9	57.5	56.0	54.6	53.2
	21S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	23N	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	23S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	25N	70.0	68.7	67.5	66.2	65.0	63.7	62.5	61.2	59.9	58.7
	25S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	26N	72.0	70.8	69.7	68.5	67.3	66.1	65.0	63.8	62.6	61.4
	28N	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	30N	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	30S	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	31S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	32N	88.0	87.2	86.4	85.6	84.8	84.0	83.2	82.3	81.5	80.7
	33S	78.0	76.5	75.0	73.6	72.1	70.6	69.1	67.6	66.2	64.7
	34N	60.0	58.3	56.6	55.0	53.3	51.6	49.9	48.3	46.6	44.9
	35N	65.0	63.5	62.1	60.6	59.1	57.7	56.2	54.7	53.3	51.8
	35S	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	37S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	38N	80.0	79.4	78.8	78.2	77.6	77.0	76.4	75.7	75.1	74.5
	38S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	40N	69.0	67.7	66.4	65.1	63.8	62.5	61.2	59.9	58.6	57.3
	40S	68.0	67.0	66.1	65.1	64.1	63.1	62.2	61.2	60.2	59.2
	41N	65.0	63.5	62.1	60.6	59.1	57.7	56.2	54.7	53.3	51.8
	42N	68.0	66.7	65.3	64.0	62.6	61.3	60.0	58.6	57.3	55.9
	43S	87.0	86.1	85.3	84.4	83.5	82.6	81.8	80.9	80.0	79.1
	44S	67.0	65.6	64.2	62.9	61.5	60.1	58.7	57.3	55.9	54.6
SHRW8R	01N	86.0	85.6	85.2	84.7	84.3	83.9	83.4	83.0	82.6	82.2
	02N	94.0	93.8	93.6	93.5	93.3	93.1	92.9	92.7	92.5	92.4
	02S	91.0	90.4	89.8	89.2	88.6	88.0	87.4	86.8	86.2	85.6
	03N	59.0	57.8	56.5	55.3	54.0	52.8	51.5	50.3	49.0	47.8
	03S	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	05N	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	05S	57.0	55.7	54.4	53.1	51.8	50.5	49.2	47.8	46.5	45.2
	06N	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	06S	67.0	65.8	64.6	63.5	62.3	61.1	59.9	58.7	57.5	56.3
	07S	73.0	72.0	71.1	70.1	69.1	68.2	67.2	66.2	65.3	64.3
	08N	91.0	90.7	90.5	90.2	89.9	89.6	89.4	89.1	88.8	88.5
	08S	60.0	58.8	57.6	56.4	55.1	53.9	52.7	51.5	50.3	49.0
	09N	88.0	87.6	87.3	86.9	86.5	86.2	85.8	85.4	85.1	84.7
	09S	83.0	82.4	81.8	81.2	80.6	80.0	79.3	78.7	78.1	77.5
	10N	61.0	59.8	58.6	57.4	56.3	55.1	53.9	52.7	51.5	50.3
	10S	82.0	81.4	80.7	80.1	79.4	78.8	78.1	77.5	76.8	76.2
	11N	60.0	58.8	57.6	56.4	55.1	53.9	52.7	51.5	50.3	49.0
	11S	42.0	40.2	38.5	36.7	34.9	33.2	31.4	29.6	27.9	26.1
	12N	50.0	48.5	47.0	45.4	43.9	42.4	40.9	39.4	37.8	36.3
	12S	90.0	89.6	89.3	88.9	88.6	88.2	87.9	87.5	87.1	86.8
	13N	84.0	83.4	82.9	82.3	81.7	81.1	80.6	80.0	79.4	78.8
	13S	90.0	89.6	89.3	88.9	88.6	88.2	87.9	87.5	87.1	86.8
	14N	90.0	89.6	89.3	88.9	88.6	88.2	87.9	87.5	87.1	86.8
	14S	68.0	67.0	66.1	65.1	64.1	63.1	62.2	61.2	60.2	59.2
	15N	49.0	47.4	45.9	44.3	42.8	41.2	39.7	38.1	36.6	35.0
	15S	85.0	84.5	83.9	83.4	82.9	82.3	81.8	81.2	80.7	80.2
	16S	87.0	86.5	86.1	85.6	85.1	84.7	84.2	83.7	83.3	82.8
	17N	64.0	61.6	59.2	56.7	54.3	51.9	49.5	47.0	44.6	42.2
	17S	59.0	57.8	56.5	55.3	54.0	52.8	51.5	50.3	49.0	47.8
	18N	67.0	66.0	65.0	64.0	63.0	62.0	61.0	60.0	59.0	58.0
	18S	66.0	64.8	63.6	62.3	61.1	59.9	58.7	57.5	56.2	55.0
	19S	84.0	83.4	82.9	82.3	81.7	81.1	80.6	80.0	79.4	78.8
	20S	50.0	48.5	47.0	45.4	43.9	42.4	40.9	39.4	37.8	36.3

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	22S	95.0	94.7	94.3	94.0	93.7	93.3	93.0	92.6	92.3	92.0
	23S	96.0	95.7	95.5	95.2	94.9	94.7	94.4	94.1	93.9	93.6
	25S	47.0	45.4	43.8	42.2	40.6	38.9	37.3	35.7	34.1	32.5
	26S	78.0	77.2	76.4	75.6	74.8	74.1	73.3	72.5	71.7	70.9
	27S	64.0	62.9	61.8	60.7	59.6	58.5	57.4	56.3	55.2	54.1

TABLE C-2: TAXIWAY 10 YEAR "NO ACTION" RESULTS

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
SHTLN1	01S	69.0	67.7	66.4	65.1	63.8	62.5	61.2	59.9	58.6	57.3
	03S	64.0	62.5	61.0	59.5	58.0	56.5	54.9	53.4	51.9	50.4
	05S	64.0	62.5	61.0	59.5	58.0	56.5	54.9	53.4	51.9	50.4
	07S	63.0	61.5	59.9	58.4	56.8	55.2	53.7	52.1	50.6	49.0
	09S	68.0	66.7	65.3	64.0	62.6	61.3	60.0	58.6	57.3	55.9
SHTWB	01E	82.0	80.9	79.9	78.8	77.7	76.7	75.6	74.5	73.5	72.4
	02W	84.0	83.1	82.1	81.2	80.2	79.3	78.3	77.4	76.4	75.5
SHTWD	01E	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	02W	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	03E	88.0	87.7	87.4	87.1	86.8	86.5	86.2	85.9	85.6	85.3
	03W	81.0	80.5	80.1	79.6	79.1	78.6	78.2	77.7	77.2	76.7
SHTWF	01E	62.0	60.6	59.3	57.9	56.5	55.2	53.8	52.5	51.1	49.7
	02W	57.0	55.5	53.9	52.4	50.8	49.3	47.7	46.2	44.7	43.1
SHTWK	01E	71.0	70.3	69.6	68.8	68.1	67.4	66.6	65.9	65.2	64.5
	01W	94.0	93.8	93.6	93.5	93.3	93.1	92.9	92.7	92.5	92.4
	02E	79.0	78.4	77.7	77.1	76.4	75.8	75.2	74.5	73.9	73.3
SHTWN	01N	85.0	84.1	83.3	82.4	81.5	80.7	79.8	78.9	78.1	77.2
SHTWN	01S	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	03N	81.0	79.9	78.7	77.6	76.5	75.4	74.2	73.1	72.0	70.9
	03S	94.0	93.6	93.3	92.9	92.6	92.2	91.9	91.5	91.2	90.8
	05N	86.0	85.2	84.3	83.5	82.7	81.9	81.0	80.2	79.4	78.5
	05S	70.0	68.2	66.4	64.7	62.9	61.1	59.3	57.5	55.8	54.0
	07N	68.0	66.1	64.2	62.3	60.4	58.5	56.6	54.7	52.8	50.9
	07S	65.0	62.9	60.8	58.8	56.7	54.6	52.5	50.5	48.4	46.3
	09N	66.0	64.0	62.0	60.0	57.9	55.9	53.9	51.9	49.9	47.8
	09S	68.0	66.7	65.3	64.0	62.6	61.3	60.0	58.6	57.3	55.9
	10N	80.0	78.8	77.7	76.5	75.4	74.2	73.1	71.9	70.7	69.6
	11N	64.0	61.9	59.8	57.8	55.7	53.6	51.5	49.4	47.3	45.2
	11S	66.0	64.6	63.2	61.7	60.3	58.9	57.5	56.0	54.6	53.2
	12N	60.0	57.7	55.4	53.1	50.7	48.4	46.1	43.8	41.5	39.2
	13N	66.0	64.6	63.2	61.7	60.3	58.9	57.5	56.0	54.6	53.2
	13S	70.0	68.7	67.5	66.2	65.0	63.7	62.5	61.2	59.9	58.7
	15N	68.0	66.7	65.3	64.0	62.6	61.3	60.0	58.6	57.3	55.9
	15S	70.0	68.7	67.5	66.2	65.0	63.7	62.5	61.2	59.9	58.7
	16N	67.0	65.6	64.2	62.9	61.5	60.1	58.7	57.3	55.9	54.6
	18N	88.0	87.5	87.0	86.5	86.0	85.5	85.0	84.5	84.0	83.5
	18S	92.0	91.5	90.9	90.4	89.9	89.3	88.8	88.2	87.7	87.2
	19S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	20N	61.0	59.4	57.7	56.1	54.5	52.8	51.2	49.6	47.9	46.3

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	21S	63.0	61.5	59.9	58.4	56.8	55.2	53.7	52.1	50.6	49.0
	23N	59.0	56.6	54.3	51.9	49.5	47.1	44.8	42.4	40.0	37.6
	23S	75.0	74.0	72.9	71.9	70.8	69.8	68.7	67.7	66.6	65.6
	25N	77.0	76.0	75.1	74.1	73.1	72.2	71.2	70.3	69.3	68.3
	25S	62.0	59.8	57.6	55.4	53.2	51.0	48.8	46.6	44.4	42.2
	26N	65.0	63.5	62.1	60.6	59.1	57.7	56.2	54.7	53.3	51.8
	27S	66.0	64.6	63.2	61.7	60.3	58.9	57.5	56.0	54.6	53.2
	28S	58.0	56.2	54.5	52.7	51.0	49.2	47.4	45.7	43.9	42.2
SHTWP	01E	59.0	57.8	56.5	55.3	54.0	52.8	51.5	50.3	49.0	47.8
	01W	64.0	63.1	62.2	61.3	60.4	59.5	58.6	57.7	56.8	55.9
	02W	59.0	57.8	56.5	55.3	54.0	52.8	51.5	50.3	49.0	47.8
SHTWQ	01E	62.0	60.8	59.7	58.5	57.4	56.2	55.1	53.9	52.8	51.6
	01W	59.0	57.8	56.5	55.3	54.0	52.8	51.5	50.3	49.0	47.8
SHTWS	01N	84.0	82.9	81.8	80.8	79.7	78.6	77.5	76.5	75.4	74.3
	02S	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	03N	62.0	60.6	59.3	57.9	56.5	55.2	53.8	52.5	51.1	49.7
	03S	62.0	60.6	59.3	57.9	56.5	55.2	53.8	52.5	51.1	49.7
	04N	63.0	61.7	60.3	59.0	57.7	56.4	55.0	53.7	52.4	51.0
	04S	76.0	75.1	74.3	73.4	72.6	71.7	70.8	70.0	69.1	68.2
	05N	82.0	81.4	80.7	80.1	79.4	78.8	78.1	77.5	76.8	76.2
	05S	62.0	60.6	59.3	57.9	56.5	55.2	53.8	52.5	51.1	49.7
	06N	83.0	82.4	81.8	81.2	80.6	80.0	79.3	78.7	78.1	77.5
	06S	80.0	79.3	78.6	77.9	77.1	76.4	75.7	75.0	74.3	73.5
	07N	84.0	83.4	82.9	82.3	81.7	81.1	80.6	80.0	79.4	78.8
	07S	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	08N	82.0	81.4	80.7	80.1	79.4	78.8	78.1	77.5	76.8	76.2
	08S	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	09N	92.0	91.5	90.9	90.4	89.9	89.3	88.8	88.2	87.7	87.2
	09S	81.0	80.3	79.6	79.0	78.3	77.6	76.9	76.2	75.5	74.9
	11N	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	13N	83.0	82.4	81.8	81.2	80.6	80.0	79.3	78.7	78.1	77.5
SHTWU	01E	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	02W	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	03E	94.0	93.8	93.6	93.4	93.1	92.9	92.7	92.5	92.3	92.1
	03W	81.0	80.3	79.6	79.0	78.3	77.6	76.9	76.2	75.5	74.9
SHTWW	01E	67.0	65.6	64.2	62.9	61.5	60.1	58.7	57.3	55.9	54.6
	02E	64.0	62.5	61.0	59.6	58.1	56.6	55.1	53.6	52.1	50.7
	02W	80.0	78.7	77.3	76.0	74.6	73.3	71.9	70.6	69.2	67.9
	03E	83.0	82.3	81.6	80.9	80.2	79.5	78.8	78.1	77.4	76.7
	03W	77.0	75.5	73.9	72.4	70.8	69.3	67.7	66.2	64.6	63.1
	04E	72.0	70.1	68.2	66.3	64.5	62.6	60.7	58.8	56.9	55.0

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	04W	75.0	73.3	71.6	70.0	68.3	66.6	64.9	63.2	61.5	59.9
	06E	75.0	73.3	71.6	70.0	68.3	66.6	64.9	63.2	61.5	59.9
	06W	72.0	70.1	68.2	66.3	64.5	62.6	60.7	58.8	56.9	55.0
TLG	01	84.0	80.8	77.6	74.3	71.1	67.9	64.7	61.4	58.2	55.0
	02	61.0	53.1	45.3	37.4	29.6	21.7	13.9	6.0	0.0	0.0
TLH	01	84.0	83.1	82.2	81.2	80.3	79.4	78.4	77.5	76.6	75.7
	02	59.0	56.6	54.3	51.9	49.5	47.1	44.8	42.4	40.0	37.6
TLJ	01	96.0	95.8	95.5	95.3	95.1	94.8	94.6	94.4	94.2	93.9
	02	81.0	79.9	78.8	77.7	76.6	75.5	74.4	73.3	72.2	71.1
TLN1	01	90.0	89.6	89.2	88.7	88.3	87.9	87.5	87.1	86.7	86.2
	02	87.0	86.5	85.9	85.4	84.8	84.3	83.7	83.2	82.6	82.1
TWB	01	61.0	59.8	58.6	57.4	56.3	55.1	53.9	52.7	51.5	50.3
	02	84.0	83.1	82.1	81.2	80.2	79.3	78.3	77.4	76.4	75.5
TWD	01	94.0	93.6	93.3	92.9	92.6	92.2	91.9	91.5	91.2	90.8
	02	82.0	80.9	79.9	78.8	77.7	76.7	75.6	74.5	73.5	72.4
	03	92.0	91.5	91.1	90.6	90.1	89.6	89.2	88.7	88.2	87.7
	04	96.0	95.7	95.5	95.2	94.9	94.7	94.4	94.1	93.9	93.6
	05	84.0	83.6	83.2	82.8	82.4	82.0	81.6	81.2	80.8	80.4
	06	64.0	63.1	62.2	61.3	60.4	59.5	58.6	57.7	56.8	55.9
	07	97.0	96.9	96.9	96.8	96.7	96.6	96.6	96.5	96.4	96.3
	08	86.0	85.7	85.3	85.0	84.6	84.3	83.9	83.6	83.2	82.8
	09	75.0	74.4	73.8	73.1	72.5	71.9	71.2	70.6	70.0	69.4
	10	62.0	61.1	60.1	59.2	58.2	57.2	56.3	55.3	54.4	53.4
TWF	01	93.0	92.6	92.2	91.8	91.3	90.9	90.5	90.1	89.7	89.3
	02	83.0	82.0	81.0	80.0	79.0	78.0	77.0	75.9	74.9	73.9
	03	89.0	88.4	87.7	87.0	86.4	85.7	85.1	84.4	83.8	83.1
	04	96.0	95.8	95.5	95.3	95.1	94.8	94.6	94.3	94.1	93.9
	05	78.0	77.2	76.4	75.6	74.8	74.1	73.3	72.5	71.7	70.9
	06	61.0	59.6	58.2	56.8	55.4	54.0	52.6	51.2	49.8	48.4
	07	77.0	76.2	75.4	74.5	73.7	72.9	72.0	71.2	70.4	69.6
	08	68.0	66.9	65.7	64.6	63.4	62.3	61.1	60.0	58.8	57.7
	09	56.0	54.4	52.8	51.3	49.7	48.1	46.5	44.9	43.4	41.8
TWK	01	91.0	90.5	89.9	89.4	88.9	88.3	87.8	87.3	86.7	86.2
	02	62.0	60.6	59.3	57.9	56.5	55.2	53.8	52.5	51.1	49.7
	03	86.0	85.2	84.3	83.5	82.7	81.9	81.0	80.2	79.4	78.5
	04	94.0	93.6	93.3	92.9	92.6	92.2	91.9	91.5	91.2	90.8
	05	88.0	87.3	86.6	85.9	85.2	84.4	83.7	83.0	82.3	81.6
	06	67.0	65.8	64.6	63.5	62.3	61.1	59.9	58.7	57.5	56.3
	07	68.0	66.9	65.7	64.6	63.4	62.3	61.1	60.0	58.8	57.7
	08	72.0	71.0	70.0	69.0	68.0	67.0	66.0	65.0	64.0	63.0
	09	65.0	63.7	62.5	61.2	60.0	58.7	57.5	56.2	55.0	53.7

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
TWL	01	88.0	87.5	87.0	86.5	86.0	85.5	85.0	84.5	84.0	83.5
	02	76.0	75.0	74.0	73.0	72.0	71.0	70.0	69.0	68.0	66.9
TWM	02	69.0	67.9	66.8	65.7	64.6	63.4	62.3	61.2	60.1	59.0
	04	78.0	77.2	76.4	75.6	74.8	74.1	73.3	72.5	71.7	70.9
	05	79.0	78.2	77.5	76.7	76.0	75.2	74.5	73.7	73.0	72.2
TWN	01	84.0	82.9	81.8	80.8	79.7	78.6	77.5	76.5	75.4	74.3
	02	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	03	86.0	85.2	84.3	83.5	82.7	81.9	81.0	80.2	79.4	78.5
	04	91.0	90.5	89.9	89.4	88.9	88.3	87.8	87.3	86.7	86.2
	05	91.0	90.5	89.9	89.4	88.9	88.3	87.8	87.3	86.7	86.2
	06	73.0	71.9	70.7	69.6	68.5	67.3	66.2	65.1	64.0	62.8
	07	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	08	88.0	87.5	87.0	86.5	86.0	85.5	85.0	84.5	84.0	83.5
	09	84.0	83.3	82.7	82.0	81.3	80.7	80.0	79.3	78.6	78.0
	10	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	11	90.0	89.6	89.2	88.7	88.3	87.9	87.5	87.1	86.7	86.2
	12	62.0	60.4	58.8	57.2	55.6	54.0	52.4	50.9	49.3	47.7
	13	53.0	51.0	49.1	47.1	45.1	43.1	41.2	39.2	37.2	35.3
	14	82.0	81.2	80.5	79.7	79.0	78.2	77.5	76.7	76.0	75.2
TWP	01	89.0	88.5	88.1	87.6	87.2	86.7	86.2	85.8	85.3	84.9
	02	78.0	77.1	76.2	75.2	74.3	73.4	72.5	71.5	70.6	69.7
	03	78.0	77.1	76.2	75.2	74.3	73.4	72.5	71.5	70.6	69.7
	04	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	05	78.0	77.5	76.9	76.4	75.8	75.2	74.7	74.1	73.6	73.0
	06	30.0	28.2	26.5	24.7	23.0	21.2	19.5	17.7	16.0	14.2
	07	66.0	65.2	64.3	63.5	62.6	61.7	60.9	60.0	59.2	58.3
	08	76.0	75.4	74.8	74.2	73.6	73.0	72.4	71.8	71.2	70.6
	09	68.0	66.9	65.7	64.6	63.4	62.3	61.1	60.0	58.8	57.7
	10	75.0	74.1	73.2	72.3	71.4	70.5	69.6	68.7	67.8	66.9
TWQ	01	86.0	85.7	85.3	85.0	84.6	84.3	83.9	83.6	83.2	82.8
	02	74.0	73.4	72.7	72.1	71.4	70.7	70.1	69.4	68.8	68.1
	03	82.0	81.6	81.1	80.7	80.2	79.8	79.3	78.9	78.4	77.9
	04	76.0	75.1	74.2	73.3	72.4	71.5	70.6	69.7	68.9	68.0
	05	68.0	66.8	65.6	64.4	63.2	62.0	60.9	59.7	58.5	57.3
TWR	01	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	02	96.0	95.7	95.5	95.2	94.9	94.7	94.4	94.1	93.9	93.6
	03	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
TWS	01	65.0	63.7	62.5	61.2	60.0	58.7	57.5	56.2	55.0	53.7
	02	73.0	72.0	71.1	70.1	69.1	68.2	67.2	66.2	65.3	64.3
	03	78.0	77.2	76.4	75.6	74.8	74.1	73.3	72.5	71.7	70.9
	04	64.0	62.7	61.4	60.1	58.8	57.5	56.2	55.0	53.7	52.4

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	05	63.0	61.7	60.3	59.0	57.7	56.4	55.0	53.7	52.4	51.0
	06	83.0	82.4	81.8	81.2	80.6	80.0	79.3	78.7	78.1	77.5
	07	79.0	78.2	77.5	76.7	76.0	75.2	74.5	73.7	73.0	72.2
	08	74.0	72.3	70.5	68.8	67.0	65.2	63.5	61.8	60.0	58.2
TWS1	01	41.0	38.9	36.8	34.6	32.5	30.4	28.3	26.2	24.1	21.9
TWS2	01	50.0	48.2	46.4	44.6	42.8	41.0	39.2	37.4	35.6	33.8
TWS3	01	36.0	33.7	31.4	29.1	26.8	24.5	22.2	19.9	17.6	15.3
TWS5	01	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
TWT	01	87.0	86.5	86.1	85.6	85.1	84.7	84.2	83.7	83.3	82.8
	02	74.0	73.1	72.1	71.2	70.3	69.3	68.4	67.5	66.5	65.6
TWU	01	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	02	78.0	77.1	76.2	75.2	74.3	73.4	72.5	71.5	70.6	69.7
	03	82.0	81.2	80.5	79.7	79.0	78.2	77.5	76.7	76.0	75.2
	04	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	05	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	06	93.0	92.8	92.5	92.3	92.0	91.7	91.5	91.2	91.0	90.7
	07	86.0	85.5	85.0	84.5	84.0	83.5	83.0	82.5	82.0	81.5
	08	76.0	74.4	72.8	71.2	69.5	67.9	66.3	64.7	63.1	61.5
	09	82.0	80.8	79.6	78.4	77.2	75.9	74.7	73.5	72.3	71.1
TWV	01	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	02	46.0	44.7	43.3	41.9	40.6	39.2	37.9	36.5	35.2	33.8
	03	73.0	72.3	71.7	71.0	70.3	69.6	68.9	68.3	67.6	66.9
TWW	01	88.0	87.5	87.0	86.5	86.0	85.5	85.0	84.5	84.0	83.5
	02	55.0	53.1	51.2	49.3	47.5	45.6	43.7	41.8	39.9	38.0
	03	55.0	53.9	52.8	51.6	50.5	49.4	48.2	47.1	46.0	44.9
	04	71.0	70.3	69.6	68.8	68.1	67.4	66.6	65.9	65.2	64.5
	05	65.0	64.1	63.3	62.4	61.5	60.6	59.7	58.9	58.0	57.1
	06	63.0	62.1	61.2	60.2	59.3	58.4	57.4	56.5	55.6	54.7
	07	77.0	76.4	75.9	75.3	74.7	74.1	73.5	73.0	72.4	71.8
	08	72.0	71.3	70.6	69.9	69.2	68.5	67.8	67.1	66.4	65.7
	09	75.0	74.4	73.8	73.1	72.5	71.9	71.2	70.6	70.0	69.4
	10	88.0	87.2	86.4	85.6	84.8	84.0	83.2	82.3	81.5	80.7
	11	80.0	78.7	77.3	76.0	74.6	73.3	71.9	70.6	69.2	67.9
	12	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
TWW1	01	83.0	81.9	80.7	79.6	78.4	77.3	76.1	75.0	73.8	72.7
TWW2	01	84.0	82.9	81.8	80.8	79.7	78.6	77.5	76.5	75.4	74.3
TWW3	01	86.0	85.1	84.1	83.2	82.2	81.3	80.3	79.4	78.5	77.5

TABLE C-3: APRON 10 YEAR "NO ACTION" RESULTS

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
APCARGOS	01	48.0	47.0	46.1	45.1	44.2	43.2	42.3	41.3	40.3	39.4
	02	61.0	60.3	59.6	58.8	58.1	57.4	56.7	56.0	55.3	54.5
	03	22.0	20.6	19.1	17.7	16.3	14.8	13.4	11.9	10.5	9.1
	04	81.0	80.7	80.3	80.0	79.6	79.3	78.9	78.6	78.2	77.9
	05	43.0	42.0	40.9	39.9	38.8	37.8	36.7	35.7	34.6	33.6
APCARGOW	Not Inspected										
APFEDEX	01	64.0	62.2	60.5	58.7	57.0	55.2	53.5	51.7	49.9	48.2
	02	54.0	52.2	50.4	48.6	46.8	45.0	43.3	41.5	39.7	37.9
	03	71.0	69.6	68.2	66.8	65.3	63.9	62.5	61.1	59.7	58.3
	04	79.0	78.0	77.0	75.9	74.9	73.9	72.9	71.8	70.8	69.8
	05	67.0	65.7	64.4	63.1	61.9	60.6	59.3	58.0	56.7	55.4
	06	38.0	35.6	33.2	30.8	28.3	25.9	23.5	21.1	18.7	16.3
	07	60.0	53.3	46.6	39.9	33.3	26.6	19.9	13.2	6.5	0.0
	08	69.0	62.7	56.5	50.3	44.0	37.8	31.5	25.3	19.0	12.8
	09	80.0	79.2	78.4	77.7	76.9	76.1	75.3	74.6	73.8	73.0
	10	18.0	14.8	11.6	8.4	5.2	2.0	0.0	0.0	0.0	0.0
	11	94.0	93.8	93.5	93.3	93.1	92.8	92.6	92.4	92.1	91.9
	13	34.0	31.4	28.9	26.3	23.7	21.1	18.6	16.0	13.4	10.9
	15	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	16	9.0	5.5	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17	17.0	13.8	10.5	7.3	4.1	0.8	0.0	0.0	0.0	0.0
	18	29.0	26.2	23.5	20.7	17.9	15.2	12.4	9.6	6.9	4.1
	19	98.0	97.6	97.2	96.7	96.3	95.9	95.5	95.1	94.7	94.2
	20	98.0	97.6	97.2	96.7	96.3	95.9	95.5	95.1	94.7	94.2
	21	86.0	83.0	80.0	77.0	74.0	71.0	68.0	65.0	62.0	59.0
APINTTERM	01	58.0	56.9	55.9	54.8	53.7	52.7	51.6	50.5	49.4	48.4
	02	94.0	93.9	93.7	93.5	93.4	93.2	93.1	92.9	92.8	92.6
	03	37.0	35.4	33.8	32.2	30.6	29.0	27.4	25.8	24.2	22.6
APMERCATL	01	48.0	47.2	46.4	45.6	44.8	44.0	43.1	42.3	41.5	40.7
	03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
APTERM1	01	43.0	42.0	40.9	39.9	38.8	37.8	36.7	35.7	34.6	33.6
	02	75.0	74.5	74.1	73.6	73.2	72.7	72.2	71.8	71.3	70.9
APTERM1A	Not Inspected										
APTERM2	01	80.0	79.2	78.3	77.5	76.7	75.8	75.0	74.1	73.3	72.5
APTERM3	01	89.0	88.5	88.1	87.6	87.2	86.7	86.2	85.8	85.3	84.9
APTERM4	01	78.0	77.1	76.2	75.2	74.3	73.4	72.5	71.5	70.6	69.7
SHAPTERM4	01E	80.0	79.2	78.3	77.5	76.7	75.8	75.0	74.1	73.3	72.5
TWCARGOS	01	70.0	68.9	67.8	66.8	65.7	64.6	63.5	62.5	61.4	60.3
	02	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0

TABLE C-4: VSR 10 YEAR "NO ACTION" RESULTS

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
VSRE	01	41.9	38.9	35.8	32.8	29.7	26.7	23.6	20.6	17.6	14.5
VSRN	01	46.0	43.2	40.4	37.6	34.8	32.0	29.2	26.4	23.6	20.7
	02	46.0	43.2	40.4	37.6	34.8	32.0	29.2	26.4	23.6	20.7
	03	54.0	51.6	49.2	46.8	44.4	42.0	39.7	37.3	34.9	32.5
	04	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	05	67.0	65.3	63.6	61.9	60.1	58.4	56.7	55.0	53.3	51.6
	06	44.0	41.1	38.2	35.3	32.4	29.4	26.5	23.6	20.7	17.8
	07	64.0	62.1	60.3	58.4	56.5	54.6	52.8	50.9	49.0	47.2
	08	56.0	53.7	51.4	49.1	46.9	44.6	42.3	40.0	37.7	35.4
	09	55.0	52.7	50.3	48.0	45.6	43.3	41.0	38.6	36.3	34.0
VSRS	01	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	02	92.0	91.6	91.2	90.8	90.4	90.0	89.6	89.2	88.8	88.4
	03	42.9	40.7	38.4	36.2	33.9	31.7	29.5	27.2	25.0	22.7
	04	78.0	76.8	75.7	74.5	73.3	72.2	71.0	69.9	68.7	67.6
	05	79.0	77.9	76.8	75.7	74.6	73.5	72.4	71.3	70.2	69.0
	06	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	07	55.9	53.6	51.3	49.0	46.7	44.4	42.1	39.8	37.5	35.1
	08	99.4	96.4	93.4	90.4	87.4	84.4	81.4	78.4	75.4	72.4
VSRW	01	86.0	83.0	80.1	77.1	74.2	71.2	68.3	65.4	62.4	59.5
	02	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	03	93.0	90.0	87.0	84.0	81.0	78.0	75.0	72.0	69.0	66.0
	04	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	05	41.9	39.6	37.3	35.1	32.8	30.5	28.2	26.0	23.7	21.4

Ontario International Airport

Airfield Pavement Evaluation

Appendix G
Pavement Condition Index
By Section 2023

Legend

Pavement Section

Pavement Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

March 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation

Appendix G
Pavement Condition Index
By Section 2028

Legend

Pavement Section

Pavement Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

March 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

RS&H

APPENDIX H

CIP COST ANALYSIS

Fiscal Year	Project	Cost	Fiscal Year Cost
1	RW8R/26L Keel	$ 26,594,000.00	$ 43,421,000.00
	SHRW08R, BPRW8R & 26L	$ 16,697,000.00	
	TW F (7,8), TW K (7,8), P (8,9), Q (3,4)	$ 130,000.00	
2	RW8L/26R	$ 473,000.00	$ 16,576,000.00
	SHRW8L	$ 536,000.00	
	TW K (3,4), P (3,4), F (2,3)	$ 162,000.00	
	APTERM1	$ 15,405,000.00	
3	VSR East	$ 1,443,000.00	$ 6,078,000.00
	VSR South	$ 651,000.00	
	VSR West	$ 2,151,000.00	
	VSR North	$ 1,833,000.00	
4	TW N (12,13), V (2,3), W (2,3)	$ 10,629,000.00	$ 10,629,000.00
5	TW K, P, Q, F	$ 849,000.00	$ 2,031,000.00
	SHTWN	$ 602,000.00	
	SHTWS	$ 580,000.00	
6	APCARGOS, APMERCATL	$ 29,928,000.00	$ 29,928,000.00
7	APTERM2,APTERM3,APTERM4, TL N1	$ 835,000.00	$ 835,000.00
8	TWS1, S2, S3	$ 2,559,000.00	$ 2,559,000.00
9	TW S	$ 45,742,000.00	$ 45,742,000.00
10	APFEDEX (2, 5, 6, 10, 13, 17, 18)	$ 13,727,000.00	$ 20,823,000.00
	APINTERM (1,3)	$ 7,096,000.00	
		Total	**$ 178,622,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **RW8R/26L Keel** Date Prepared: 2/5/2020

Recommended Repair	*Units*	*Repair Unit Price*	*Area*	*Estimated Reconstruction Cost*
Full Depth Reconstruction PCC	SF	$39.50		$ 20,146,000.00
			Mobilization (10%):	$ 2,015,000.00
			Contigency (20%):	$ 4,433,000.00
			Total Cost:	**$ 26,594,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **SHRW08R, BPRW8R & 26L** Date Prepared: 2/5/2020

Recommended Repair	*Units*	*Repair Unit Price*	*Area*	*Estimated Reconstruction Cost*
Full Depth Reconstruction AC	SF	$10.50		$ 12,649,000.00
			Mobilization (10%):	$ 1,265,000.00
			Contigency (20%):	$ 2,783,000.00
			Total Cost:	**$ 16,697,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **TW F (7,8), TW K (7,8), P (8,9), Q (3,4)** Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	2696	$ 26,960.00
	M	Crack Seal (Linear)	LF	$10.00	47	$ 470.00
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1615	$ 8,075.00
	M	Joint Seal	LF	$5.00	170	$ 850.00
	H	Joint Seal	LF	$5.00	321	$ 1,605.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	6	$ 6,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	15	$ 30,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	216	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	2	$ 1,000.00
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 10,000.00
					Contigency (20%):	$ 22,000.00
					Total Cost:	**$ 130,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: **RW8L/26R**

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	5	$ 125.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	5735	$ 57,350.00
	M	Crack Seal (Linear)	LF	$10.00	41	$ 410.00
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A	15	$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	3147	$ 15,735.00
	M	Joint Seal	LF	$5.00	5843	$ 29,215.00
	H	Joint Seal	LF	$5.00	796	$ 3,980.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	13	$ 13,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	94	$ 188,000.00
	M	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	1	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	431	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	72	$ 36,000.00
	M	Partial Depth Patch (Linear)	LF	$500.00	19	$ 9,500.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 36,000.00
					Contigency (20%):	$ 79,000.00
					Total Cost:	**$ 473,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: **SHRW8L**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	125,670	$ 100,536.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00	7	$ 14.00
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	10,841	$ 21,682.00
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	1,940	$ 9,700.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	1,093,286	$ 273,321.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 41,000.00
					Contigency (20%):	$ 90,000.00
					Total Cost:	**$ 536,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: **TW K (3,4), P (3,4), F (2,3)**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	M	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	62	$ 620.00
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	893	$ 4,465.00
	M	Joint Seal	LF	$5.00	416	$ 2,080.00
	H	Joint Seal	LF	$5.00	10	$ 50.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	8	$ 8,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	5	$ 10,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	55	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	178	$ 89,000.00
	M	Partial Depth Patch (Linear)	LF	$500.00	3	$ 1,500.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 13,000.00
					Contigency (20%):	$ 27,000.00
					Total Cost:	**$ 162,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **APTERM1** Date Prepared: 2/5/2020

Recommended Repair	*Units*	*Repair Unit Price*	*Area*	*Estimated Reconstruction Cost*
Full Depth Reconstruction PCC	SF	$39.50		$ 10,511,000.00
Full Depth Reconstruction AC	SF	$17.50		$ 1,159,000.00
			Mobilization (10%):	$ 1,167,000.00
			Contigency (20%):	$ 2,568,000.00
			Total Cost:	**$ 15,405,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: VSR East

Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
Northern Taxiway W connection to newly constructed area of VSR East behind Runway 26R Blast Pad			$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ -		$ 14.00	$ 470,400.00
Newly constructed area of VSR East East of Runway 26R Blast Pad			$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ -		$ 14.00	$ -
Newly constructed area of VSR East behind Runway 26R Blast Pad to southern Taxiway W connection	1,400		$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ -		$ 14.00	$ 621,600.00
Sub Total				$ -			$ -			$ -			**$ 1,092,000.00**
Mobilization (10%):				**$ 110,000.00**									
Contingency (20%):				**$ 241,000.00**									
Total				**$ 1,443,000.00**									

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: VSR South

RS&H

Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
VSR West to Taxiway S1			$ 2.00	$ 2,200.00		$ 0.25	$ 4,125.00		$ 4.00	$ -		$ 14.00	$ -
Taxiway S1 to Taxiway S2			$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ 18,000.00		$ 14.00	$ 63,000.00
Taxiway S2 to End of FedEx Apron			$ 2.00	$ 5,400.00		$ 0.25	$ 10,125.00		$ 4.00	$ -		$ 14.00	$ 37,800.00
End of FedEx Apron to Taxiway Cargo South	550		$ 2.00	$ 9,300.00		$ 0.25	$ 11,625.00		$ 4.00	$ -		$ 14.00	$ -
Cucamonga Channel Bridge to Taxiway S5	300		$ 2.00	$ 36,800.00		$ 0.25	$ 17,250.00	4,500	$	$ 276,000.00		$ 14.00	$ -
Sub Total	1,350	$100		**53,700.00**	16,500	$	**43,125.00**	$		**294,000.00**	$		**100,800.00**
Mobilization (10%):	1,550	$ **50,000.00**									4,500		
Contingency (20%):	4,600	2,700 $ **109,000.00**			40,500			-			2,700		
Total	4,650	4,650 $8,400 **651,000.00**			46,500 69,000			69,000	4.00				
								-			-		
											-		

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: VSR West

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
Taxiway B to Flood Control Bridge #1			$ 2.00	$ 1,000.00		$ 0.25	$ -		$ 4.00	$ -		$ 14.00	$ 70,000.00
#1 Bridge to #2 Bridge. West of Runway 8L Blast Pad			$ 2.00	$ 3,400.00		$ 0.25	$ 8,500.00		$ 4.00	$ -		$ 14.00	$ -
Flood Control Bridge #2 to VSR South Connection			$ 2.00	$ -		$ 0.25	$ -	-	$ 4.00	$ -		$ 14.00	$ 1,545,600.00
	1,000	**Sub Total**		**$ 4,400.00**			**$ 8,500.00**			**$ -**			**$ 1,615,600.00**
	1,700	**Mobilization (10%):**		**$ 163,000.00**									
	4,600	**Contingency (20%):**		**$ 359,000.00**									
	500				34,000			-			5,000		
	1,700	**Total**		**$ 2,151,000.00**	-						110,400		
								-			-		
					-								

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: VSR North

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
Taxiway B to Taxilane G			$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ 196,800.00		$ 14.00	$ 688,800.00
Taxilane G to 150' before Taxilane H			$ 2.00	$ -		$ 0.25	$ -		$ 4.00	$ -		$ 14.00	$ 151,200.00
150' before Taxilane H to Taxilane H			$ 2.00	$ -		$ 0.25	$ 450.00	49,200	$ 4.00	$ -		$ 14.00	$ 25,200.00
200' after Taxilane H	4,100		$ 2.00	$ 1,200.00		$ 0.25	$ 1,200.00	-	$ 4.00	$ -		$ 14.00	$ -
200' after Taxilane H to Cucamonga Channel Bridge	450		$ 2.00	$ -		$ 0.25	$ -	-	$ 4.00	$ 93,600.00		$ 14.00	$ -
Cucamonga Channel Bridge to Terminal Way Gate (North - South)	150		$ 2.00	$ 6,300.00		$ 0.25	$ 3,780.00	-	$ 4.00	$ -	49,200	$ 14.00	$ -
Taxiway P to Taxiway R	200		$ 2.00	$ 2,200.00		$ 0.25	$ 5,500.00	23,400	$	$ 88,000.00	10,800	$ 14.00	$ -
Taxiway R to Taxiway U	975		$ 2.00	$ 12,800.00	1,800	$ 0.25	$ 16,000.00		$ 4.00	$ -	1,800	$ 14.00	$ -
Taxiway U to Taxiway W	620		$ 2.00	$ 7,400.00	4,800	$ 0.25	$ 13,875.00		$	$ 74,000.00		$ 14.00	$ -
Sub Total	1,100	600	**$**	**29,900.00**		**$**	**40,805.00**		**$**	**452,400.00**		**$**	**865,200.00**
Mobilization (10%):	1,600	3,150	**$ 139,000.00**			15,120							
Contingency (20%):	1,850	1,100	**$ 306,000.00**			22,000		22,000	4.00				
Total		6,400	**$ 1,833,000.00**			64,000		-					
		3,700				55,500		18,500	4.00				
								-					

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **TW N (12,13), V (2,3), W (2,3)** Date Prepared: 2/5/2020

Recommended Repair	*Units*	*Repair Unit Price*	*Area*	*Estimated Reconstruction Cost*
Full Depth Reconstruction PCC	SF	$39.50		$ 8,051,000.00
			Mobilization (10%):	$ 806,000.00
			Contigency (20%):	$ 1,772,000.00
			Total Cost:	**$ 10,629,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: **TW K, P, Q, F**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	15	$ 375.00
	M	Crack Seal (Corner)	EA	$25.00	5	$ 125.00
	H	Full Depth Patch	EA	$3,000.00	1	$ 3,000.00
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	2874	$ 28,740.00
	M	Crack Seal (Linear)	LF	$10.00	137	$ 1,370.00
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	2613	$ 13,065.00
	M	Joint Seal	LF	$5.00	1227	$ 6,135.00
	H	Joint Seal	LF	$5.00	69	$ 345.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	107	$ 107,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	50	$ 100,000.00
	M	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	3	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	15	$ 300,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	419	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	98	$ 49,000.00
	M	Partial Depth Patch (Linear)	LF	$500.00	13	$ 6,500.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 65,000.00
					Contigency (20%):	$ 142,000.00
					Total Cost:	**$ 849,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: **SHTWN**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	420,585	$ 336,468.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	7,327	$ 14,654.00
	M	Crack Seal (Linear)	LF	$2.00	216	$ 432.00
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	650	$ 3,250.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	401,724	$ 100,431.00
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 46,000.00
					Contigency (20%):	$ 101,000.00
					Total Cost:	**$ 602,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: **SHTWS**

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	245,020	$ 196,016.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00	200	$ 1,000.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	25,695	$ 51,390.00
	M	Crack Seal (Linear)	LF	$2.00	456	$ 912.00
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	285	$ 1,425.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	751,471	$ 187,867.75
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 44,000.00
					Contigency (20%):	$ 97,000.00
					Total Cost:	**$ 580,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **APCARGOS, APMERCATL** Date Prepared: 2/5/2020

Recommended Repair	*Units*	*Repair Unit Price*	*Area*	*Estimated Reconstruction Cost*
Full Depth Reconstruction PCC	SF	$39.50		$ 12,917,000.00
Full Depth Reconstruction AC	SF	$17.50		$ 9,755,000.00
			Mobilization (10%):	$ 2,268,000.00
			Contigency (20%):	$ 4,988,000.00
			Total Cost:	**$ 29,928,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **APTERM2,APTERM3,APTERM4, TL N1**

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	14	$ 350.00
	M	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	7852	$ 78,520.00
	M	Crack Seal (Linear)	LF	$10.00	1273	$ 12,730.00
	H	Slab Replacement (Linear)	LF	$2,000.00	24	$ 48,000.00
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	5016	$ 25,080.00
	M	Joint Seal	LF	$5.00	1991	$ 9,955.00
	H	Joint Seal	LF	$5.00	693	$ 3,465.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	16	$ 16,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	2	$ 4,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	19	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	9	$ 180,000.00
	M	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	497	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	288	$ 144,000.00
	M	Partial Depth Patch (Linear)	LF	$500.00	82	$ 41,000.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	20	$ 20,000.00
	M	Partial Depth Patch	EA	$1,000.00	6	$ 6,000.00
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 64,000.00
					Contigency (20%):	$ 140,000.00
					Total Cost:	**$ 835,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **TWS1, S2, S3** Date Prepared: 2/5/2020

Recommended Repair	*Units*	*Repair Unit Price*	*Area*	*Estimated Reconstruction Cost*
Full Depth Reconstruction PCC	SF	$39.50		$ 857,000.00
Full Depth Reconstruction AC	SF	$17.50		$ 1,081,000.00
			Mobilization (10%):	$ 194,000.00
			Contigency (20%):	$ 427,000.00
			Total Cost:	**$ 2,559,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **TW S** Date Prepared: 2/5/2020

Recommended Repair	*Units*	*Repair Unit Price*	*Area*	*Estimated Reconstruction Cost*
Full Depth Reconstruction PCC	SF	$39.50		$ 34,652,000.00
			Mobilization (10%):	$ 3,466,000.00
			Contigency (20%):	$ 7,624,000.00
			Total Cost:	**$ 45,742,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **APFEDEX (2, 5, 6, 10, 13, 17, 18)** Date Prepared: 2/5/2020

Recommended Repair	*Units*	*Repair Unit Price*	*Area*	*Estimated Reconstruction Cost*
Full Depth Reconstruction PCC	SF	$39.50		$ 304,000.00
Full Depth Reconstruction AC	SF	$17.50		$ 10,095,000.00
			Mobilization (10%):	$ 1,040,000.00
			Contigency (20%):	$ 2,288,000.00
			Total Cost:	**$ 13,727,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **APINTERM (1,3)** Date Prepared: 2/5/2020

Recommended Repair	*Units*	*Repair Unit Price*	*Area*	*Estimated Reconstruction Cost*
Full Depth Reconstruction AC	SF	$17.50		$ 5,375,000.00
			Mobilization (10%):	$ 538,000.00
			Contigency (20%):	$ 1,183,000.00
			Total Cost:	**$ 7,096,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

APPENDIX I

GEOTECHNICAL REPORT

A Report Prepared for:

RS&H
5901 West Century Boulevard
Suite 1030
Los Angeles, California 90045

GEOTECHNICAL REPORT
AIRPORT PAVEMENT MANAGEMENT SYSTEM
ONTARIO INTERNATIONAL AIRPORT
ONTARIO, CALIFORNIA

Project No. 2019-001

by

Beatrice Torres
Staff Engineer

Clint Isa
Civil Engineer 76470

Diaz•Yourman & Associates
1616 East 17th Street
Santa Ana, CA 92705-8509
(714) 245-2920

REGISTERED PROFESSIONAL ENGINEER
CLINT I. ISA
No. C 76470
CIVIL
STATE OF CALIFORNIA

January 13, 2020

TABLE OF CONTENTS

1 INTRODUCTION 1

2 DATA REVIEW, FIELD EXPLORATION, AND LABORATORY TESTING 3

2.1 DATA REVIEW 3

2.2 FIELD EXPLORATION 3

2.3 LABORATORY TESTING 3

3 SITE CONDITIONS 5

3.1 SURFACE CONDITIONS 5

3.2 SUBSURFACE CONDITIONS 7

3.2.1 Site Soil Conditions 7

3.2.2 Pavement Subgrade Capacity 7

4 LIMITATIONS 9

5 REPORT REVISION LOG 10

6 BIBLIOGRAPHY 11

LIST OF TABLES

Table 1 - EXISTING PAVEMENT SECTIONS 6

Table 2 - PAVEMENT SUBGRADE SOIL CHARACTERISTICS 7

Table 3 - AIRCRAFT PAVEMENT SUPPORTING CAPACITY (FOR DESIGN OF NEW PAVEMENT) 8

Table 4 - AIRCRAFT PAVEMENT SUPPORTING CAPACITY (IN SITU CONDITIONS) 8

LIST OF FIGURES

Figure 1 - VICINITY MAP 1

Figure 2 - SITE PLAN 4

LIST OF APPENDICES

APPENDIX A - FIELD EXPLORATION

APPENDIX B - LABORATORY TESTING

LIST OF ABBREVIATIONS AND ACRONYMS

AC	asphalt concrete
AOA	air operations area
APMS	Airport Pavement Management System
ASTM	ASTM International
bgs	below ground surface
bpf	blows per foot
bps	below pavement surface
CBR	California Bearing Ratio
CSS	cement-stabilized soils
CTB	cement-treated base
DYA	Diaz•Yourman & Associates
ER	efficiency rating
GPS	global positioning system
I-	Interstate
LSS	lime-stabilized soil
OIAA	Ontario International Airport Authority
ONT	Ontario International Airport
PCC	Portland cement concrete
pcf	pounds per cubic foot
SPT	standard penetration test
USCS	Unified Soil Classification System



1 INTRODUCTION

This report presents the results of the geotechnical investigation performed by Diaz•Yourman & Associates (DYA) for the Landside and Airside Airport Pavement Management System (APMS; Project) at the Ontario International Airport (ONT) in Ontario, California. RS&H authorized this work on November 26, 2018.

ONT is located approximately 3 miles west and ¾ miles south of the intersection of Interstate-(I-) 10 and I-15, as shown on the Vicinity Map, Figure 1. The Project site generally consists of the landside pavements that service ONT and the aircraft pavement located on the ONT air operations area (AOA). The Project site is currently fully developed, and surfaces are paved with asphalt concrete (AC) and Portland cement concrete (PCC). Daily operations at the Project site consist primarily of vehicular traffic in landside areas and private, corporate, and commercial aircraft traffic and vehicular traffic in the airside areas.

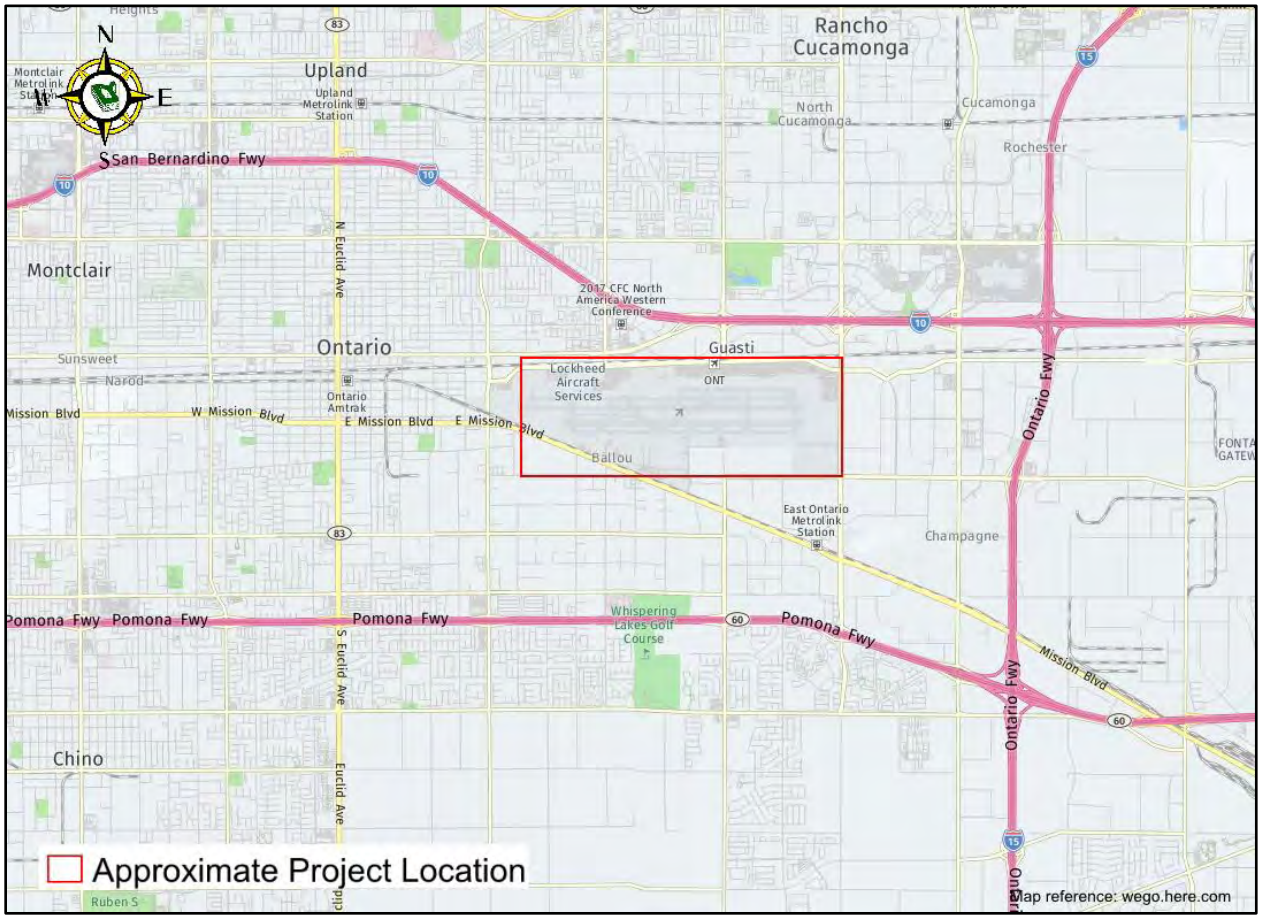


Figure 1 - VICINITY MAP

The purpose of the APMS is to evaluate the condition and capacity of the existing landside and airside pavements to support existing and forecasted pavement loads. The findings of the APMS will aid Ontario International Airport Authority (OIAA) in the planning and coordination of future pavement rehabilitation and reconstruction projects.

The purpose of DYA's services was to provide geotechnical input for the development of the APMS for the existing airfield pavements. The evaluation of the landside pavements for the APMS was outside of DYA's scope of services. The scope of our services consisted of the following tasks:

- Reviewing existing data.
- Coordinating and performing a field exploration.
- Performing laboratory tests on selected soil samples.
- Performing engineering analyses to develop conclusions and recommendations regarding the subsurface conditions.
- Preparing this report.

DYA's scope of services excluded any investigation needed to evaluate the presence of hazardous materials in the soil at the Project site.

2 DATA REVIEW, FIELD EXPLORATION, AND LABORATORY TESTING

2.1 DATA REVIEW

Geotechnical data collected by DYA and others during previous investigations on the ONT AOA were reviewed to supplement site data collected during this exploration. A list of the documents reviewed is presented in the bibliography (Section 6).

2.2 FIELD EXPLORATION

The field exploration, which was conducted between October 8 and October 15, 2019, consisted of drilling six borings and performing ten pavement cores at the locations shown on Figure 2. The boring and coring locations were selected by RS&H. The boring depths, which were approximately 11.5 feet below the pavement surface (bps), were selected to evaluate the pavement-supporting capacity of the on-site subgrade soils. Details of the field exploration, including sampling procedures and boring logs, are presented in Appendix A.

2.3 LABORATORY TESTING

Soil samples collected from the borings were re-examined in the laboratory to substantiate field classifications. Selected soil samples were tested for moisture content, grain-size distribution, Atterberg limits, compaction characteristics, and pavement-supporting capacity (California Bearing Ratio [CBR]). The soil samples tested are identified on the boring logs. Laboratory test data are summarized on the boring logs in Appendix A and presented on individual test reports in Appendix B.



Figure 2 - SITE PLAN

3 SITE CONDITIONS

3.1 SURFACE CONDITIONS

At the time of our field exploration, the surface conditions consisted primarily of the ONT aircraft pavements (e.g., runways, taxiways, taxilanes, and aircraft aprons). The infield areas between the aircraft pavements were generally unpaved and lightly vegetated.

The surface pavement at DYA's field exploration locations generally consisted of AC or PCC over base, though the surface pavement was observed to have been placed directly on subgrade soil in some areas. Where present, the base layer was observed to have likely been stabilized with cement or lime at several of the field exploration locations. A summary of the pavement sections encountered during DYA's field exploration is presented in Table 1.



Table 1 - EXISTING PAVEMENT SECTIONS

FIELD EXPLORATION ID	LOCATION	PAVEMENT		BASE		SUBGRADE[1]	NOTES
		Type	Thickness (inches)	Description Type	Thickness (inches)		
DYB19-01	Taxiway D	PCC	16	CSS	5.75	Silty SAND (SM)	
DYB19-02	Taxilane S1	AC	3.75[2]	Poorly Graded Gravel (GP)	4	Well-graded SAND with SILT and GRAVEL (SW-SM)	
DYB19-03	International Terminal Gate 35	AC over PCC	3 over 5[2]	None	--	Well-graded SAND with SILT (SW-SM)	
DYB19-04	Taxiway K	PCC	15.5	CSS	5.5	Silty SAND (SM)	
DYB19-05	South Cargo Ramp	PCC	7.5	None	--	Silty SAND (SM)	
DYB19-06	Runway 8R-26L	PCC	16.25	CSS over LSS	CSS: 3.75 LSS: 4.75	Silty SAND (SM)	Fabric observed between PCC and CSS layers
DYC19-01	Taxilane G	AC over PCC	5.5 over 6[2]	None	--	Silty SAND (SM)	
DYC19-02	Taxiway H	AC	4	Poorly Graded Gravel (GP)	4	Silty SAND with GRAVEL (SM)	
DYC19-03	International Terminal Gate 31	AC over PCC	3 over 7.5	None	--	Silty SAND (SM)	Fabric observed between AC and PCC layers
DYC19-04	Taxiway P	PCC	16.5	CSS	6.75	Silty SAND (SM)	
DYC19-05	Taxiway Q	PCC	16.25	CSS	6.5	Silty SAND (SM)	
DYC19-06	Taxilane N1	PCC	15	CSS	2.5 over 10.5[2]	Silty SAND (SM); Brown	Two layers of CSS
DYC19-07	Taxilane S3	AC	3	Poorly Graded Gravel (GP)	3	Silty SAND with GRAVEL (SM)	
DYC19-08	Atlantic Aviation Apron	AC	3.5	CTB over Poorly graded GRAVEL with Silt & SAND (GP-GM)	CTB: 1.5 over 4 GP-GM: 3	Silty SAND with GRAVEL (SM)	Two layers of CTB
DYC19-09	Terminal 1 Gate 4	PCC	12	None	--	Silty SAND with GRAVEL (SM)	
DYC19-10	International Terminal Gate 35	AC	5	Poorly Graded Gravel (GP)	2	Silty SAND (SM)	

Notes:

1. Unified Soil Classification System (USCS).
2. Average thickness (bottom of core was not level).

- PCC = Portland cement concrete; AC = asphalt concrete; CSS = cement-stabilized soil; LSS = lime-stabilized soil; CTB = cement-treated base.

3.2 SUBSURFACE CONDITIONS

3.2.1 Site Soil Conditions

The soils encountered at each of DYA's field exploration locations were generally similar and consisted primarily of medium-dense to very dense coarse-grained soils (i.e., sands) with varying amount of silts and clays. Summaries of the pavement subgrade conditions encountered at the site are presented in Table 2.

Table 2 - PAVEMENT SUBGRADE SOIL CHARACTERISTICS

SOIL LAYER[1,2]	DEPTH TO TOP OF LAYER[3] (feet)	THICKNESS (feet)	SPT N_{60} BLOW COUNT[4,5] (bpf)	MOISTURE CONTENT[5] (%)
Silty SAND (SM); Silty SAND with GRAVEL (SM); Well-graded SAND with SILT (SW-SM); Well-graded SAND with SILT and GRAVEL (SW-SM); Clayey SAND (SC)	0.5 to 2	>11.5	34 (22)	6 (2)

Note(s):

1. Based on borings and laboratory testing performed by DYA for this investigation.
2. See Plate A1 in Appendix A for USCS soil descriptions.
3. Measured from bottom of base layer for borings performed in paved areas.
4. Standard penetration test (SPT) blow count corrected for drill rig hammer efficiency rating (ER).
5. Average value; standard deviation value shown in parentheses.

- bpf = blows per foot.
- pcf = pounds per cubic foot.

Groundwater was not encountered in the borings during the field exploration to the maximum depth explored, approximately 11.5 feet bps. Based on groundwater monitoring data within the Project vicinity, groundwater levels in the vicinity of ONT have generally been deeper than 50 feet below ground surface (bgs; GeoTracker, 2019).

3.2.2 Pavement Subgrade Capacity

DYA evaluated the pavement subgrade supporting capacity (i.e., CBR) of the in situ pavement subgrade soils and recompacted samples of the existing pavement subgrade soils. Laboratory CBR values for recompacted samples of the pavement subgrade soils collected at DYA's boring locations are summarized in Table 3.



Table 3 - AIRCRAFT PAVEMENT SUPPORTING CAPACITY (FOR DESIGN OF NEW PAVEMENT)

BORING ID	DEPTH (feet)	SOIL TYPE	CBR VALUE - 90% RELATIVE COMPACTION[1]	CBR VALUE - 95% RELATIVE COMPACTION[1]	CBR VALUE - 100% RELATIVE COMPACTION[1]
DYB19-01	0 to 5	SM	13[2]	52[3]	96[2]
DYB19-02	0 to 5	SW-SM	--[4]	--[4]	112[2]
DYB19-03	0 to 5	SW-SM	--[4]	32[3]	50[2]
DYB19-04	0 to 5	SM	8[2]	36[2]	94[2]
DYB19-05	0 to 5	SM	0.5[2]	34[3]	58[3]
DYB19-06	2 to 5	SM	16[2]	51[3]	111[3]

Note(s):
1. Relative compaction based on ASTM International (ASTM) D1557.
2. CBR values based on extrapolation of laboratory test data for 0.2 inches penetration.
3. CBR values based on interpolation of laboratory test data for 0.2 inches penetration.
4. Extrapolated CBR value less than 0.

The CBR of the in situ pavement subgrade soils at the field exploration locations was estimated by qualitatively correlating the soil consistency (via SPT N-value) to in-place relative compaction for each sample collected from the upper 6 feet of each of the borings. The laboratory CBR test results in Table 3 were then used to assign an approximate CBR value to each sample based on its corresponding consistency. The in situ CBRs for the subgrade soils at each boring location, which are presented in Table 4, were then calculated using a weighted harmonic mean of the CBR values assigned to each sample.

Table 4 - AIRCRAFT PAVEMENT SUPPORTING CAPACITY (IN SITU CONDITIONS)

BORING ID	SOIL TYPE[1]	IN SITU CBR VALUE[2]
DYB19-01	SM	13
DYB19-02	SW-SM	25
DYB19-03	SW-SM	10
DYB19-04	SM	38
DYB19-05	SM	10
DYB19-06	SM	17

Notes:
1. USCS.
2. Based on weighted harmonic mean of upper 6 feet of existing subgrade soils assuming Boeing 777 as design aircraft.

The CBR values presented in Table 3 and Table 4 can be used to help conceptually evaluate new/rehabilitated aircraft pavement sections and the capacity of existing pavement sections, respectively.

4 LIMITATIONS

This report has been prepared for this project in accordance with generally accepted geotechnical engineering practices common to the local area. No other warranty, expressed or implied, is made.

The data presented in this report are based on the literature review, field exploration, and laboratory testing conducted in the area. The results of the field exploration indicate subsurface conditions only at the specific locations and times and only to the depths penetrated. They do not necessarily reflect strata variations that may exist between such locations. Although subsurface conditions have been explored as part of the exploration, we have not conducted chemical laboratory testing on samples obtained or evaluated the site with respect to the presence or potential presence of contaminated soil or groundwater conditions, mold, or methane gas.

This report is intended for use only for the project described. In the event that any changes in the nature, design, or location of the facilities are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by DYA. We are not responsible for any claims, damages, or liability associated with the interpretation of subsurface data or reuse of the subsurface data or engineering analyses without our express written authorization.

5 REPORT REVISION LOG

REVISION NO.	DATE	REVISION DESCRIPTION
Rev. 0	December 31, 2019	Draft submittal to client.
Rev. 1	January 13, 2020	Updated draft to include internal QA/QC comments; final submittal to client.

6 BIBLIOGRAPHY

ASTM International, 2019, Annual Book of Standards, Volumes 4.08 and 4.09, Soil and Rock.

Diaz•Yourman & Associates, 2003, Geotechnical Investigation, Runway 26R/8L Improvements, Ontario International Airport, California, March 5, 2003. DYA Project No. 2002-093.00.

Diaz•Yourman & Associates, 2004a, Geotechnical Investigation, Airport Inline Baggage Screening, Ontario International Airport Terminal 2, California, January 15, 2004. DYA Project No. 2003-086.01.

Diaz•Yourman & Associates, 2004b, Geotechnical Investigation, Security Buildings, Ontario International Airport, California, January 15, 2004. DYA Project No. 2003-087.

Diaz•Yourman & Associates, 2005a, Geotechnical Investigation, Airport Baggage Screening Alternative, Ontario International Airport Terminal 2, California, April 7, 2005. DYA Project No. 2004-048.01.

Diaz•Yourman & Associates, 2005b, Geotechnical Investigation, Airport Baggage Screening Alternative, Ontario International Airport Terminal 4, California, April 7, 2005. DYA Project No. 2004-048.02.

Diaz•Yourman & Associates, 2007, Demolition of Buildings 10 and 15, Ontario Airport, California, July 10, 2007. DYA Project No. 2006-004.01.

Diaz•Yourman & Associates, 2013a, Geotechnical Report, Runway 8L-26R Safety Improvements Area, Ontario International Airport, California, May 1, 2013. DYA Project No. 2013-008.01.

Diaz•Yourman & Associates, 2013b, Addendum 1, Runway 8L-26R Improvements, Ontario International Airport, California, May 8, 2013. DYA Project No. 2013-008.02.

Diaz•Yourman & Associates, 2016a, Geotechnical Investigation, Taxiway S Pavement Rehabilitation, Ontario International Airport, California, June 27, 2016. DYA Project No. 2016-010.01.

Diaz•Yourman & Associates, 2016b, Geotechnical Investigation, Pavement Repair at Intersection of Taxiway S and W, Ontario International Airport, California, June 23, 2016. DYA Project No. 2016-014.01.

Diaz•Yourman & Associates, 2018, Geotechnical Services, Northwest Quadrant Demolition, Ontario International Airport, California, October 12, 2018. DYA Project No. 2018-022.01.

Fugro Consultants Inc., 2012, Geotechnical Study, South Taxiway Pavement Distress, Ontario Airport, California, February 3, 2012.

GeoTracker, 2019, http://geotracker.waterboards.ca.gov/gama/gamamap, accessed December 2019.



Geotechnical Consultants Inc., 1986, Geotechnical Reconnaissance, Ontario International Airport, Expansion Program, Design Phase, Los Angeles Department of Airports, California, April 1986.

Google, 2019, Google Earth Aerial Imagery.

HNTB, 2011, L.A./Ontario International Airport (ONT), Airport Pavement Management System (APMS), September 2011.

APPENDIX A -
FIELD EXPLORATION

APPENDIX A - FIELD EXPLORATION

The field exploration consisted of drilling six borings (DYB19-01 through DYB19-06) and performing ten cores (DYC19-01 through DYC19-10) between October 8, 2019, and October 15, 2019, at the locations shown on Figure 2. A summary of the boring and coring locations, elevations, and depths is presented in Table A1. The boring and coring locations were identified in the field by measuring from known locations using a hand-held global positioning system (GPS) unit.

Table A1 – SUMMARY OF FIELD EXPLORATION LOCATIONS

BORING ID	LATITUDE[1]	LONGITUDE[1]	ELEVATION[2] (feet)	TOTAL DEPTH (feet bps)
DYB19-01	34.05601	-117.61613	926	11.5
DYB19-02	34.05348	-117.61516	915	11.5
DYB19-03	34.05942	-117.6057	935	11.5
DYB19-04	34.05600	-117.60603	917	11.5
DYB19-05	34.05167	-117.60132	892	11.5
DYB19-06	34.05481	-117.58736	912	11.5
DYC19-01	34.05857	-117.60797	930	--
DYC19-02	34.05857	-117.60559	931	--
DYC19-03	34.06064	-117.60434	941	--
DYC19-04	34.05593	-117.60039	915	--
DYC19-05	34.05589	-117.59982	912	--
DYC19-06	34.05898	-117.5930	914	--
DYC19-07	34.05343	-117.6095	906	--
DYC19-08	34.05099	-117.6034	898	--
DYC19-09	34.06052	-117.60653	927	--
DYC19-10	34.05927	-117.60545	933	--

Note(s):

1. Latitude and longitude estimated using a hand-held GPS unit with an approximate 10-foot horizontal accuracy.
2. Estimated using Google Earth (Google, 2019).

- bps = below the pavement surface.

Prior to drilling the borings and corings, the field exploration locations were marked in the field and the boring locations were checked for potential underground utility conflict using geophysical techniques. The geophysical survey was performed by Southwest Geophysics, Inc. on October 1, 2019. Underground Service Alert (USA) was subsequently notified, and DYA received confirmation on October 7, 2019, that the boring and coring locations did not conflict with existing utilities.



Coring was performed by Penhall Company on October 8 and 9, 2019. Cores of the surface pavement (i.e., Portland cement concrete [PCC] and asphalt concrete [AC]) and underlying chemically stabilized base layers (i.e., cement-treated base [CTB], cement-stabilized soil [CSS], and lime-stabilized soil [LSS]) were performed using a 6-inch-diameter coring barrel. After coring the surface pavement and chemically stabilized base layers (where present), the composition and thickness of unstabilized base layers and the composition of the underlying subgrade soils were evaluated using a hand auger. A DYA field engineer observed the coring operation and collected the cores of the surface pavement and stabilized base and the grab samples of unstabilized base.

Borings were drilled by 2R Drilling on October 14 and October 15, 2019, with a truck-mounted Simco 2800 HT drill rig using hollow-stem-auger drilling techniques. Prior to performing each boring, the surface pavement and underlying chemically stabilized base layers (where present) were cored by Penhall Company using a 10-inch-diameter coring barrel. A DYA field engineer observed the coring and drilling operations and collected drive samples for visual examination and subsequent laboratory testing. Drive samples were collected with a standard penetration test (SPT) split-spoon sampler with dimensions in accordance with ASTM D1586. The sampler was driven with a 140-pound automatic trip hammer falling 30 inches. The hammer ER provided by 2R Drilling, Inc. for the drill rig was last calculated on June 5, 2018, at 88.1%.

Soils encountered in the borings were classified in general accordance with ASTM International (ASTM) D2487, which is summarized on Plate A1, and D2488. Boring logs presented on Plates A2 through A7 were prepared from visual examination of the samples, cuttings obtained during drilling operations, and results of laboratory tests. The SPT N-values presented on the boring logs were derived from the SPT blow counts recorded in the field, which were modified by multiplying by the ratio of ER/60 to obtain the SPT N_{60}-value for each sample.

Groundwater was not encountered during the field exploration to a depth of 11.5 feet bgs. Corings were backfilled with No. 3 sand to the bottom of the surface pavement layer; borings were backfilled from 11.5 feet to 5 feet bgs with hydrated bentonite chips and from 5 feet bgs to the bottom of the surface pavement layer with soil cuttings. Surface pavement layers were patched with rapid-set concrete.

SOIL CLASSIFICATION SYSTEM-ASTM D2487

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE-GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

"Push" Sampler

Split Barrel "Drive" Sampler With Liner

Standard Penetration Test (SPT) Sampler

Dual-Mass Dynamic Cone Penetration (DCP) Test

Concrete/Rock Core

Groundwater Surface

SPT "N" = 0.65 x modified California blows per foot

NP = Nonplastic
EI = Expansion Index Test
SG = Specific Gravity
SE = Sand Equivalent
UC = Unconfined Comp.
CD = Consol. Drained Triaxial.
CU = Consol. Undrained Triaxial.
UU = Undrained, Unconsol. Triaxial.
RV = R-Value
CA = Chemical Analysis
DS = Direct Shear
CN = Consolidation
CP = Collapse Potential
SA = Grain size; HD = Hydrometer
MD = Compaction Test
HC = Hydraulic Conductivity Test
CBR = California Bearing Ratio
[PID] Reading in ppm above background

OIAA Airport Pavement Management Service

Project No. 2019-001

PLATE

A1

Library: DYLIB.GLB; Template: DYLG; Prj ID: 2019-001.GPJ

BORING LOCATION:	See Figure No. 2	**ELEVATION (feet):**	926
LATITUDE:	34.05600	**LONGITUDE:**	-117.61612
DRILLING EQUIPMENT:	Simco 2800	**DRILLING METHOD:**	Hollow Stem Auger
BORING DIAMETER (inches):	8	**BORING DEPTH (feet):**	11.5
DATE STARTED:	10-15-19 **COMPLETED:** 10-15-19	**HAMMER TYPE:**	Automatic **EFFICIENCY:** 88.1%
DRILLING CONTRACTOR:	2R Drilling, Inc.	**HAMMER DROP:**	30 inches **WEIGHT:** 140 lbs
LOGGED BY:	AA **CHECKED BY:** OB	**DRIVE SAMPLER DIAMETER (inches)**	**ID:** 2.4 **OD:** 3

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
925							PORTLAND CEMENT CONCRETE (PCC): 16 inches						
				14	41		POORLY GRADED SAND with GRAVEL (SP): BASE - 5.75 inches; cement stabilized soil (CSS)		6	NP	NP	19	CBR MD SA
				15			SILTY SAND (SM): dark yellowish brown; moist; dense; coarse to fine SAND; trace fine GRAVEL; micaceous						
				13	31								
	5			11									
				10									
				11	15		olive brown; medium dense; trace coarse GRAVEL						
920				7									
				5	15		CLAYEY SAND (SC): dark olive brown; moist; medium dense; coarse to fine SAND; trace coarse to fine GRAVEL; micaceous						
				5									
				7									
				4									
				6									
	10			4	10		olive brown; loose; iron oxide stains						
915				3									
				4			Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
	15												
910													
	20												
905													
	25												
900													

LOG OF BORING DYB19-01

OIAA Airport Pavement Management Service
Project No. 2019-001

PLATE

A2

Library: DYLIB.GLB; Template: DYLG; Prj ID: 2019-001.GPJ

BORING LOCATION:	See Figure No. 2	**ELEVATION (feet):**	915
LATITUDE:	34.05348	**LONGITUDE:**	-117.61516
DRILLING EQUIPMENT:	Simco 2800	**DRILLING METHOD:**	Hollow Stem Auger
BORING DIAMETER (inches):	8	**BORING DEPTH (feet):**	11.5
DATE STARTED:	10-14-19 **COMPLETED:** 10-14-19	**HAMMER TYPE:**	Automatic **EFFICIENCY:** 88.1%
DRILLING CONTRACTOR:	2R Drilling, Inc.	**HAMMER DROP:**	30 inches **WEIGHT:** 140 lbs
LOGGED BY:	AA **CHECKED BY:** OB	**DRIVE SAMPLER DIAMETER (inches)**	**ID:** 2.4 **OD:** 3

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
				30	100		ASPHALT CONCRETE (AC): 3.75 inches						
				40			POORLY GRADED GRAVEL (GP): BASE - 4 inches						
				35	72		WELL-GRADED SAND with SILT and GRAVEL (SW-SM): olive brown; moist; very dense; coarse to fine SAND; coarse to fine GRAVEL; potentially cemented; micaceous		3	NP	NP	7	CBR MD SA
				20									
				25									
				24	29		SILTY SAND (SM): olive brown; moist; very dense; coarse to fine SAND; trace coarse to fine GRAVEL; micaceous						
				13									
910	5			11	15		medium dense; medium to fine SAND; trace fine GRAVEL						
				9									
				5									
				5									
				5									
							SILTY SAND with GRAVEL (SM): olive brown; moist; dense; coarse to fine SAND; coarse to fine GRAVEL; micaceous						
905	10			12	41								
				11									
				17									
							Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
900	15												
895	20												
890	25												

LOG OF BORING DYB19-02

OIAA Airport Pavement Management Service
Project No. 2019-001

PLATE

A3

Library: DYLIB.GLB; Template: DYLG; Prj ID: 2019-001.GPJ

BORING LOCATION:	See Figure No. 2	**ELEVATION (feet):**	935
LATITUDE:	34.05942	**LONGITUDE:**	-117.60573
DRILLING EQUIPMENT:	Simco 2800	**DRILLING METHOD:**	Hollow Stem Auger
BORING DIAMETER (inches):	8	**BORING DEPTH (feet):**	11.5
DATE STARTED: 10-15-19 **COMPLETED:** 10-15-19		**HAMMER TYPE:** Automatic **EFFICIENCY:**	88.1%
DRILLING CONTRACTOR:	2R Drilling, Inc.	**HAMMER DROP:** 30 inches **WEIGHT:**	140 lbs
LOGGED BY: AA **CHECKED BY:** OB		**DRIVE SAMPLER DIAMETER (inches)** **ID:** 2.4 **OD:** 3	

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
							ASPHALT CONCRETE (AC): 3 inches PORTLAND CEMENT CONCRETE (PCC): 5 inches						
				8 8 8 9	23 29		WELL-GRADED SAND with SILT (SW-SM): dark olive brown; moist; medium dense; medium to fine SAND; trace fine GRAVEL; micaceous		4	NP	NP	11	CBR MD SA
				12 8 5	12		olive brown; trace coarse GRAVEL						
930	5			4 4 5 4 5	13		CLAYEY SAND (SC): dark yellowish brown; moist; medium dense; medium to fine SAND; trace fine GRAVEL; micaceous						
925	10			7 5 7	18		Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
920	15												
915	20												
910	25												

LOG OF BORING DYB19-03

OIAA Airport Pavement Management Service
Project No. 2019-001

PLATE

A4

Library: DYLIB.GLB; Template: DYLG; Prj ID: 2019-001.GPJ

BORING LOCATION:	See Figure No. 2	**ELEVATION (feet):**	917
LATITUDE:	34.05600	**LONGITUDE:**	-117.60602
DRILLING EQUIPMENT:	Simco 2800	**DRILLING METHOD:**	Hollow Stem Auger
BORING DIAMETER (inches):	8	**BORING DEPTH (feet):**	11.5
DATE STARTED:	10-15-19 **COMPLETED:** 10-15-19	**HAMMER TYPE:**	Automatic **EFFICIENCY:** 88.1%
DRILLING CONTRACTOR:	2R Drilling, Inc.	**HAMMER DROP:**	30 inches **WEIGHT:** 140 lbs
LOGGED BY:	AA **CHECKED BY:** OB	**DRIVE SAMPLER DIAMETER (inches)**	**ID:** 2.4 **OD:** 3

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
							PORTLAND CEMENT CONCRETE (PCC): 15.5 inches						
915				9 19	54		SILTY SAND (SM): olive brown; moist; very dense; coarse to fine SAND; BASE - 5.5 inches; CSS		8	NP	NP	30	CBR MD SA
				18 16	50		SILTY SAND (SM): olive brown; moist; dense; coarse to fine SAND; iron oxide stains; micaceous						
	5			15 19	69		trace coarse to fine GRAVEL; decreased fines; no iron oxide stains						
				22 26	50		no GRAVEL						
910				21 9			rig chatter at 8 feet; coarse GRAVEL in cuttings						
				18 16									
	10			21 20	46		trace coarse to fine GRAVEL						
905				11			Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
	15												
900													
	20												
895													
	25												
890													

LOG OF BORING DYB19-04

OIAA Airport Pavement Management Service
Project No. 2019-001

PLATE

A5

Library: DYLIB.GLB; Template: DYLG; Prj ID: 2019-001.GPJ

BORING LOCATION:	See Figure No. 2	**ELEVATION (feet):**	892
LATITUDE:	34.05167	**LONGITUDE:**	-117.60132
DRILLING EQUIPMENT:	Simco 2800	**DRILLING METHOD:**	Hollow Stem Auger
BORING DIAMETER (inches):	8	**BORING DEPTH (feet):**	11.5
DATE STARTED:	10-14-19 **COMPLETED:** 10-14-19	**HAMMER TYPE:**	Automatic **EFFICIENCY:** 88.1%
DRILLING CONTRACTOR:	2R Drilling, Inc.	**HAMMER DROP:**	30 inches **WEIGHT:** 140 lbs
LOGGED BY:	AA **CHECKED BY:** OB	**DRIVE SAMPLER DIAMETER (inches)**	**ID:** 2.4 **OD:** 3

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
							PORTLAND CEMENT CONCRETE (PCC): 7.5 inches						
890				7 7 7	21		SILTY SAND (SM): dark olive brown; moist; medium dense; medium to fine SAND; micaceous		6	NP	NP	17	CBR MD SA
				7 7 7	32		dense						
				15 9	16		medium dense; trace coarse GRAVEL						
	5			6 5 4	19		rig chatter at 5 feet; coarse to fine GRAVEL in cuttings						
885				5 8			hard drilling						
	10						SILTY SAND with GRAVEL (SM): light olive brown; moist; coarse to fine SAND; coarse to fine GRAVEL; micaceous						
880							Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
	15												
875													
	20												
870													
	25												
865													

LOG OF BORING DYB19-05

Page 1 of 1

OIAA Airport Pavement Management Service
Project No. 2019-001

PLATE

A6

Library: DYLIB.GLB; Template: DYLG; Prj ID: 2019-001.GPJ

BORING LOCATION:	See Figure No. 2	**ELEVATION (feet):**	912
LATITUDE:	34.05481	**LONGITUDE:**	-117.58736
DRILLING EQUIPMENT:	Simco 2800	**DRILLING METHOD:**	Hollow Stem Auger
BORING DIAMETER (inches):	8	**BORING DEPTH (feet):**	11.5
DATE STARTED:	10-14-19 **COMPLETED:** 10-14-19	**HAMMER TYPE:**	Automatic **EFFICIENCY:** 88.1%
DRILLING CONTRACTOR:	2R Drilling, Inc.	**HAMMER DROP:**	30 inches **WEIGHT:** 140 lbs
LOGGED BY:	AA **CHECKED BY:** OB	**DRIVE SAMPLER DIAMETER (inches)**	**ID:** 2.4 **OD:** 3

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
							PORTLAND CEMENT CONCRETE (PCC): 16.25 inches						
910				9 12 17	43		SILTY SAND (SM): BASE - 3.75 inches; CSS; fabric layer between PCC and CSS SILTY SAND (SM): SUBBASE - 4.75 inches; lime-treated soil (LSS)		9	NP	NP	34	CBR MD SA
	5			8 22 20	62 23		SILTY SAND (SM): olive brown; moist; dense; coarse to fine SAND; trace coarse to fine GRAVEL; CLAY nodules; micaceous						
905				8 8 8			medium dense; no GRAVEL						
	10			3 3 4	10		loose; fine SAND; decreased CLAY nodules						
900							Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
	15												
895													
	20												
890													
	25												
885													

LOG OF BORING DYB19-06

OIAA Airport Pavement Management Service
Project No. 2019-001

PLATE

A7

APPENDIX B -
LABORATORY TESTING

APPENDIX B - LABORATORY TESTING

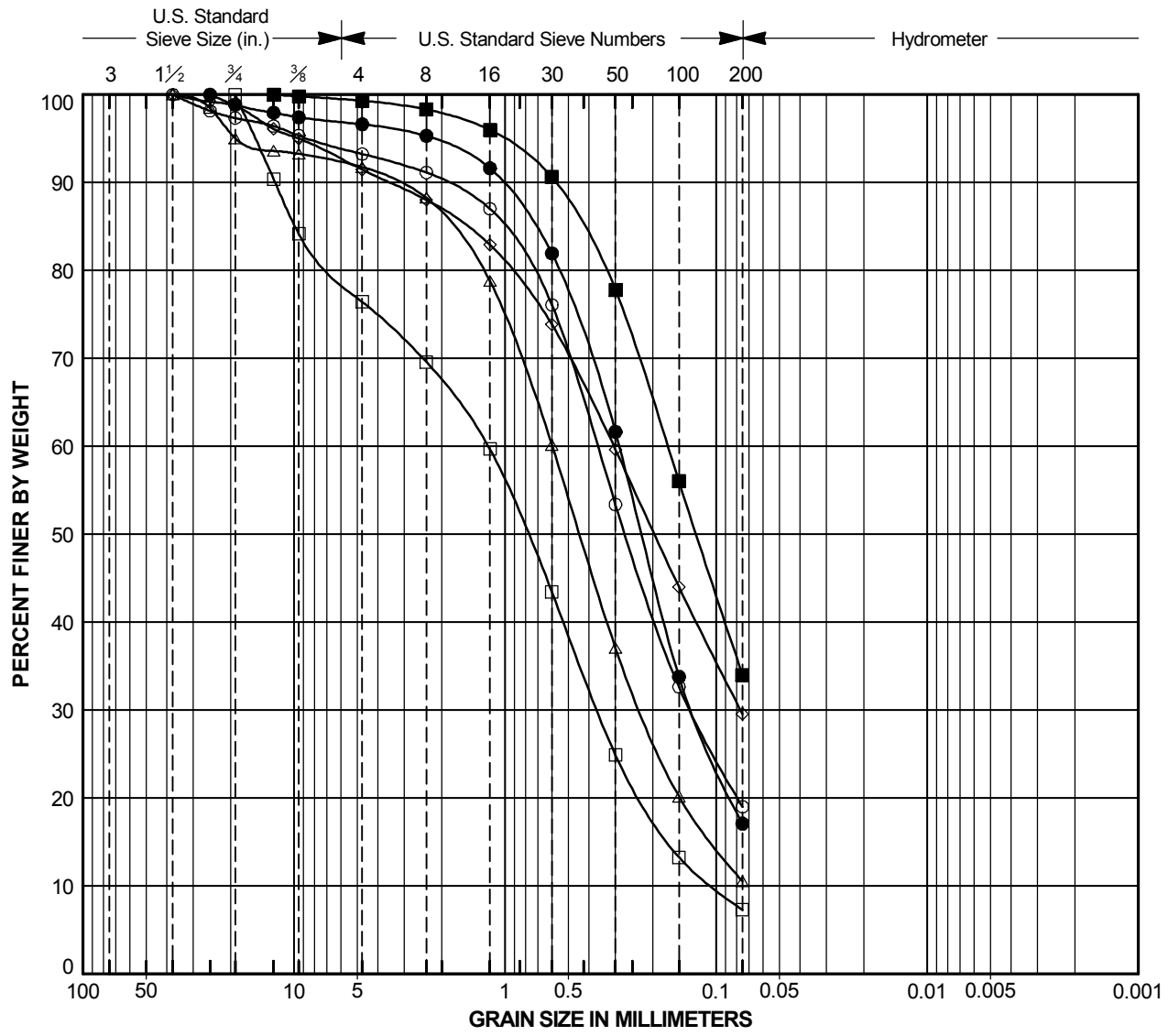
Diaz•Yourman & Associates (DYA) selected soil samples to be tested and the tests to be performed on the selected samples. Laboratory testing was performed by Leighton Consulting, Inc. Laboratory data are summarized on the boring logs in Appendix A and presented on Plates B1 through B20. A summary of the geotechnical laboratory testing is presented in Table B1.

Table B1 - LABORATORY TESTING SUMMARY

TEST NAME	PROCEDURE	PURPOSE	LOCATION
Moisture Content	ASTM D2216	Classification, index properties	Boring Logs
Grain-Size Distribution	ASTM D422	Classification, index properties	Plate B1
Atterberg Limits	ASTM D4318	Expansion potential, classification, index properties	Plate B2
Compaction	ASTM D1557	Earthwork	Plates B3 to B8
California Bearing Ration (CBR)	ASTM D 1883	Earthwork	Plates B9 to B20
Note(s): • ASTM = ASTM International			



Template: DY_SIEVE_WIN



COBBLES	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Laboratory Testing by: Hushmand Associates, Incorporated

Symbol	Source	Depth (feet)	Classification	Natural M. C. (%)	Liquid Limit (%)	Plasticity Index (%)	% Passing #200 Sieve
⊙	DYB19-01	2.0	SILTY SAND (SM)	6	NP	NP	19
□	DYB19-02	0.7	WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM)	3	NP	NP	7
△	DYB19-03	0.7	WELL-GRADED SAND WITH SILT (SW-SM)	4	NP	NP	11
◇	DYB19-04	2.0	SILTY SAND (SM)	8	NP	NP	30
●	DYB19-05	0.8	SILTY SAND (SM)	6	NP	NP	17
■	DYB19-06	2.0	SILTY SAND (SM)	9	NP	NP	34

PARTICLE SIZE ANALYSIS

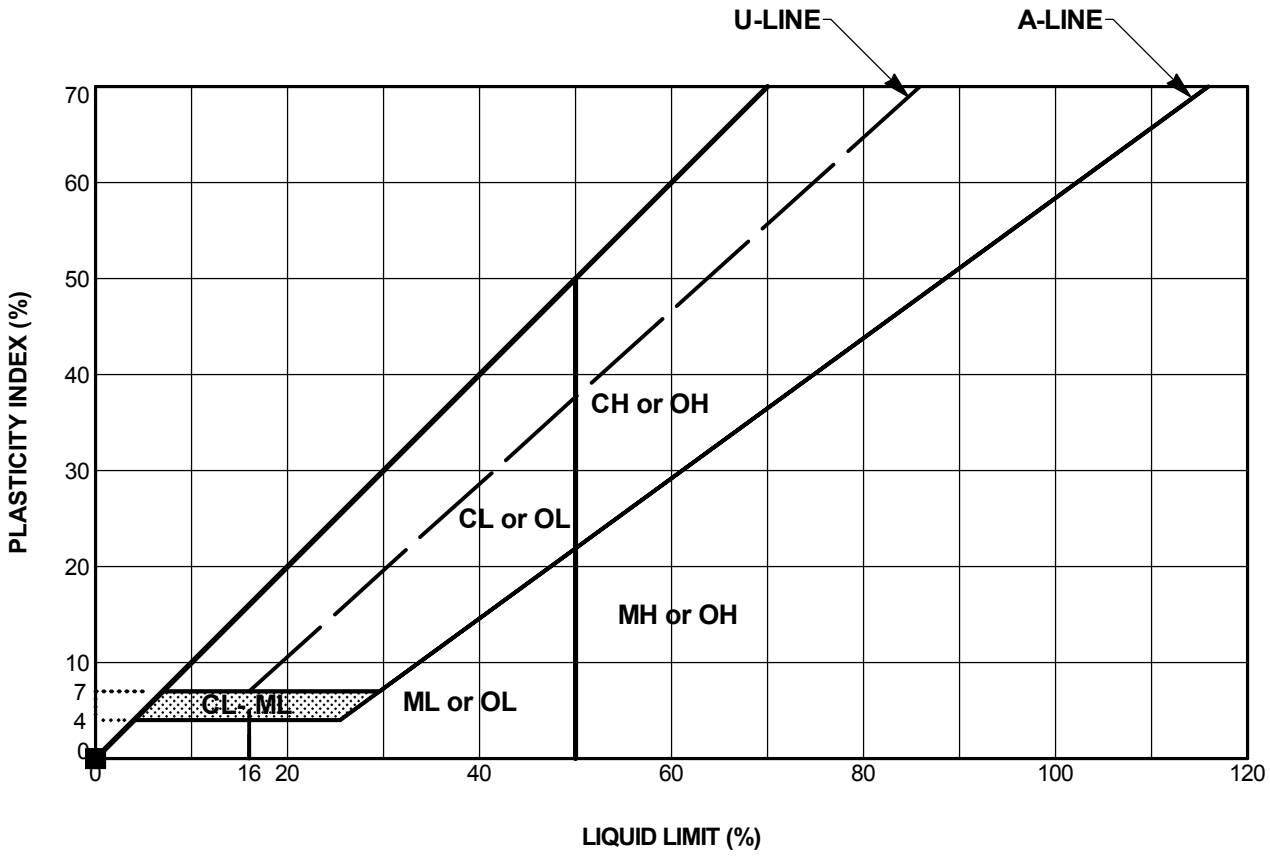
OIAA Airport Pavement Management Service

Project No. 2019-001

PLATE

B1

Template: DY_ATTERBERG_CHART_WIN



Laboratory Testing by: Hushmand Associates, Incorporated

Test Method: ASTM D4318

Symbol	Source	Depth (feet)	Classification	Natural M. C. (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing #200 Sieve
⊙	DYB19-01	2.0	SILTY SAND (SM)	6	NP	NP	NP	19
□	DYB19-02	0.7	WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM)	3	NP	NP	NP	7
△	DYB19-03	0.7	WELL-GRADED SAND WITH SILT (SW-SM)	4	NP	NP	NP	11
◇	DYB19-04	2.0	SILTY SAND (SM)	8	NP	NP	NP	30
●	DYB19-05	0.8	SILTY SAND (SM)	6	NP	NP	NP	17
■	DYB19-06	2.0	SILTY SAND (SM)	9	NP	NP	NP	34

PLASTICITY CHART

OIAA Airport Pavement Management Service

Project No. 2019-001

PLATE

B2

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	OIAA ONT APMS	Tested By:	O. Figueroa	Date:	10/28/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/29/19
Boring No.:	DYB19-01	Depth (ft.):	0-5		
Sample No.:	Bulk				
Soil Identification:	Dark Brown Silty Sand (SM)				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07440 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	7039	7322	7269			
Weight of Mold (g)	2621	2621	2621			
Net Weight of Soil (g)	4418	4701	4648			
Wet Weight of Soil + Cont. (g)	428.7	488.4	492.7			
Dry Weight of Soil + Cont. (g)	407.1	454.4	448.8			
Weight of Container (g)	39.5	39.1	38.3			
Moisture Content (%)	5.88	8.19	10.69			
Wet Density (pcf)	130.9	139.3	137.7			
Dry Density (pcf)	123.6	128.8	124.4			

Maximum Dry Density (pcf) 128.8 **Optimum Moisture Content (%)** 8.4

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

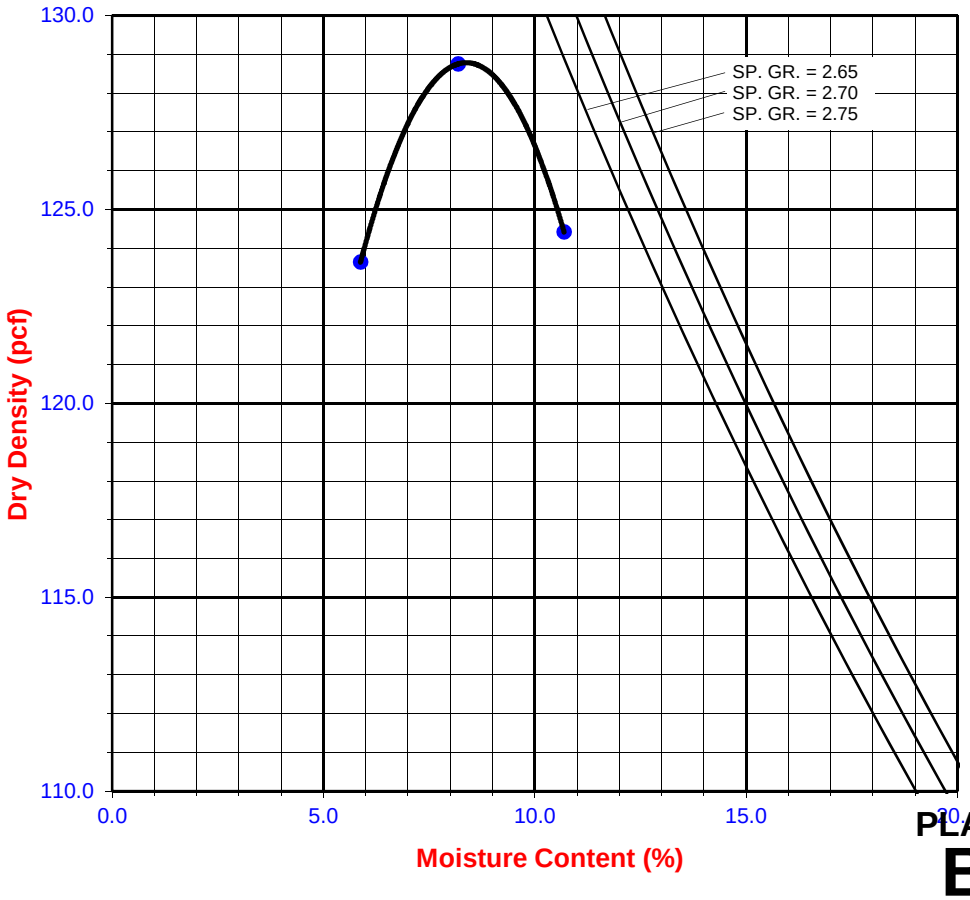


PLATE B3

MX DYB19-01 @ 0-5

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	OIAA ONT APMS	Tested By:	G. Berdy	Date:	10/21/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/23/19
Boring No.:	DYB19-02	Depth (ft.):	0-5		
Sample No.:	Bulk				
Soil Identification:	Olive Brown Well-Graded Sand with Silt and Gravel (SW-SM)g				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07440 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	7180	7301	7402	7480		
Weight of Mold (g)	2621	2621	2621	2621		
Net Weight of Soil (g)	4559	4680	4781	4859		
Wet Weight of Soil + Cont. (g)	402.2	600.7	629.5	705.0		
Dry Weight of Soil + Cont. (g)	391.6	571.5	585.8	642.1		
Weight of Container (g)	39.1	39.3	39.5	39.0		
Moisture Content (%)	3.01	5.49	8.00	10.43		
Wet Density (pcf)	135.1	138.7	141.7	144.0		
Dry Density (pcf)	131.1	131.5	131.2	130.4		

Maximum Dry Density (pcf) 131.5 **Optimum Moisture Content (%)** 5.6

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

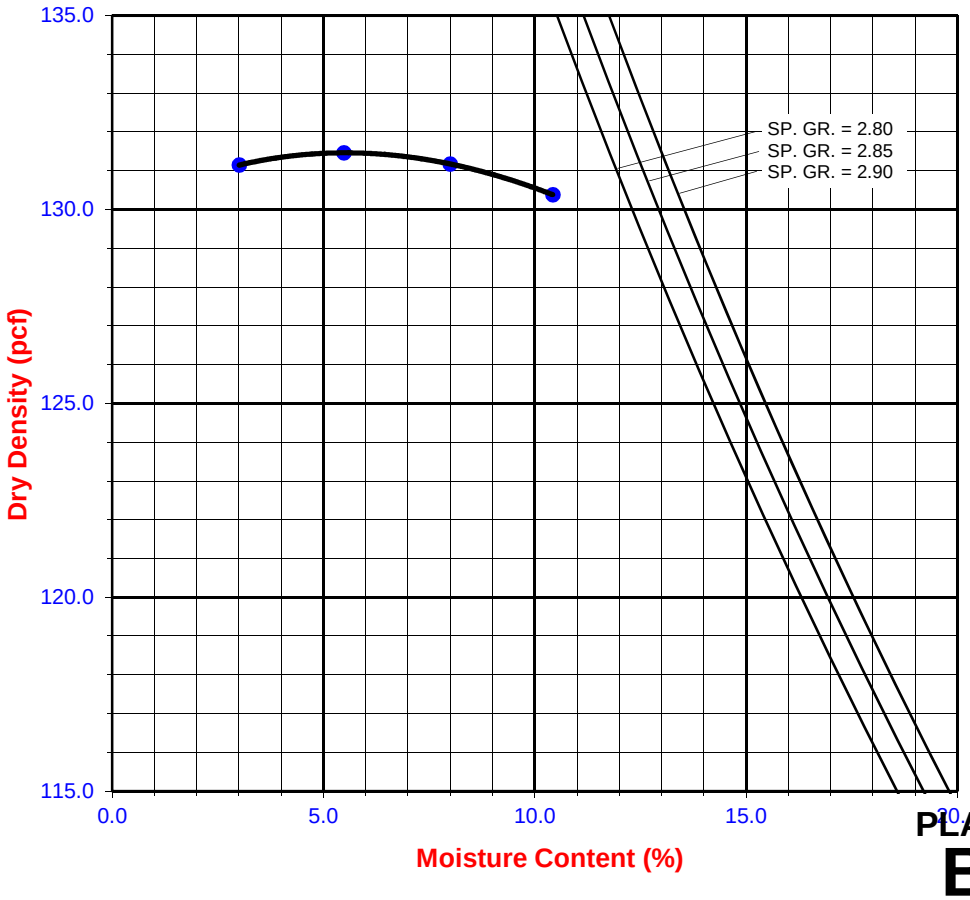


PLATE
B4

MX DYB19-02 @ 0-5

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	OIAA ONT APMS	Tested By:	G. Berdy	Date:	10/30/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/31/19
Boring No.:	DYB19-03	Depth (ft.):	0-5		
Sample No.:	Bulk				
Soil Identification:	Olive Brown Well-Graded Sand with Silt (SW-SM)				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07440 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	6912	7028	7191	7185		
Weight of Mold (g)	2621	2621	2621	2621		
Net Weight of Soil (g)	4291	4407	4570	4564		
Wet Weight of Soil + Cont. (g)	556.8	525.6	587.3	705.7		
Dry Weight of Soil + Cont. (g)	536.9	493.0	538.8	633.2		
Weight of Container (g)	39.6	38.6	37.4	38.2		
Moisture Content (%)	4.00	7.17	9.67	12.18		
Wet Density (pcf)	127.1	130.6	135.4	135.2		
Dry Density (pcf)	122.3	121.8	123.5	120.5		

Maximum Dry Density (pcf) **123.6** **Optimum Moisture Content (%)** **9.9**

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

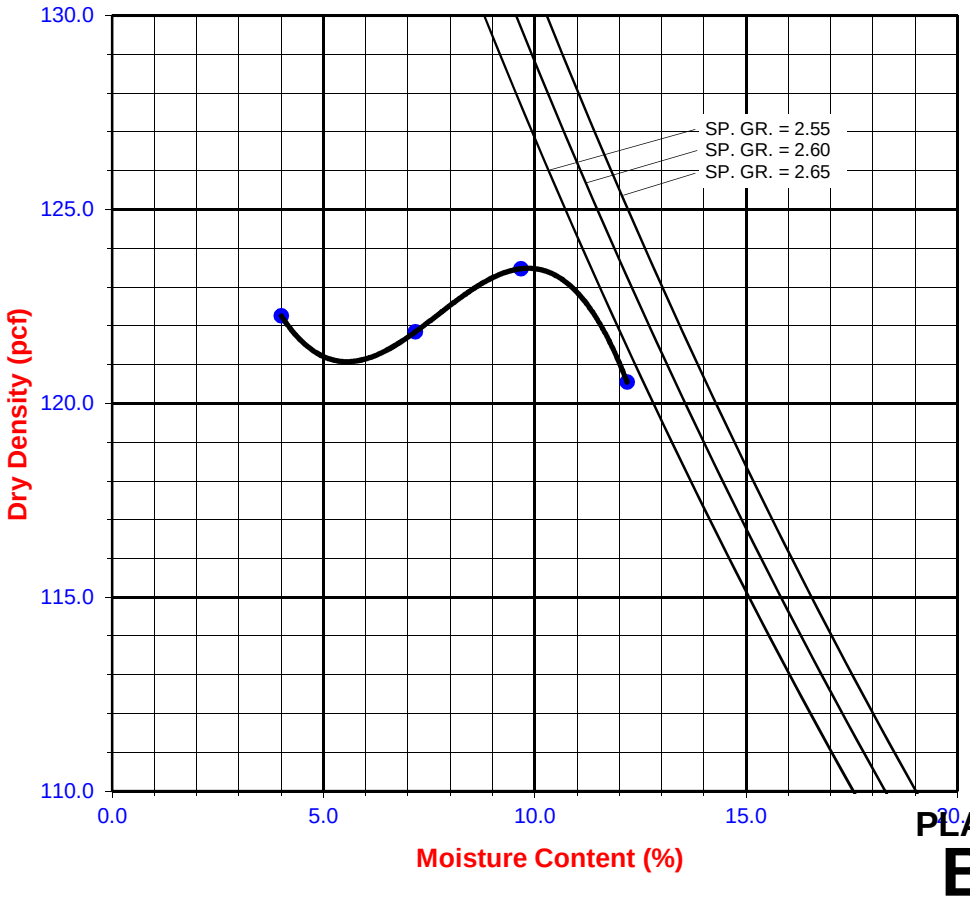


PLATE B5

MX DYB19-03 @ 0-5

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	OIAA ONT APMS	Tested By:	R. Densmore	Date:	10/23/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/24/19
Boring No.:	DYB19-04	Depth (ft.):	0-5		
Sample No.:	Bulk				
Soil Identification:	Brown Silty Sand (SM)				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07440 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	6749	7504	7454	7271		
Weight of Mold (g)	2621	2621	2621	2621		
Net Weight of Soil (g)	4128	4883	4833	4650		
Wet Weight of Soil + Cont. (g)	607.4	562.3	628.8	595.7		
Dry Weight of Soil + Cont. (g)	582.1	527.6	575.6	534.1		
Weight of Container (g)	39.5	39.0	39.1	39.1		
Moisture Content (%)	4.66	7.10	9.92	12.44		
Wet Density (pcf)	122.3	144.7	143.2	137.8		
Dry Density (pcf)	116.9	135.1	130.3	122.5		

Maximum Dry Density (pcf) 135.6 **Optimum Moisture Content (%)** 7.7

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

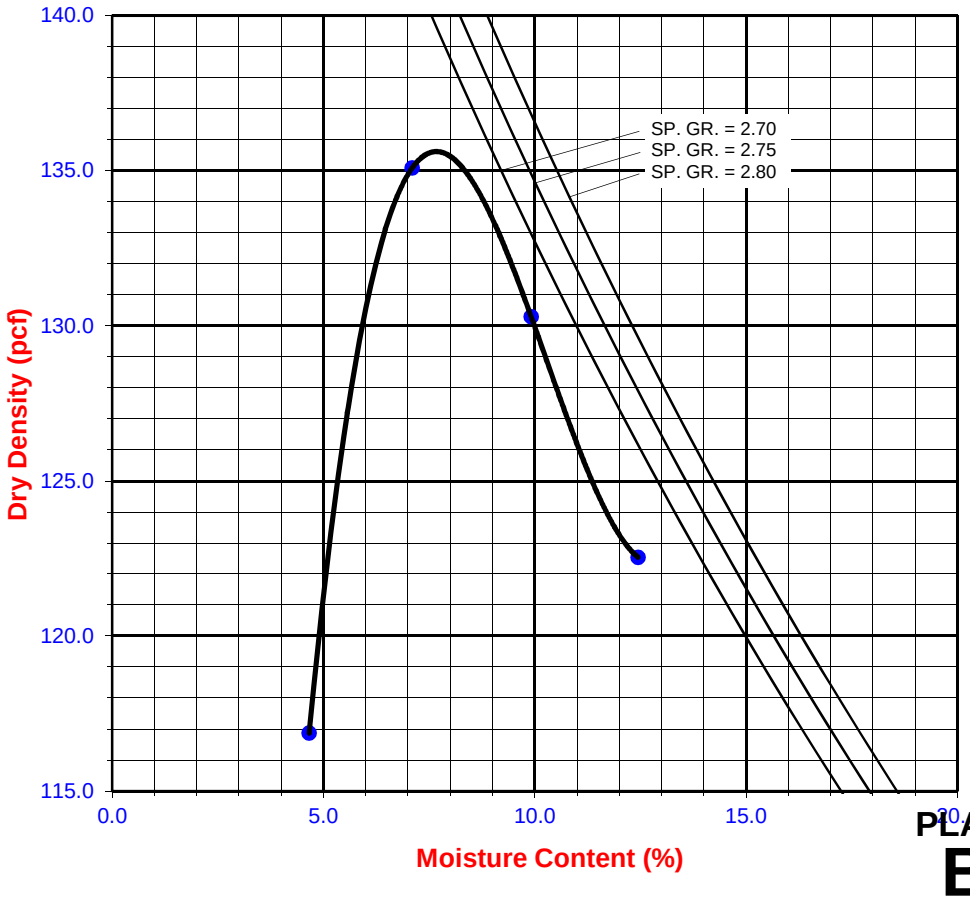


PLATE B6

MX DYB19-04 @ 0-5

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	OIAA ONT APMS	Tested By:	R. Densmore	Date:	10/25/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/28/19
Boring No.:	DYB19-05	Depth (ft.):	0-5		
Sample No.:	Bulk				
Soil Identification:	Dark Brown Silty Sand (SM)				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07440 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	6851	6984	7068	7101		
Weight of Mold (g)	2621	2621	2621	2621		
Net Weight of Soil (g)	4230	4363	4447	4480		
Wet Weight of Soil + Cont. (g)	473.1	502.6	479.3	561.9		
Dry Weight of Soil + Cont. (g)	446.9	466.9	434.0	498.5		
Weight of Container (g)	39.3	62.8	39.2	39.4		
Moisture Content (%)	6.43	8.83	11.47	13.81		
Wet Density (pcf)	125.3	129.3	131.8	132.7		
Dry Density (pcf)	117.8	118.8	118.2	116.6		

Maximum Dry Density (pcf) 118.8 **Optimum Moisture Content (%)** 9.2

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

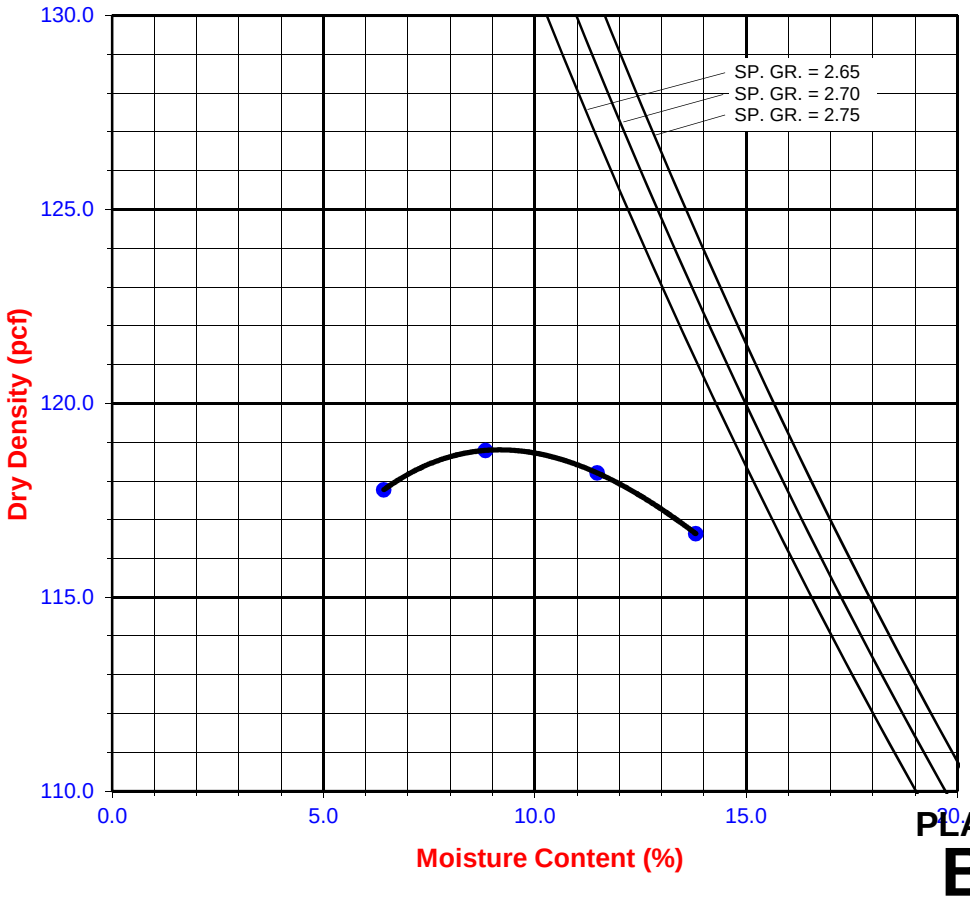


PLATE B7

MX DYB19-05 @ 0-5

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	OIAA ONT APMS	Tested By:	G. Berdy	Date:	10/23/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/23/19
Boring No.:	DYB19-06	Depth (ft.):	2-5		
Sample No.:	Bulk				
Soil Identification:	Olive Brown Silty Sand (SM)				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07440 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	6921	7454	7370			
Weight of Mold (g)	2621	2621	2621			
Net Weight of Soil (g)	4300	4833	4749			
Wet Weight of Soil + Cont. (g)	756.2	740.4	715.6			
Dry Weight of Soil + Cont. (g)	725.9	700.2	666.2			
Weight of Container (g)	230.3	230.8	224.1			
Moisture Content (%)	6.11	8.56	11.17			
Wet Density (pcf)	127.4	143.2	140.7			
Dry Density (pcf)	120.1	131.9	126.6			

Maximum Dry Density (pcf) 132.3 **Optimum Moisture Content (%)** 9.1

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

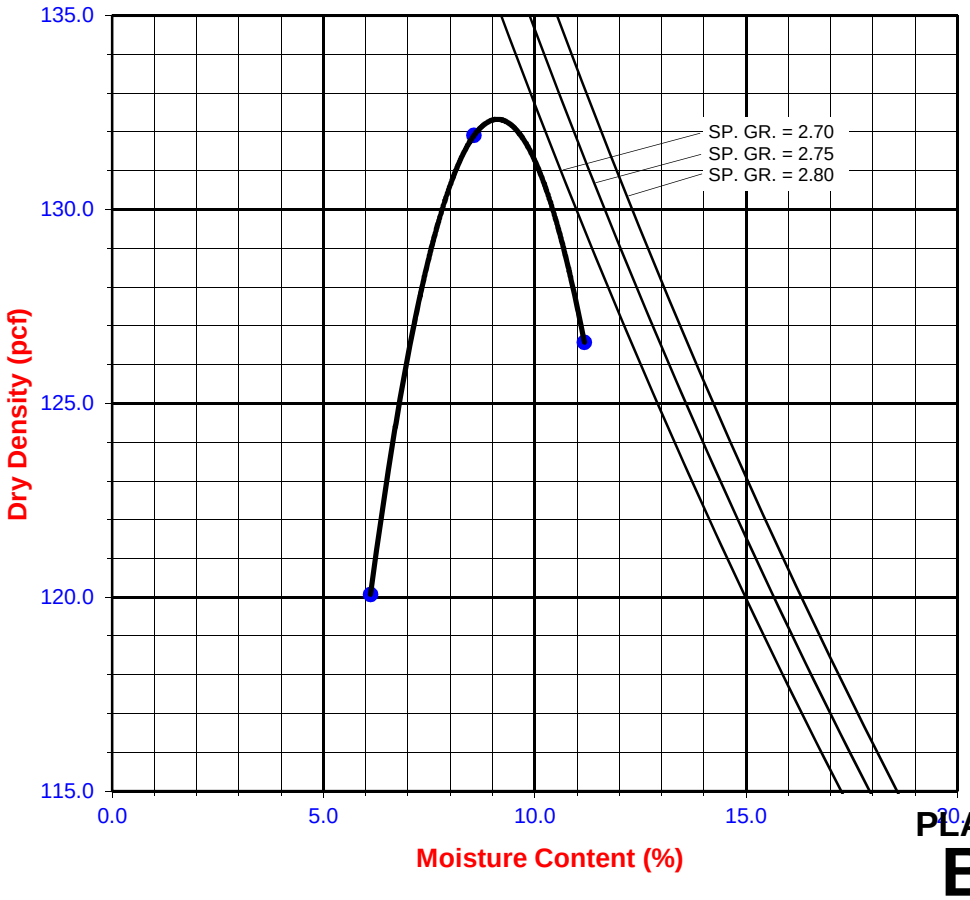


PLATE B8

MX DYB19-06 @ 2-5

Leighton

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-99

Project Name:	OIAA ONT APMS		Tested By :	GEB/OHF	Date: 10/30/19
Project No. :	2019-001		Height of Drop (in):	18.0	
Boring No.:	DYB19-01		Wt. of Rammer (lbs) :	10.0	
Sample No.:	Bulk		Height of Sample (in) :	4.584	
Depth (ft.) :	0-5		Piston Diameter (in):	1.954	
Soil Description :	Dark Brown Silty Sand (SM)		Load Constant:	5.456932	

SAMPLE PREPARATION

Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	3	5	6
Weight of Wet Soil & Mold (g)	8493	8649	8892
Weight of Mold (g)	4157	4176	4198
Weight of Wet Soil (g)	4336	4473	4694
Mold Factor	0.029418	0.029431	0.029458
Wet Weight Soil + Container (g)	302.9	289.3	220.0
Dry Weight Soil + Container (g)	283.4	270.7	206.5
Weight of Container (g)	39.2	39.4	39.2
Initial Swell / Collapse Reading (in.)	0.1170	0.2550	0.2330

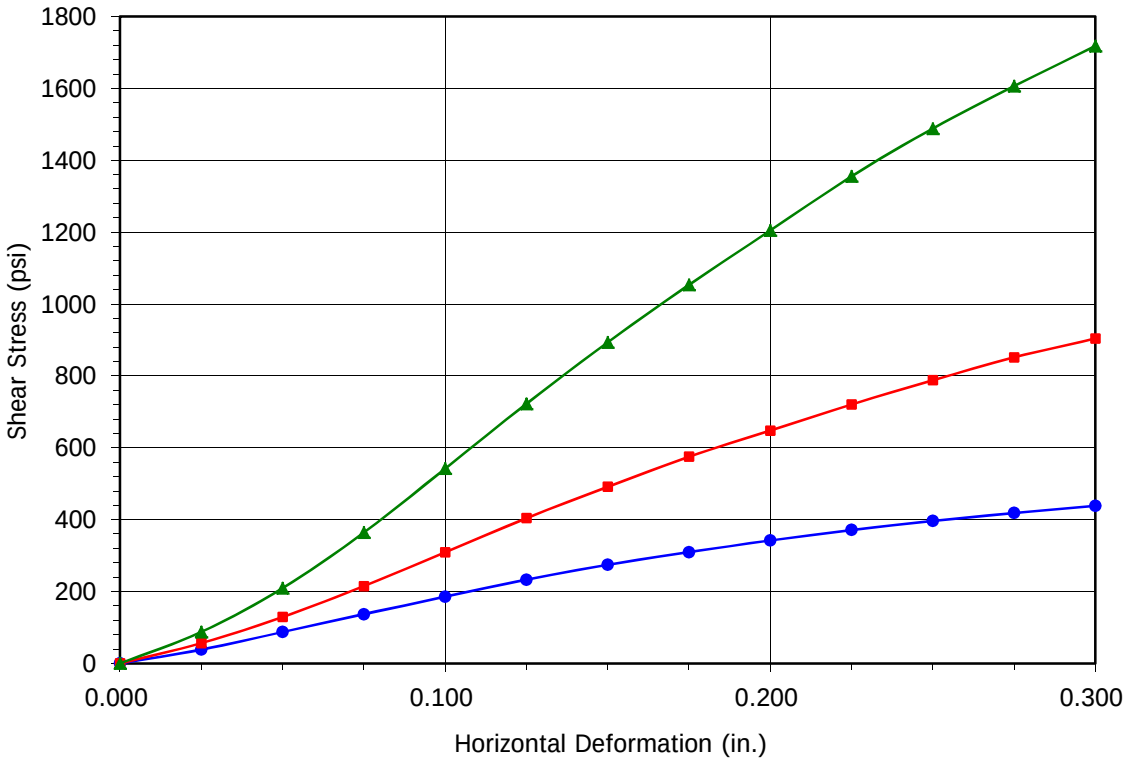
AFTER SOAKING

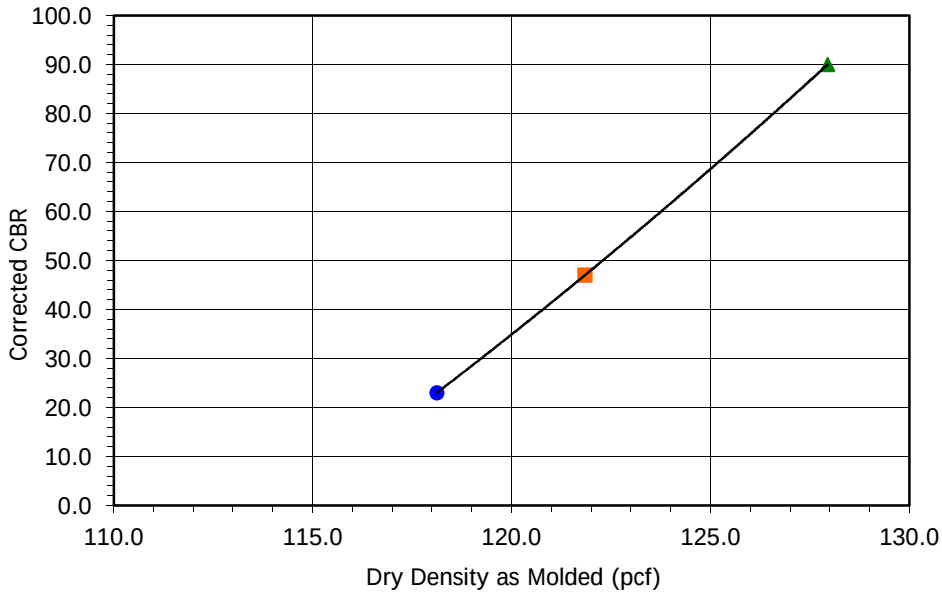
Final Swell / Collapse Reading (in.)	0.1170	0.2530	0.2280
Wt. Wet Soil + Mold + Base Plate (g)	11736	11817	11981
Weight of Mold+ Base Plate (g)	7207	7208	7215
Weight of Wet Soil (g)	4529	4609	4766
Wet Wt. Soil + Container (g)	415.1	421.5	399.2
Dry Wt. Soil + Container (g)	371.7	378.5	367.2
Weight of Container (g)	39.4	36.3	36.5

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	21.0	38.2	31.0	56.4	48.0	87.3
0.050	48.0	87.3	71.0	129.2	115.0	209.3
0.075	75.0	136.5	118.0	214.7	200.0	363.9
0.100	102.0	185.6	170.0	309.4	298.0	542.3
0.125	128.0	232.9	222.0	404.0	397.0	722.4
0.150	151.0	274.8	270.0	491.3	491.0	893.5
0.175	170.0	309.4	316.0	575.0	579.0	1053.6
0.200	188.0	342.1	356.0	647.8	662.0	1204.7
0.225	204.0	371.2	396.0	720.6	745.0	1355.7
0.250	218.0	396.7	433.0	787.9	818.0	1488.5
0.275	230.0	418.5	468.0	851.6	883.0	1606.8
0.300	241.0	438.6	497.0	904.4	944.0	1717.8
0.325	252.0	458.6	530.0	964.5	1005.0	1828.8
0.350	262.0	476.8	558.0	1015.4	1057.0	1923.5
0.375	273.0	496.8	580.0	1055.4	1095.0	1992.6
0.400	282.0	513.2	597.0	1086.4	1114.0	2027.2
0.425	290.0	527.7	611.0	1111.9	1121.0	2039.9
0.450	298.0	542.3	622.0	1131.9	1115.0	2029.0
0.475	307.0	558.7	625.0	1137.3	1113.0	2025.4
0.500	315.0	573.2	627.0	1141.0	1120.0	2038.1

PLATE
B9





Blows per layer	● 10		■ 25		▲ 56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	8.0	13.1	8.0	12.6	8.1	9.7
Dry Density (pcf)	118.1	117.8	121.8	120.5	127.9	128.0
Swell(+)/Collapse(-) (%)	0.00		-0.04		-0.11	
Bearing Ratio	23.0		47.0		90.0	

Boring No.: DYB19-01
Sample No.: Bulk
Depth (ft): 0-5
Sample Description:
Dark Brown Silty Sand (SM)

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

10-19

PLATE B10

Leighton

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-99

Project Name:	OIAA ONT APMS		Tested By :	GEB/OHF	Date: 10/24/19
Project No. :	2019-001		Height of Drop (in):	18.0	
Boring No.:	DYB19-02		Wt. of Rammer (lbs) :	10.0	
Sample No.:	Bulk		Height of Sample (in) :	4.584	
Depth (ft.) :	0-5		Piston Diameter (in):	1.954	
Soil Description :	Olive brown (SW-SM)g		Load Constant:	5.456932	

SAMPLE PREPARATION

Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	4	3A	10
Weight of Wet Soil & Mold (g)	8712	8716	8867
Weight of Mold (g)	4204	4122	4156
Weight of Wet Soil (g)	4508	4594	4711
Mold Factor	0.029465	0.029406	0.029365
Wet Weight Soil + Container (g)	431.2	364.3	305.0
Dry Weight Soil + Container (g)	411.4	346.1	289.8
Weight of Container (g)	39.1	39.4	39.2
Initial Swell / Collapse Reading (in.)	0.2580	0.1730	0.1680

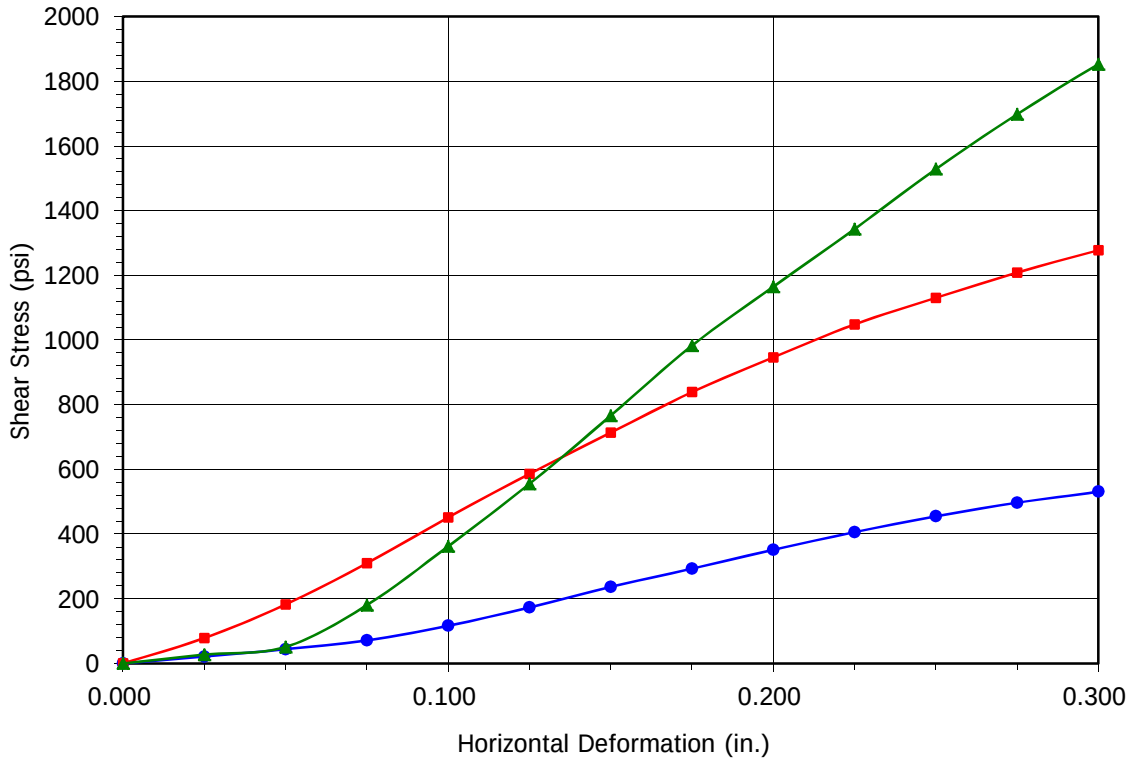
AFTER SOAKING

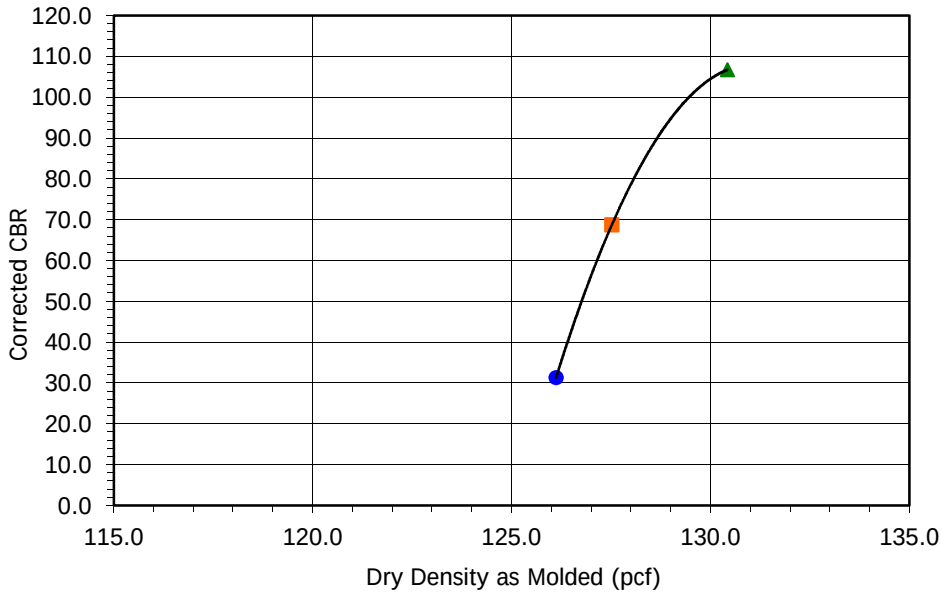
Final Swell / Collapse Reading (in.)	0.2565	0.1730	0.1650
Wt. Wet Soil + Mold + Base Plate (g)	11954	11924	12037
Weight of Mold+ Base Plate (g)	7264	7165	7203
Weight of Wet Soil (g)	4690	4759	4834
Wet Wt. Soil + Container (g)	454.5	415.1	403.6
Dry Wt. Soil + Container (g)	413.3	384.1	375.5
Weight of Container (g)	39.1	39.4	38.5

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	11.5	20.9	43.0	78.2	15.0	27.3
0.050	24.0	43.7	100.0	182.0	28.0	51.0
0.075	39.0	71.0	170.0	309.4	99.0	180.2
0.100	64.0	116.5	248.0	451.3	199.0	362.1
0.125	95.0	172.9	322.0	586.0	305.0	555.0
0.150	130.0	236.6	392.0	713.3	421.0	766.1
0.175	161.0	293.0	461.0	838.9	540.0	982.7
0.200	193.0	351.2	520.0	946.3	640.0	1164.6
0.225	223.0	405.8	576.0	1048.2	738.0	1343.0
0.250	250.0	454.9	621.0	1130.1	840.0	1528.6
0.275	273.0	496.8	664.0	1208.3	933.0	1697.8
0.300	292.0	531.4	702.0	1277.5	1018.0	1852.5
0.325	315.0	573.2	738.0	1343.0	1093.0	1989.0
0.350	332.0	604.2	775.0	1410.3	1164.0	2118.2
0.375	351.0	638.7	806.0	1466.7	1239.0	2254.7
0.400	366.0	666.0	836.0	1521.3	1285.0	2338.4
0.425	381.0	693.3	861.0	1566.8	1327.0	2414.8
0.450	396.0	720.6	879.0	1599.6	1366.0	2485.8
0.475	411.0	747.9	898.0	1634.1	1400.0	2547.6
0.500	426.0	775.2	910.0	1656.0	1423.0	2589.[illegible]

PLATE B11





Blows per layer	● 10		■ 25		▲ 56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	5.3	11.0	5.9	9.0	6.1	8.3
Dry Density (pcf)	126.1	124.5	127.5	128.4	130.4	131.0
Swell(+)/Collapse(-) (%)	-0.03		0.00		-0.07	
Bearing Ratio	31.3		68.7		106.7	

Boring No.: DYB19-02
Sample No.: Bulk
Depth (ft): 0-5
Sample Description:
Olive brown (SW-SM)g

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

10-19

PLATE B12

Leighton

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-99

Project Name:	OIAA ONT APMS		Tested By :	GEB/OHF	Date: 10/31/19
Project No. :	2019-001		Height of Drop (in):	18.0	
Boring No.:	DYB19-03		Wt. of Rammer (lbs) :	10.0	
Sample No.:	Bulk		Height of Sample (in) :	4.584	
Depth (ft.) :	0-5		Piston Diameter (in):	1.954	
Soil Description :	Olive brown SW-SM		Load Constant:	5.456932	

SAMPLE PREPARATION

Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	6A	3A	4
Weight of Wet Soil & Mold (g)	8413	8560	8774
Weight of Mold (g)	4110	4122	4204
Weight of Wet Soil (g)	4303	4438	4570
Mold Factor	0.029478	0.029406	0.029465
Wet Weight Soil + Container (g)	381.9	314.6	341.0
Dry Weight Soil + Container (g)	349.9	289.7	313.2
Weight of Container (g)	39.3	38.8	40.4
Initial Swell / Collapse Reading (in.)	0.1360	0.1920	0.2510

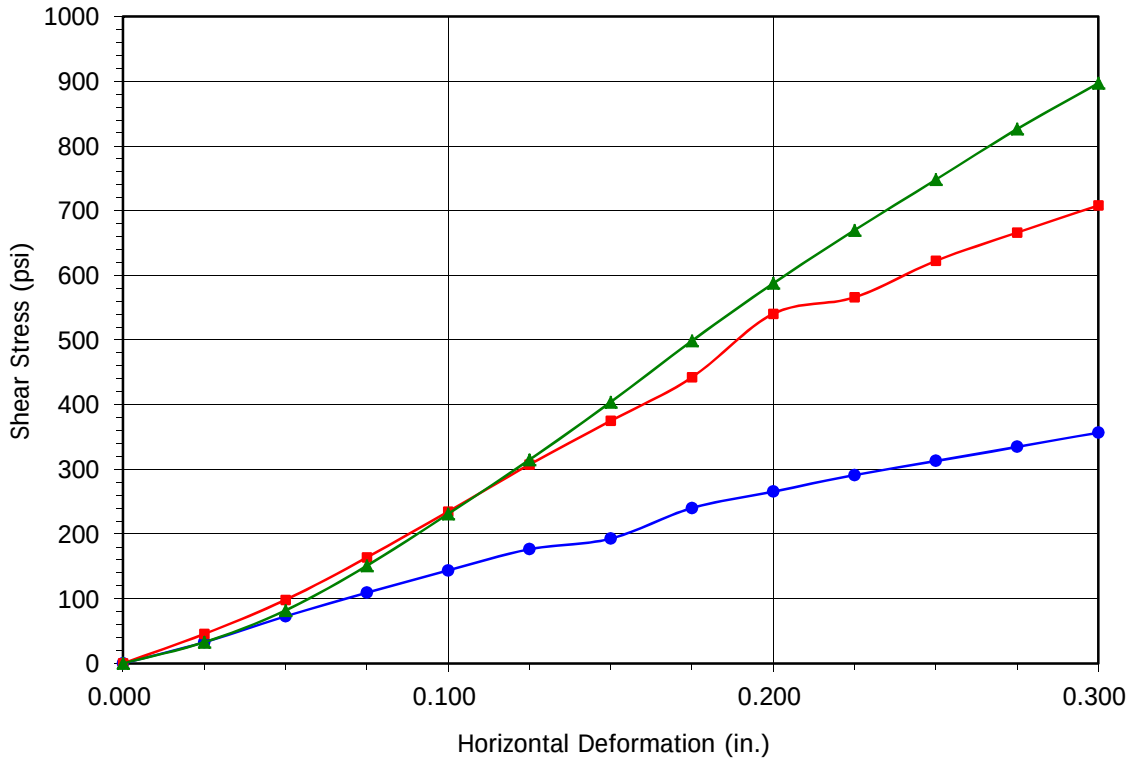
AFTER SOAKING

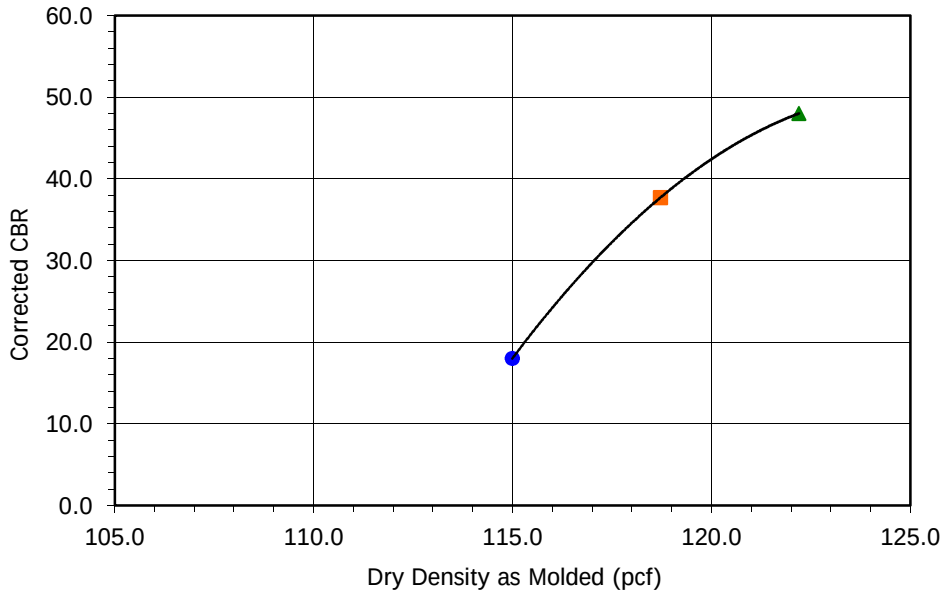
Final Swell / Collapse Reading (in.)	0.1300	0.1850	0.2430
Wt. Wet Soil + Mold + Base Plate (g)	11559	11688	11861
Weight of Mold+ Base Plate (g)	7130	7165	7264
Weight of Wet Soil (g)	4429	4523	4597
Wet Wt. Soil + Container (g)	413.4	426.5	484.8
Dry Wt. Soil + Container (g)	368.0	384.6	439.9
Weight of Container (g)	39.0	38.4	40.4

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	18.0	32.8	25.0	45.5	18.0	32.8
0.050	40.0	72.8	54.0	98.3	45.0	81.9
0.075	60.0	109.2	90.0	163.8	83.0	151.0
0.100	79.0	143.8	129.0	234.7	127.0	231.1
0.125	97.0	176.5	169.0	307.5	173.0	314.8
0.150	106.0	192.9	206.0	374.9	222.0	404.0
0.175	132.0	240.2	243.0	442.2	274.0	498.6
0.200	146.0	265.7	297.0	540.5	323.0	587.8
0.225	160.0	291.2	311.0	565.9	368.0	669.7
0.250	172.0	313.0	342.0	622.4	411.0	747.9
0.275	184.0	334.8	366.0	666.0	454.0	826.2
0.300	196.0	356.7	389.0	707.9	493.0	897.1
0.325	207.0	376.7	410.0	746.1	533.0	969.9
0.350	216.0	393.1	429.0	780.7	567.0	1031.8
0.375	224.0	407.6	443.0	806.1	600.0	1091.8
0.400	232.0	422.2	456.0	829.8	626.0	1139.2
0.425	239.0	434.9	467.0	849.8	645.0	1173.7
0.450	246.0	447.7	478.0	869.8	659.0	1199.2
0.475	252.5	459.5	488.0	888.0	671.0	1221.0
0.500	259.0	471.3	504.0	917.1	682.0	1241.1

PLATE
B13





Blows per layer	● 10		■ 25		▲ 56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	10.3	13.8	9.9	12.1	10.2	11.2
Dry Density (pcf)	115.0	114.7	118.7	118.6	122.2	121.8
Swell(+)/Collapse(-) (%)	-0.13		-0.15		-0.17	
Bearing Ratio	18.0		37.7		48.0	

Boring No.: DYB19-03
Sample No.: Bulk
Depth (ft): 0-5
Sample Description:
Olive brown SW-SM

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

10-19

PLATE B14

Leighton

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-99

Project Name:	OIAA ONT APMS		Tested By :	ACS/OHF	Date: 10/25/19
Project No. :	2019-001		Height of Drop (in):	18.0	
Boring No.:	DYB19-04		Wt. of Rammer (lbs) :	10.0	
Sample No.:	Bulk		Height of Sample (in) :	4.584	
Depth (ft.) :	0-5		Piston Diameter (in):	1.954	
Soil Description :	Brown Silty Sand (SM)		Load Constant:	5.456932	

SAMPLE PREPARATION

Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	5	6A	4A
Weight of Wet Soil & Mold (g)	8747	8927	9131
Weight of Mold (g)	4176	4110	4122
Weight of Wet Soil (g)	4571	4817	5009
Mold Factor	0.029431	0.029478	0.029391
Wet Weight Soil + Container (g)	354.5	281.1	368.8
Dry Weight Soil + Container (g)	332.5	264.8	346.0
Weight of Container (g)	38.8	39.5	38.2
Initial Swell / Collapse Reading (in.)	0.2530	0.1195	0.1765

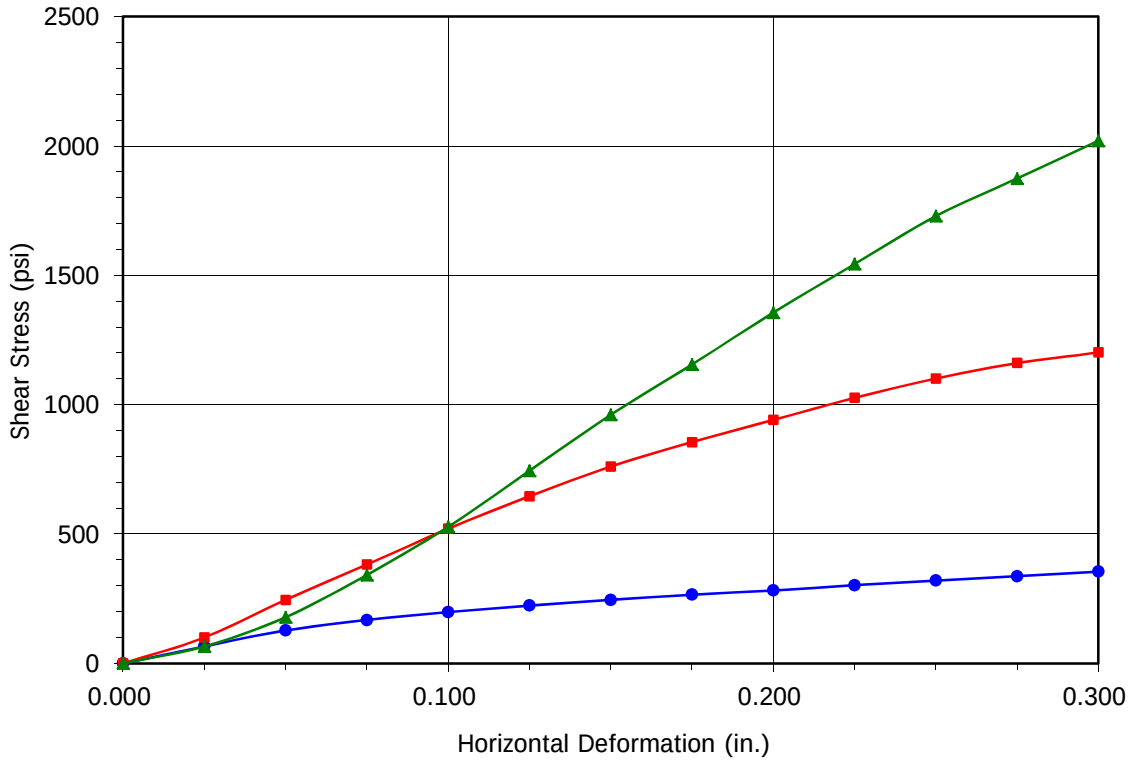
AFTER SOAKING

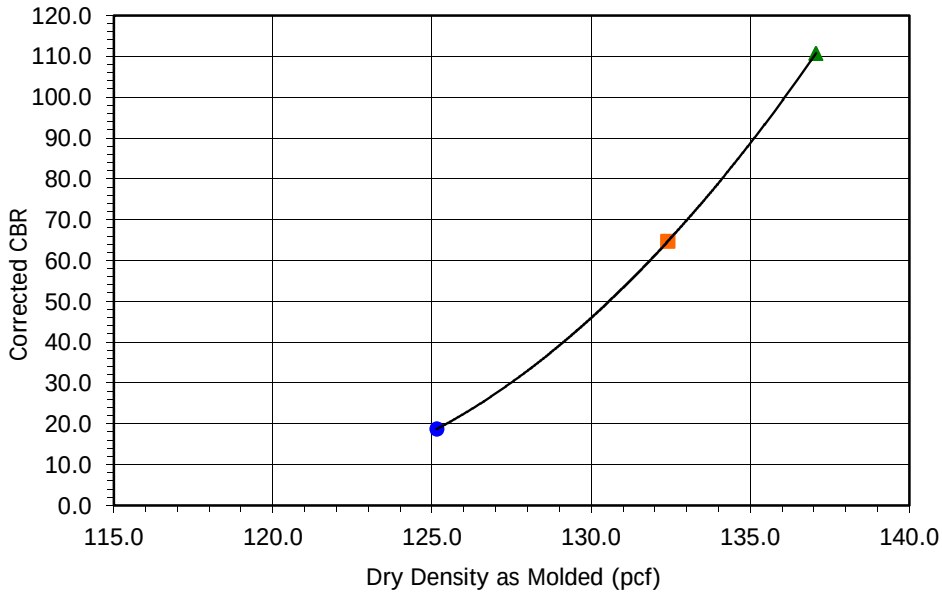
Final Swell / Collapse Reading (in.)	0.2610	0.1230	0.1920
Wt. Wet Soil + Mold + Base Plate (g)	11940	12034	12212
Weight of Mold+ Base Plate (g)	7208	7130	7168
Weight of Wet Soil (g)	4732	4904	5044
Wet Wt. Soil + Container (g)	482.7	514.0	552.2
Dry Wt. Soil + Container (g)	438.8	473.9	513.3
Weight of Container (g)	38.8	39.3	39.5

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	36.0	65.5	55.0	100.1	36.0	65.5
0.050	70.0	127.4	135.0	245.7	98.0	178.3
0.075	92.0	167.4	210.0	382.1	188.0	342.1
0.100	109.0	198.4	286.0	520.4	290.0	527.7
0.125	123.0	223.8	355.0	646.0	409.0	744.3
0.150	135.0	245.7	418.0	760.7	528.0	960.8
0.175	146.0	265.7	470.0	855.3	635.0	1155.5
0.200	155.0	282.1	517.0	940.8	745.0	1355.7
0.225	166.0	302.1	564.0	1026.3	848.0	1543.1
0.250	176.0	320.3	605.0	1100.9	950.0	1728.8
0.275	185.0	336.7	638.0	1161.0	1030.0	1874.3
0.300	195.0	354.8	661.0	1202.8	1110.0	2019.9
0.325	204.0	371.2	696.0	1266.5	1190.0	2165.5
0.350	214.0	389.4	725.0	1319.3	1260.0	2292.9
0.375	225.0	409.4	748.0	1361.2	1327.0	2414.8
0.400	233.0	424.0	771.0	1403.0	1384.0	2518.5
0.425	242.0	440.4	794.0	1444.9	1446.0	2631.3
0.450	251.0	456.8	818.0	1488.5	1510.0	2747.8
0.475	261.0	475.0	845.0	1537.7	1573.0	2862.5
0.500	271.0	493.1	868.0	1579.5	1632.0	2969.1

PLATE
B15





Blows per layer	● 10		■ 25		▲ 56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	7.5	11.0	7.2	9.2	7.4	8.2
Dry Density (pcf)	125.2	125.5	132.4	132.3	137.1	137.0
Swell(+)/Collapse(-) (%)	0.17		0.08		0.34	
Bearing Ratio	18.7		64.7		110.7	

Boring No.: DYB19-04
Sample No.: Bulk
Depth (ft): 0-5
Sample Description:
Brown Silty Sand (SM)

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

10-19

PLATE B16

Leighton

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-99

Project Name:	OIAA ONT APMS		Tested By :	OHF/ACS	Date: 11/01/19
Project No. :	2019-001		Height of Drop (in):	18.0	
Boring No.:	DYB19-05		Wt. of Rammer (lbs) :	10.0	
Sample No.:	Bulk		Height of Sample (in) :	4.584	
Depth (ft.) :	0-5		Piston Diameter (in):	1.954	
Soil Description :	Dark Brown Silty Sand (SM)		Load Constant:	5.456932	

SAMPLE PREPARATION

Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	10	4A	6
Weight of Wet Soil & Mold (g)	8227	8389	8701
Weight of Mold (g)	4156	4122	4198
Weight of Wet Soil (g)	4071	4267	4503
Mold Factor	0.029365	0.029391	0.029458
Wet Weight Soil + Container (g)	277.2	280.8	365.4
Dry Weight Soil + Container (g)	257.0	260.6	338.1
Weight of Container (g)	39.0	40.3	38.8
Initial Swell / Collapse Reading (in.)	0.1608	0.1820	0.2186

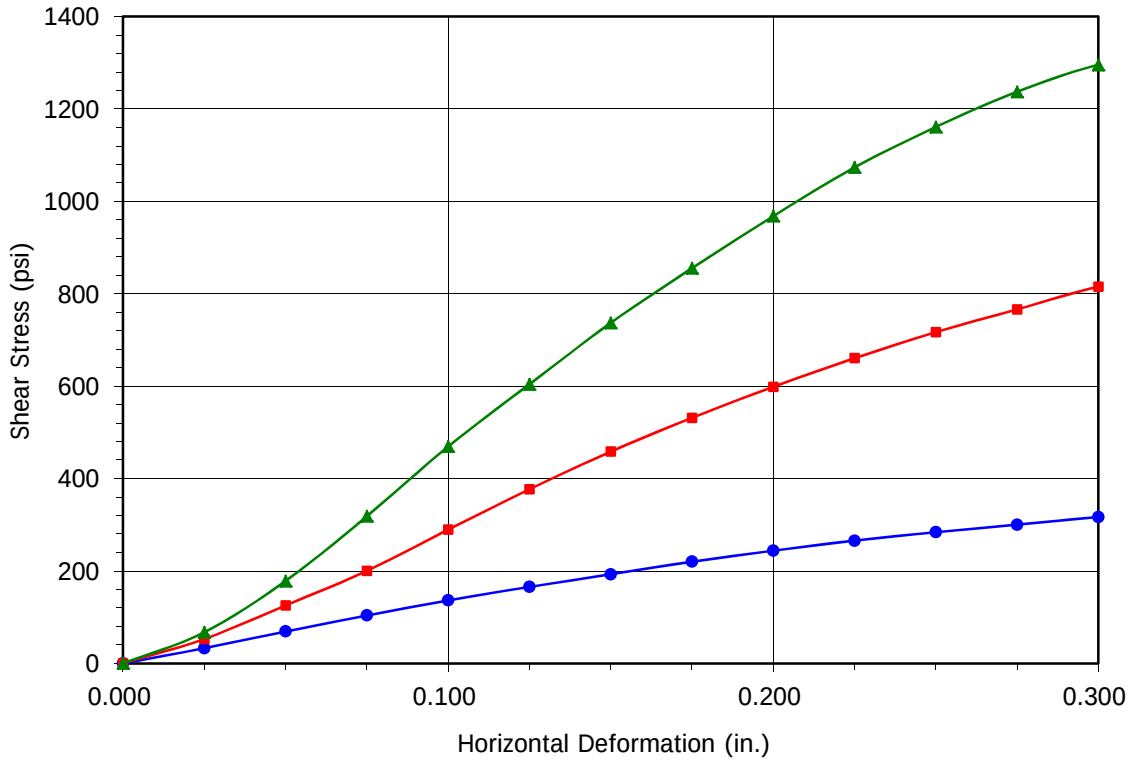
AFTER SOAKING

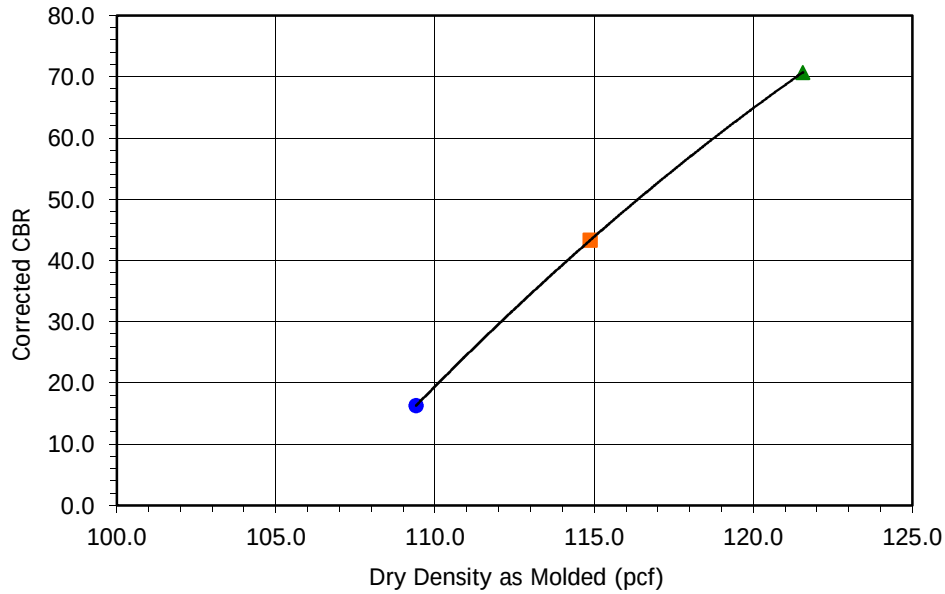
Final Swell / Collapse Reading (in.)	0.1520	0.1720	0.2160
Wt. Wet Soil + Mold + Base Plate (g)	11545	11679	11828
Weight of Mold+ Base Plate (g)	7203	7168	7215
Weight of Wet Soil (g)	4342	4511	4613
Wet Wt. Soil + Container (g)	566.4	450.6	475.0
Dry Wt. Soil + Container (g)	493.7	401.0	432.3
Weight of Container (g)	39.8	39.4	39.6

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	18.0	32.8	29.0	52.8	37.0	67.3
0.050	38.0	69.2	69.0	125.6	98.0	178.3
0.075	57.0	103.7	110.0	200.2	175.0	318.5
0.100	75.0	136.5	159.0	289.3	258.0	469.5
0.125	91.0	165.6	207.0	376.7	332.0	604.2
0.150	106.0	192.9	252.0	458.6	405.0	737.0
0.175	121.0	220.2	292.0	531.4	470.0	855.3
0.200	134.0	243.8	329.0	598.7	532.0	968.1
0.225	146.0	265.7	363.0	660.6	590.0	1073.6
0.250	156.0	283.9	394.0	717.0	638.0	1161.0
0.275	165.0	300.3	421.0	766.1	680.0	1237.4
0.300	174.0	316.6	448.0	815.2	712.0	1295.7
0.325	180.0	327.6	462.0	840.7	729.0	1326.6
0.350	184.0	334.8	475.0	864.4	732.0	1332.1
0.375	190.0	345.8	479.0	871.7	728.0	1324.8
0.400	193.0	351.2	484.0	880.8	727.0	1323.0
0.425	197.0	358.5	489.0	889.9	728.0	1324.8
0.450	202.0	367.6	496.0	902.6	734.0	1335.7
0.475	206.0	374.9	503.0	915.3	745.0	1355.7
0.500	211.0	384.0	500.0	909.9	756.0	1375.1

PLATE B17





Blows per layer	● 10		■ 25		▲ 56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	9.3	16.0	9.2	13.7	9.1	10.9
Dry Density (pcf)	109.4	109.9	114.9	116.6	121.6	122.6
Swell(+)/Collapse(-) (%)	-0.19		-0.22		-0.06	
Bearing Ratio	16.3		43.3		70.7	

Boring No.: DYB19-05
Sample No.: Bulk
Depth (ft): 0-5
Sample Description:
Dark Brown Silty Sand (SM)

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

11-19

PLATE B18

Leighton

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-99

Project Name:	OIAA ONT APMS		Tested By :	GEB/OHF	Date: 10/24/19
Project No. :	2019-001		Height of Drop (in):	18.0	
Boring No.:	DYB19-06		Wt. of Rammer (lbs) :	10.0	
Sample No.:	Bulk		Height of Sample (in) :	4.584	
Depth (ft.) :	2-5		Piston Diameter (in):	1.954	
Soil Description :	Olive Brown Silty Sand (SM)		Load Constant:	5.456932	

SAMPLE PREPARATION

Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	3	6	5A
Weight of Wet Soil & Mold (g)	8610	8929	9054
Weight of Mold (g)	4157	4198	4150
Weight of Wet Soil (g)	4453	4731	4904
Mold Factor	0.029418	0.029458	0.029355
Wet Weight Soil + Container (g)	295.70	278.30	209.20
Dry Weight Soil + Container (g)	274.20	257.50	196.00
Weight of Container (g)	39.70	39.10	38.90
Initial Swell / Collapse Reading (in.)	0.1280	0.2140	0.2000

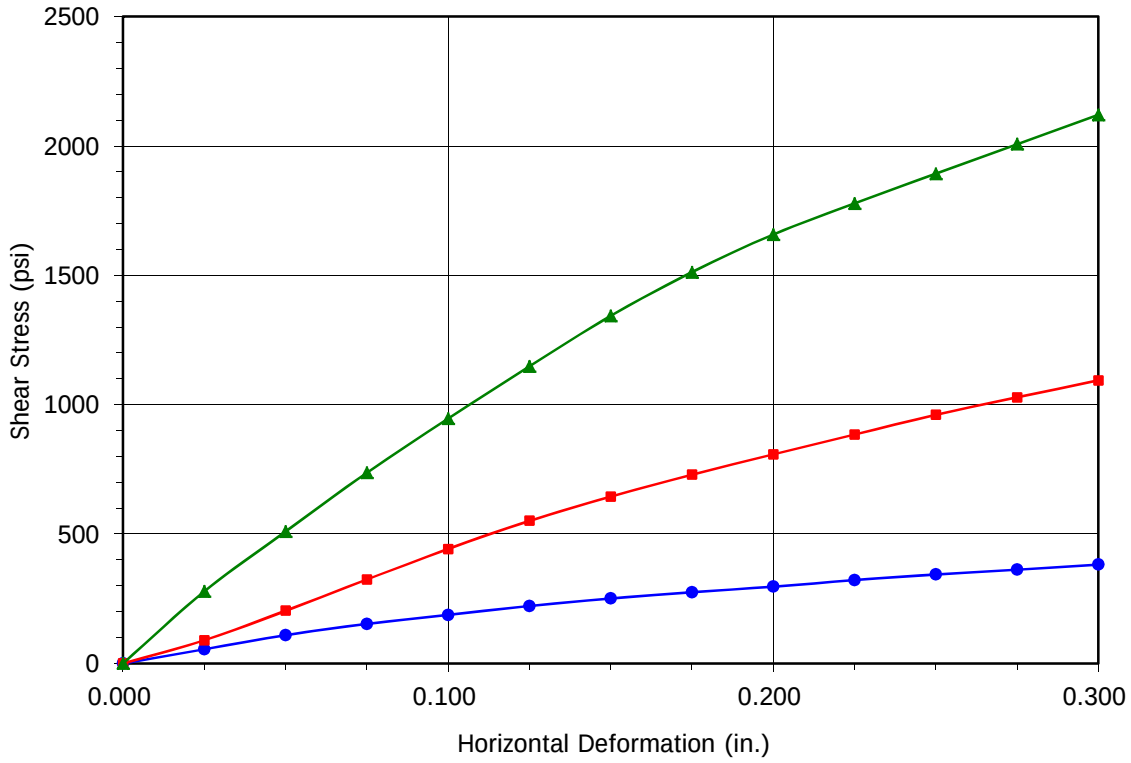
AFTER SOAKING

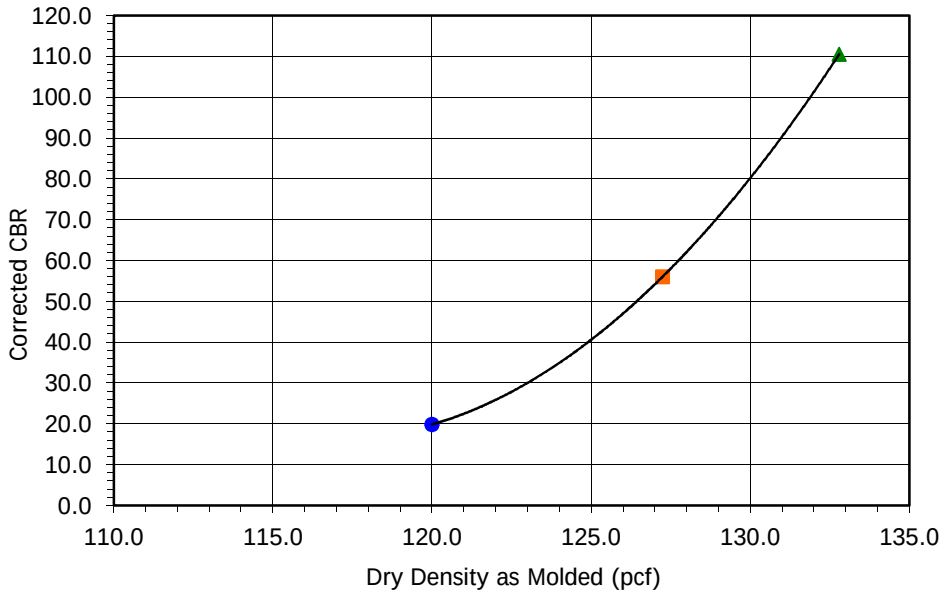
Final Swell / Collapse Reading (in.)	0.1270	0.2120	0.2090
Wt. Wet Soil + Mold + Base Plate (g)	11799	11999	12084
Weight of Mold+ Base Plate (g)	7207	7215	7153
Weight of Wet Soil (g)	4592	4784	4931
Wet Wt. Soil + Container (g)	251.50	353.30	347.80
Dry Wt. Soil + Container (g)	226.80	320.50	318.80
Weight of Container (g)	39.20	39.40	39.80

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	30.0	54.6	49.0	89.2	153.0	278.4
0.050	60.0	109.2	112.0	203.8	280.0	509.5
0.075	84.0	152.9	178.0	323.9	405.0	737.0
0.100	103.0	187.4	243.0	442.2	520.0	946.3
0.125	122.0	222.0	303.0	551.4	631.0	1148.3
0.150	138.0	251.1	354.0	644.2	738.0	1343.0
0.175	151.0	274.8	401.0	729.7	831.0	1512.2
0.200	163.0	296.6	444.0	808.0	911.0	1657.8
0.225	177.0	322.1	486.0	884.4	977.0	1777.9
0.250	189.0	343.9	528.0	960.8	1040.0	1892.5
0.275	199.0	362.1	565.0	1028.2	1103.0	2007.2
0.300	210.0	382.1	601.0	1093.7	1165.0	2120.0
0.325	221.0	402.2	638.0	1161.0	1230.0	2238.3
0.350	232.0	422.2	674.0	1226.5	1292.0	2351.1
0.375	242.0	440.4	704.0	1281.1	1355.0	2465.7
0.400	252.0	458.6	725.0	1319.3	1418.0	2580.4
0.425	262.0	476.8	733.0	1333.9	1480.0	2693.2
0.450	273.0	496.8	741.0	1348.4	1543.0	2807.9
0.475	285.0	518.6	748.0	1361.2	1603.0	2917.0
0.500	296.0	538.6	754.0	1372.1	1662.0	3024.1

PLATE B19





Blows per layer	● 10		■ 25		▲ 56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	9.2	13.2	9.5	11.7	8.4	10.4
Dry Density (pcf)	120.0	119.4	127.2	126.2	132.8	131.1
Swell(+)/Collapse(-) (%)	-0.02		-0.04		0.20	
Bearing Ratio	19.8		56.0		110.5	

Boring No.: DYB19-06
Sample No.: Bulk
Depth (ft): 2-5
Sample Description:
Olive Brown Silty Sand (SM)

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

10-19

PLATE B20

DISTRIBUTION

1 copy: Mr. Steve Stroh
RS&H
5901 West Century Boulevard
Suite 1030
Los Angeles, 90045

QUALITY CONTROL REVIEWER

Allen M. Yourman, Jr., PE, GE
Principal

BT/CI:dr

Appendix D

Air Quality and Greenhouse Gas Emissions

DRAFT

Air Quality & Greenhouse Gas (GHG) Construction Emissions Technical Memorandum

Supplemental EIR for Rehabilitation of Runway 8R-26L and Associated Improvements at ONT

April 18, 2022

Prepared for:

Ontario International Airport Authority

Prepared by:

HNTB

CONTENTS

Attachment 1: Construction Emissions Analysis

Attachment 1-A: Project Schedule and ACEIT Scenarios Details

Attachment 1-B: ACEIT Input Summary and ACEIT Activity Data

Attachment 1-C: CalEEMod Emission Factors and Emissions Calculation

Attachment 2: Operational Emissions Analysis

Attachment 2-A: Fleet Mix

Attachment 1

Construction Emissions Analysis

TABLE OF CONTENTS

1 Introduction 1
2 ACEIT 1
2.1 Scenarios 2
2.2 Project Type 2
2.3 Overall Size 4
2.4 Size Details 4
2.5 Activity Data 4
3 CalEEMod 7
4 Regulatory Setting 7
4.1 National Ambient Air Quality Standards (NAAQS) 8
4.2 SCAQMD Standards 9
4.3 Greenhouse Gases (GHG) 9
5 Proposed Project Construction Emissions 9
5.1 Air Quality Impacts 9
5.2 GHG Impacts 13
6 Two-Year Program Alternative Construction Emissions 14
6.1 Air Quality Impacts 14
6.2 GHG Impacts 17

List of Tables

Table 1 ACEIT Non-Road Equipment Activity Data 5
Table 2 ACEIT On-road Vehicle Miles Traveled (VMT) 6
Table 3 Current Attainment / Non-attainment Designations 8
Table 4 General Conformity *de minimis* Levels 8
Table 5 SCAQMD Thresholds of Significance for Construction-Related CAPs and Precursors 9
Table 6 Proposed Project CalEEMod Direct Construction Emissions 11
Table 7 Proposed Project Concrete Batch Plant PM Emissions (MT/Year) 11
Table 8 Proposed Project Total Direct Construction Emissions 12
Table 9 Proposed Project - CalEEMod Emissions for On-Road Hauling (tons/year) 13
Table 10 Proposed Project - Total GHG Emissions (MT/Year) 13
Table 11 Proposed Project - GHG Emissions for On-Road Hauling Compared to Total GHG Emissions (MT/Year) 14
Table 12 Two-Year Program Alternative CalEEMod Direct Construction Emissions 16
Table 13 Two-Year Program Alternative Concrete Batch Plant PM Emissions 16
Table 14 Two-Year Program Alternative Total Direct Construction Emissions 16
Table 15 Two Year Program Alternative - Total GHG Emissions (MT/Year) 17

Attachments

Attachment 1-A: Project Schedule and ACEIT Scenarios Details

Attachment 1-B: ACEIT Input Summary and ACEIT Activity Data

Attachment 1-C: CalEEMod Emission Factors and Emissions Calculation

1 Introduction

Construction-related emissions are typically associated with the exhaust from heavy equipment (e.g., backhoes, graders, etc.), delivery trucks (e.g., dump trucks, construction materials delivery), and construction worker vehicles traveling to and from the construction site. There are also emissions (i.e., dust) associated with site preparation, land clearing, and equipment traversing unpaved areas. Construction emissions are temporary in nature and generally confined to the construction site and roads used to enter and exit the construction site. Emissions of CO, NO_x, VOC, SO_x, $PM_{2.5}$, PM_{10}, as well as Greenhouse Gas Emissions (GHG) (i.e., CO_2, CH_4, N_20, and CO_{2e}) were evaluated for the Proposed Project's three-year construction period, 2023, 2024 and 2025.

The Airport Construction Emissions Inventory Tool (ACEIT), developed by the Transportation Research Board (TRB) Airport Cooperative Research Program (ACRP) under Project 02-33, was used to identify the types of construction activities and equipment/vehicle activity data for the air quality analysis. For this analysis, ACEIT was also used to derive the hours of operation for off-road construction equipment and vehicle miles traveled (VMT) for on-road trucks and employee vehicles. Construction activities are based upon the phasing plans developed by HNTB, including the known areas (square feet) associated with the various project types (i.e., proposed pavement, pavement demolition, and building area). The construction activity levels developed in the ACEIT model were then used to model emissions in California Emissions Estimator Model® (CalEEMod) version 2020.4.0.[1]

A concrete batch plant is proposed to be located on Airport property in an industrial area along E. Avion Street. A concrete batch plant would reduce the total VMT needed for concrete delivery trucks, but would still require delivery of raw materials (i.e., portland cement and aggregate) to mix the concrete on-site. The construction activity levels developed in ACEIT and modeled in CalEEMod do not account for the use of a concrete batch plant and instead assume a conservative 40-mile roundtrip for concrete delivery. The health risk assessment completed as part of this Supplemental Environmental Impact Report (SEIR) includes an analysis of particulate matter ($PM_{2.5}$ and PM_{10}) emissions associated with operation of the concrete batch plant. These emissions are summed with the construction emissions developed in CalEEMod to represent the full potential direct construction emissions for the Proposed Project.

2 ACEIT

ACEIT facilitates the modeling of emissions through user defined input of construction scenarios, project types, and overall project size inputs (i.e., cost and dimensions). Each construction scenario represents a specific year, season (winter or summer) and number of months. Associated with the user input project types, ACEIT provides default input data for construction activities, equipment types, fuel types, size details and emission factors. However, ACEIT allows the user to refine construction scenarios with specific activity data to reflect more accurate construction schedules and quantities. ***Attachment 1-A*** provides a summary of the project details

[1] CalEEMod emission factors include OFFROAD2011 emission factors for non-road equipment and EMFAC2017 emission factors for on-road vehicles.

(schedule, scenarios, project size and cost) utilized in the ACEIT model. ***Attachment 1-B*** provides the ACEIT input summary sheets.

2.1 Scenarios

ACEIT requires project activity to be grouped by Scenario. A Scenario includes the project year, number of months, season (summer/winter), and average weather temperature inputs (average daily temperature, maximum and minimum daily temperature change). The season and weather inputs are used to determine emission factors. Because ACEIT emission factors are not ultimately used to calculate construction emissions, weather data was not collected and default "summer" and temperature inputs were used to set up the scenarios. There are eight Scenarios for this project, based on the projected construction phasing schedule[2]:

- Scenario 1: 2023 January - February (2 months)
- Scenario 2: 2023 January - February (2 months)
- Scenario 3: 2023 February - August (6 months)
- Scenario 4: 2023 August - October (3 months)
- Scenario 5: 2023 January - October (9 months)
- Scenario 6: 2024 January - October (9 months)
- Scenario 7: 2025 January - June (5 months)
- Scenario 8: 2025 June - October (5 months)

2.2 Project Type

Project types, construction activity types, fuel type and equipment were then selected for each scenario. To be conservative, all default construction activity types and diesel equipment were selected for project types, with the exception of identifying pavement types and removing clearing and grubbing as a construction activity for taxiway projects. Default ACEIT construction activities includes both concrete and asphalt placement for pavement project types, allowing the user to define the proposed pavement type. The construction activities and project details were refined to include the placement of both concrete (mainline) and asphalt (shoulders) pavements for runway/taxiways and demolition of both concrete (mainline) and asphalt (shoulders) pavements for the existing taxiway pavements present. The following summaries the project types selected for each scenario. Unless noted otherwise, all default construction activity types were used for each project type.

- Scenario 1, 3 and 4 (2023): Taxiway improvement projects, including the following ACEIT project types, and associated construction activities were used in the model:
    - Taxiways: (asphalt placement, concrete placement, drainage, dust control, excavation, fencing, grading, hydroseeding, lighting, markings, soil erosion/sediment control, subbase placement, topsoil placement)
    - Demolition - Asphalt: (concrete demolition)

[2] The construction phasing schedule does not align exactly with proposed runway closure periods, as it also includes time for mobilization and demobilization, as well as construction occurring when both runways are operational (June-October 2025).

  - Demolition – Concrete: (asphalt demolition)
  - NAVAIDS: Precision Approach Path Indicator (PAPI) *(Scenario 3 only)*

- Scenario 2 (2023): Taxiway improvement projects (partial depth reconstruction – all concrete), including the following ACEIT project type, and associated construction activities were used in the model:
  - Taxiways: (concrete placement, drainage, dust control, excavation, grading, fencing, hydroseeding, lighting, markings, soil erosion/sediment control, subbase placement, topsoil placement)
  - Runway Markings: (marking removal, markings)

- Scenario 5 (2023): South Electrical Vault Relocation, including the following ACEIT project type, and associated construction activities were used in the model:
  - Building - 10000 sqft- 1 story: (concrete foundations, construction mob & layout, exterior wall framing, interior build-out/finishes, roofing, security & safety systems, structural steel erection)

- Scenario 6 (2024): Runway 8R-26L rehabilitation, relocated vehicle service roadway and relocated localizer equipment building, including the following ACEIT project types, and associated construction activities were used in the model:
  - Runway Rehabilitation: (cold milling, concrete demo, concrete placement, asphalt placement, dust control, excavation, grading, hydroseeding, lighting, markings, sealing random cracks, soil erosion/sediment control, subbase placement, topsoil placement)
  - Service Road: (asphalt placement, drainage, dust control, excavation, grading, hydroseeding, markings, soil erosion/sediment control, subbase placement, topsoil placement)
  - NAVAIDS: (ILS Localizer)

- Scenario 7 (2025): Additional taxiway connector projects and relocated fencing, including the following ACEIT project types, and associated construction activities were used in the model:
  - Taxiways: (asphalt placement, concrete placement, drainage, dust control, excavation, grading, hydroseeding, lighting, markings, soil erosion/sediment control, subbase placement, topsoil placement)
  - Demolition – Concrete: (concrete demolition)
  - Fencing: (clearing and grubbing, excavation, fencing, grading, hydroseeding, soil erosion/sediment control, topsoil placement)

- Scenario 8 (2025): Additional taxiway connector projects, including the following ACEIT project types, and associated construction activities were used in the model:
  - Taxiways: (asphalt placement, concrete placement, drainage, dust control, excavation, grading, hydroseeding, lighting, markings, soil erosion/sediment control, subbase placement, topsoil placement)
  - Demolition – Concrete: (concrete demolition)

2.3 Overall Size

The ACEIT model requires a minimal set of overall project size and characteristic data to model each project type. Each project type requires input of estimated cost and dimensions (maximum length and width). Project dimensions were derived from project area quantities provided by design engineers. Cost estimates were based on a Cost/SY (determined from historical project costs for taxiway reconstruction) and the area quantities. Demolition costs were assumed to be 15% of the total reconstruction cost. Project dimensions were estimated based on area quantities provided by project designers, and assumed taxiway mainline and shoulder widths. The overall project size and characteristic data is utilized in ACEIT to estimate default size details (quantities) for construction activities.

2.4 Size Details

The ACEIT model generates size details for specific construction activities based on the overall project size data entered by the user (cost and dimensions). For example, ACEIT assumes default pavement depths to determine concrete volumes based on user input dimensions of a proposed taxiway. These size details were refined to reflect the known concrete depths of proposed pavements. *Attachment 1-A* provides the details of the construction scenarios, project types and user defined size details used in the model.

Size details can be modified by the user. While the majority of the ACEIT default size details were left unchanged, quantities associated with concrete and asphalt placement and demolition were modified to match preliminary design quantities (areas and volumes). For taxiway projects, both asphalt placement and concrete placement are selected construction activities to account for the taxiway surface (concrete) and the shoulder surface (asphalt). Based on the overall size inputs, the model assumes the full area (maximum length and width) of the project is constructed as both asphalt and concrete. These quantities were modified in the model to include volumes for concrete mainline and areas for asphalt shoulders based on quantities provided by project engineers.

2.5 Activity Data

ACEIT calculates activity levels for non-road equipment and on-road vehicles based on the defined scenarios and project size details. ACEIT makes the following assumptions for on-road activity:

- # employees based on the higher of two methods: (1) number of equipment and (2) multiplying the project cost in million by 11
- Average employee travels 30 miles round-trip from home to construction site each-day.
- Average on-road material delivery truck travels 40 miles round-trip

OIAA proposes to place a concrete batch plant on-Airport property, in an industrial area along E. Avion Street to minimize project costs, construction emissions and concrete material delivery vehicles on adjacent roadways. The assumed 40 mile round-trip for concrete delivery is a conservative estimate for VMT as it was estimated without consideration of a batch plant on-site.

Raw materials (i.e., Portland cement and aggregate) would still need to be delivered to the batch plant in order to mix the concrete on site however, it is expected that overall the VMT associated with concrete delivery will be less with a batch plant on-site.

The non-road equipment and on-road vehicle activity data developed in ACEIT for the proposed improvements in 2023, 2024 and 2025 are summarized in **Tables 1** and **2**.

Table 1
ACEIT Non-Road Equipment Activity Data

Equipment Type	Load Factor	Avg Rated HP	2023 Equipment hours	2024 Equipment hours	2025 Equipment hours
40 Ton Crane	0.43	300	240	0	0
Air Compressor	0.43	100	370	747	164
Asphalt Paver	0.59	175	43	121	27
Backhoe	0.21	100	320	0	0
Chain Saw	0.7	11	0	14	2
Chipper/Stump Grinder	0.43	100	0	14	2
Cold Planer	0.59	175	0	185	0
Concrete Ready Mix Trucks	0.59	600	60	0	0
Concrete Saws	0.59	40	354	1,761	164
Concrete Truck	0.59	600	1,537	3,093	726
Crack Cleaner	0.59	40	0	15	0
Crack Filler (Trailer Mounted)	0.43	100	0	15	0
Crane	0.43	300	0	8	0
Dozer	0.59	175	2,143	694	989
Dump Truck	0.59	600	1,025	1,942	562
Dump Truck (12 cy)	0.59	600	3,434	2,674	1,701
Excavator	0.59	175	672	1,186	260
Excavator with Bucket	0.59	175	177	0	25
Excavator with Hoe Ram	0.59	175	177	0	25
Flatbed Truck	0.59	600	2,253	3,172	1,106
Fork Truck	0.59	100	1,640	0	0
Grader	0.59	300	116	37	58
High Lift	0.59	100	440	0	0
Hydraulic Hammer	0.59	175	0	1,022	0
Hydroseeder	0.59	600	104	8	52
Loader	0.59	175	354	140	159
Man Lift	0.21	75	1,200	0	0
Man Lift (Fascia Construction)	0.21	75	120	0	0
Material Deliveries	0.59	600	8	0	0
Off-Road Truck	0.59	600	104	8	52
Other General Equipment	0.43	175	3,756	6,166	1,870

Table 1
ACEIT Non-Road Equipment Activity Data

Equipment Type	Load Factor	Avg Rated HP	2023 Equipment hours	2024 Equipment hours	2025 Equipment hours
Pickup Truck	0.59	600	6,243	7,541	2,832
Pressure Washer	0.43	25	3	0	0
Pumps	0.43	11	96	30	48
Roller	0.59	100	1,201	639	593
Rubber Tired Loader	0.59	175	354	4,088	164
Scraper	0.59	600	455	18	224
Skid Steer Loader	0.21	75	382	277	239
Slip Form Paver	0.59	175	354	4,088	164
Surfacing Equipment (Grooving)	0.59	25	410	4,242	199
Survey Crew Trucks	0.59	600	10	0	0
Sweepers	0.43	175	0	185	0
Sweepers/Scrubbers	0.43	175	3	0	0
Tool Truck	0.59	600	400	0	0
Tractor Trailer- Material Delivery	0.59	600	172	0	0
Tractor Trailer- Steel Deliveries	0.59	600	16	0	0
Tractor Trailers Temp Fac.	0.59	600	4	0	0
Tractors/Loader/Backhoe	0.21	100	532	210	303
Water Truck	0.59	600	3,123	3,545	2,160

Source: ACEIT input summary (derived from user defined project details), 2022.

Table 2
ACEIT On-road Vehicle Miles Traveled (VMT)

On-road Activity	Vehicle	2023 VMT	2024 VMT	2025 VMT
Material Delivery (diesel)	Asphalt 18 Wheeler	14,259	20,041	7,022
	Cement Mixer	229,562	319,400	115,394
	Dump Truck	37,719	0	1,161
	Dump Truck - Asphalt	20,200	28,391	9,949
	Dump Truck Subbase Material	122,433	170,347	59,693
	Tractor Trailer	160	0	0
Employee Commute (gasoline)	Passenger Car	1,726,051	3,435,447	756,090

Source: ACEIT input summary (derived from user defined project details), 2022.

3 CalEEMod

The construction activity levels developed in the ACEIT model were used to model emissions in the California Emissions Estimator Model® (CalEEMod) version 2020.4.0.[3] CalEEMod was developed for the California Air Pollution Officers Association (CAPCOA) in collaboration with the California Air Districts[4]. It can model criteria pollutants including ROG, NOx, CO, SO_2, PM_{10}, $PM_{2.5}$, Fugitive PM_{10}, and Fugitive $PM_{2.5}$. In addition, it can model GHGs including Biogenic Carbon Dioxide (Bio-CO_2), Non-Biogenic Carbon Dioxide (Nbio-CO_2), CO_2, CH_4, Nitrous Oxide (N_2O), and CO_{2e}. CalEEMod applies widely accepted methodologies for modeling emissions including the EPA AP-42 emission factors, California Air Resources Board (CARB) vehicle emission models, studies commissioned by California agencies such as the California Energy Commission (CEC) and CalRecycle. Default values are incorporated in the model to account for different policies and requirements for different California Air Districts. The ACEIT construction activity levels (equipment hours and VMT) were input into CalEEMod to determine construction emissions. ACEIT equipment types were matched to CalEEMod equipment types, and CalEEMod default equipment horsepower and load factors were used. ACEIT equipment hours by year were converted to hours/day in CalEEMod based on the total assumed days of work in each calendar year. Additionally, VMT derived in ACEIT were used to determine CalEEMod inputs for total number of trips and trip length by calendar year. CalEEMod also includes mitigated emission modeling which allows the user to define engine tier for equipment types included in the model.

See ***Attachment 1-C*** provides the CalEEMod Report including model inputs and construction emission summary.

Note that ONT requires the use of Tier 4 final engine emission standards for all off-road construction equipment. The construction emissions inventory was developed in CalEEMod with the assumption that all off-road construction equipment would use Tier 4 final engines (as indicated by "mitigated" emissions in *Attachment 1-C*). To ensure implementation, Tier 4 engine requirements would be included in construction contracts, plans and specifications as needed.

4 Regulatory Setting

ONT is located in San Bernardino County, California which is part of the South Coast Air Basin. The South Coast Air Quality Management District (SCAQMD) has jurisdiction over the South Coast Air Basin. The SCAQMD is responsible for ensuring that federal and state air quality standards are met by monitoring ambient air pollutant levels throughout the region and implementing strategies to attain the standards.

[3] CalEEMod emission factors include OFFROAD2011 emission factors for non-road equipment and EMFAC2017 emission factors for on-road vehicles.
[4] California Emissions Estimator Model (CalEEMod), http://www.caleemod.com/, accessed January 2022.

4.1 National Ambient Air Quality Standards (NAAQS)

Table 3 summarizes the attainment status for the National Ambient Air Quality Standards (NAAQS) in the South Coast Air Basin, according to the U.S. EPA Green Book dated December 31, 2021.

Table 3

Current Attainment / Non-attainment Designations

Pollutant	NAAQS	Designation
Carbon Monoxide (CO)	1971 Standard	Maintenance (Serious)
Ozone (O_3)	2008 (8-Hour) Standard	Non-attainment (Extreme)
	2015 (8-Hour) Standard	Non-attainment (Extreme)
Nitrogen Dioxide (NO_2)	1971 Standard	Maintenance
Sulfur Dioxide (SO_2)	1971 Standard	Attainment
	2010 Standard	Attainment
Particulate Matter (PM_{10})	1987 Standard	Maintenance (Serious)
Particulate Matter ($PM_{2.5}$)	1997 Standard	Non-attainment (Moderate)
	2006 Standard	Non-attainment (Serious)
	2012 Standard	Non-attainment (Moderate)
Lead (Pb)	1978 Standard	Attainment
	2008 Standard	Attainment

Source: Los Angeles – South Coast Air Basin, CA, EPA, Green Book at https://www.epa.gov/green-book, December 2021.

The General Conformity *de minimis* levels for these pollutants are summarized in **Table 4**.

Table 4

General Conformity *de minimis* Levels

Pollutant	Tons per year
O_3 (extreme)	10 for NO_x and 10 for VOCs
CO (maintenance)	100
NO_2 (maintenance)	100
PM_{10} (maintenance)	100
$PM_{2.5}$ (serious)	70

Source: EPA, *de minimis* emission levels, https://www.epa.gov/general-conformity/de-minimis-tables, December 2021.

4.2 SCAQMD Standards

CARB manages air quality, regulates mobile emissions sources, and oversees the activities of county and regional air districts within California. As it relates to California Ambient Air Quality Standards (CAAQS), the SCAQMD area does not meet standards for O_3, PM_{10} and $PM_{2.5}$. The SCAQMD sets the criteria pollutant and precursors thresholds of significance for construction, shown in **Table 5**.

Table 5
SCAQMD Thresholds of Significance for Construction-Related Criteria Air Pollutants and Precursors

Pollutant/Precursor	Daily Thresholds (lbs/day)
NO_x	100
VOC	75
PM_{10}	150
$PM_{2.5}$	55
SO_x	150
CO	550

Notes:
VOC and NOx are precursors to ozone.

Source: South Coast AQMD CEQA Handbook (South Coast AQMD, 1993), https://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2

4.3 Greenhouse Gases (GHG)

Neither EPA nor SCAQMD have adopted thresholds of significance for construction GHG emissions.

5 Proposed Project Construction Emissions

The Proposed Project Alternative assumes construction will occur over three years, with the following construction periods each year (and five workdays/week):

- 2023: January 15-October 15 (195 days)
- 2024: January 15-October 15 (197 days)
- 2025: January 15 -October 15 (196 days)

5.1 Air Quality Impacts

Table 6 summarizes the Proposed Project direct construction emissions in 2023, 2024 and 2025 resulting from construction activities developed in ACEIT and modeled in CalEEMod. These construction emissions assume implementation of Tier 4 final standards for all off-road equipment,

which serves to significantly reduce NO_x and PM emissions. To ensure implementation, Tier 4 engine requirements are included by ONT in all applicable construction contracts, plans and specifications. Therefore, the construction emissions inventory was developed in CalEEMod with a Tier 4 final engines input for all off-road construction equipment.

Table 7 summarizes the Proposed Project concrete batch plant operation emissions in 2023, 2024 and 2025 developed as part of the health risk assessment of this SEIR.[5]

Table 8 summarizes the total Proposed Project direct construction emissions in 2023, 2024 and 2025, as compared to the NAAQS and SCAQMD thresholds of significance. As shown, the direct construction-related emissions are below the applicable NAAQS and SCAQMD thresholds for all pollutants/precursors and construction years.

[5] Emissions from the concrete batch plant operation were determined using the controlled emission factors from USEPA AP-42 Chapter 11.12, *Concrete Batching*. "Controlled" emission factors assume typical control measures such as fabric filtration wherever possible for transfer of dry ingredients (a "baghouse") and spraying water in other areas.

Table 6
Proposed Project CalEEMod Direct Construction Emissions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023 Proposed Project	12	2	<1	<1	<1	1	125	24	4	<1	3	9
2024 Proposed Project	18	3	1	<1	<1	2	178	32	7	1	5	16
2025 Proposed Project	5	1	<1	<1	<1	<1	56	11	2	<1	1	4

Notes:
Volatile organic compounds (VOCs) are referred as reactive organic gases (ROG) in CalEEMod.

Source: CalEEMod, HNTB analysis 2022.

Table 7
Proposed Project Concrete Batch Plant PM Emissions

Year	Pollutants (tons/year)		Pollutants (lbs/day)	
	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
2023 Proposed Project	0.5	0.9	5	9
2024 Proposed Project	0.4	0.7	4	7
2025 Proposed Project	0.2	0.4	2	4

Source: USEPA AP-42 Chapter 11.12, *Concrete Batching,* HNTB and HELIX analysis, 2022.

Table 8
Proposed Project Total Direct Construction Emissions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	**NO_x**	**VOC**	**SO_2**	**$PM_{2.5}$**	**PM_{10}**	**CO**	**NO_x**	**VOC**	**SO_2**	**$PM_{2.5}$**	**PM_{10}**
2023 Proposed Project	12	2	<1	<1	1	2	125	24	4	<1	8	18
2024 Proposed Project	18	3	1	<1	1	2	178	32	7	1	9	23
2025 Proposed Project	5	1	<1	<1	<1	1	56	11	2	<1	4	8
NAAQS or SCAQMD threshold of significance	*100*	*10*	*10*	--	*70*	*100*	*550*	*100*	*75*	*150*	*150*	*55*
Exceeds Thresholds?	*No*	*No*	*No*	--	*No*	*No*	*No*	*No*	--	--	*No*	*No*

Notes:
Volatile organic compounds (VOCs) are referred as reactive organic gases (ROG) in CalEEMod.

Source: CalEEMod, HNTB analysis 2022.

The concrete batch plant proposed to be located on Airport property would likely reduce the total VMT assumed in the emissions analysis for concrete delivery trucks but would still include delivery of raw materials (i.e., portland cement and aggregate) to mix the concrete on-site. A closer look at the CalEEMod output indicates emissions specific to on-road hauling, as summarized in **Table 9**. While not insignificant, the on-road hauling emissions account for a fraction of the total emissions, with off-road equipment accounting for the majority of construction emissions.

Table 9
Proposed Project - CalEEMod Emissions for On-Road Hauling (tons/year)

Year	ROG/VOC[1]	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
2023	0.02	1.1	0.3	0.01	0.2	0.06
2024	0.02	1.4	0.3	0.01	0.3	0.08
2025	0.01	0.5	0.1	0.003	0.1	0.03

Notes:
[1] Volatile organic gases (VOCs) are referred as Reactive organic gases (ROG) in CalEEMod.

Source: CalEEMod, HNTB analysis 2022.

5.2 GHG Impacts

Table 10 depicts the total construction GHG emissions on an annual basis in metric tons for all construction years.

Table 10
Proposed Project - Total GHG Emissions (MT/Year)

Year	CO_2	CH_4	N_2O	CO_{2e}
2023	2,869	0.6	0.1	**2,918**
2024	4,086	0.8	0.1	**4,147**
2025	1,307	0.3	0.04	**1,327**

Sources: HNTB Analysis, 2022.

As noted previously, the concrete batch plant would likely reduce the total VMT assumed in the GHG emissions analysis for concrete delivery trucks but would still include delivery of raw materials (i.e., portland cement and aggregate) to mix the concrete on-site. As summarized in **Table 11**, a closer look at the CalEEMod output indicates GHG emissions specific to on-road hauling accounts for between 18-21% of the total direct GHG construction emissions in each construction year. Utilizing a concrete batch plant on-site would likely serve to reduce total on-road hauling VMT, and thus reduce total GHG emissions, but the Proposed Project would still result in a net increase in total GHG emissions during the construction period.

Table 11
Proposed Project – GHG Emissions for On-Road Hauling Compared to Total GHG Emissions (MT/Year)

Year	On-Road Hauling				Total CO_{2e} (Table 10)	% GHG Emissions due to On-Road Hauling
	CO_2	CH_4	N_2O	Total CO_{2e}		
2023	573	0.02	0.09	**601**	*2,918*	**21%**
2024	714	0.03	0.11	**749**	*4,147*	**18%**
2025	251	0.01	0.04	**263**	*1,327*	**20%**

Sources: HNTB Analysis, 2022.

6 Two-Year Program Alternative Construction Emissions

A reduced construction schedule alternative was carried forward for environmental analysis, the Two-Year Program Alternative. This alternative would include identical project components included as part of the Proposed Project, however would be implemented over a two-year schedule (2023 and 2024). The Two-Year Program Alternative assumes that the construction proposed in 2025 under the Proposed Project would occur in 2023. In order to analyze the impact on construction emissions, the ACEIT activity data calculated for 2023 and 2025 for the Proposed Project was combined and assumed to occur in 2023 for the Two-Year Program Alternative. Additionally, the concrete batch plant emissions calculated for 2023 and 2025 for the Proposed Project was combined and assumed to occur in 2023 for the Two-Year Program Alternative. Construction proposed in 2024 remains the same between alternatives. The Two-Year Program Alternative assumes construction will occur over two years, with the following construction periods each year (and five workdays/week):

- 2023: January 15 - October 15 (195 days)
- 2024: January 15 - October 15 (197 days)

6.1 Air Quality Impacts

Table 12 summarizes the Two-Year Program Alternative direct construction emissions in 2023 and 2024 resulting from construction activities developed in ACEIT and modeled in CalEEMod. These construction emissions assume implementation of Tier 4 final standards for all off-road equipment, which serves to significantly reduce NO_x and PM emissions. To ensure implementation, Tier 4 engine requirements are included by ONT in all applicable construction contracts, plans and specifications. Therefore, the construction emissions inventory was developed in CalEEMod with a Tier 4 final engines input for all off-road construction equipment.

Table 13 summarizes the Two-Year Program Alternative concrete batch plant operation emissions in 2023 and 2024 developed as part of the health risk assessment of this SEIR.[6]

Table 14 summarizes the total Two-Year Program Alternative direct construction emissions in 2023 and 2024, as compared to the NAAQS and SCAQMD thresholds of significance. As shown, the 2024 Two-Year Program Alternative emissions are identical to the 2024 Proposed Project emissions. The 2023 Two-Year Program Alternative emissions are slightly greater, but comparable, to the sum of the 2023 and 2025 Proposed Project emissions. As shown, the direct construction-related emissions are below the applicable NAAQS and SCAQMD thresholds for all pollutants/precursors and construction years.

[6] Emissions from the concrete batch plant operation were determined using the controlled emission factors from USEPA AP-42 Chapter 11.12, *Concrete Batching*. "Controlled" emission factors assume typical control measures such as fabric filtration wherever possible for transfer of dry ingredients (a "baghouse") and spraying water in other areas.

Table 12
Two-Year Program Alternative CalEEMod Direct Construction Emissions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023 Proposed Project	18	3	1	<1	<1	1	182	36	6	1	4	13
2024 Proposed Project	18	3	1	<1	<1	2	178	32	7	1	5	16

Notes:
Volatile organic compounds (VOCs) are referred as reactive organic gases (ROG) in CalEEMod.

Source: CalEEMod, HNTB analysis 2022.

Table 13
Two-Year Program Alternative Concrete Batch Plant PM Emissions

Year	Pollutants (tons/year)		Pollutants (lbs/day)	
	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
2023 Proposed Project	0.7	1.3	8	13
2024 Proposed Project	0.4	0.7	4	7

Source: USEPA AP-42 Chapter 11.12, *Concrete Batching,* HNTB and HELIX analysis, 2022.

Table 14
Two-Year Program Alternative Total Direct Construction Emissions

Year	Pollutants (tons/year)						Pollutants (lbs/day)					
	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_x	VOC	SO_2	$PM_{2.5}$	PM_{10}
2023 Proposed Project	18	3	1	<1	1	3	182	36	6	1	12	26
2024 Proposed Project	18	3	1	<1	1	2	178	32	7	1	9	23
NAAQS or SCAQMD threshold of significance	*100*	*10*	*10*	*--*	*70*	*100*	*550*	*100*	*75*	*150*	*150*	*55*
Exceeds Thresholds?	*No*	*No*	*No*	*--*	*No*	*No*	*No*	*No*	*--*	*--*	*No*	*No*

Notes:
Volatile organic compounds (VOCs) are referred as reactive organic gases (ROG) in CalEEMod.

Source: CalEEMod, HNTB analysis 2022.

6.2 GHG Impacts

Table 15 depicts the total construction GHG emissions on an annual basis in metric tons for all construction years of the Two-Year Program Alternative.

Table 15
Two Year Program Alternative - Total GHG Emissions (MT/Year)

Year	CO_2	CH_4	N_2O	CO_{2e}
2023	4,199	0.9	0.1	**4,266**
2024	4,086	0.8	0.1	**4,147**

Sources: HNTB Analysis, 2022.

Attachment 1-A
Project Schedule and ACEIT Scenarios Details

Attachment 1-A - Project Schedule and Scenarios Details

ACEIT Inputs

Scenario	Year	Months	# of Months	Total Cost ($M)	Total Cost ($)
Scenario 1	2023	Jan-Feb	2	$ 1.17	$ 1,174,522
Scenario 2	2023	Jan-Feb	2	$ 4.83	$ 4,829,533
Scenario 3	2023	Feb-August	6	$ 27.09	$ 27,090,219
Scenario 4	2023	Aug-Oct	3	$ 7.34	$ 7,343,099
Scenario 5	2023	Jan-Oct	9	$ 3.00	$ 3,000,000
Scenario 6	2024	Jan-Oct	9	$ 47.00	$ 47,003,115.56
Scenario 7	2025	Jan-June	5	$ 8.28	$ 8,281,868.44
Scenario 8	2025	June-Oct	5	$ 10.77	$ 10,769,546.67
Total	--		--	$ 109.49	$ 109,491,904

Project	Work Area	Scenario	
1	4, 5	6	REHABILITATE RUNWAY 8R-26L
2	2, 2A	3	MODIFY EXISTING CONNECTOR TAXIWAY F AND REDESIGNATE AS TAXIWAY E
3	2, 3	3, 4	REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F
4	2, 2A	3	CONSTRUCT EXIT TAXIWAY S5
5	1	1	RECONSTRUCT EXISTING EXIT TAXIWAY K
6	2, 2A	3	RECONSTRUCT EXISTING EXIT TAXIWAY P TO A HIGH-SPEED EXIT AND REDESIGNATE AS TAXIWAY S8
7	2, 3	3	REMOVE EXISTING TAXIWAY P BETWEEN RUNWAYS 8L-26R AND 8R-26L
8	2, 2A	3	CONSTRUCT BYPASS TAXIWAY S11
9	2, 3	3, 4	CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8R-26L AND 8L-26R
10	2, 2A	3	CONSTRUCT BYPASS TAXIWAY S3
11	6, 10	7, 8	CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8L-26R AND TAXIWAY N
12	6, 10	7, 8	RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED EXIT TAXIWAY
13	6, 10	7, 8	CONSTRUCT BYPASS TAXIWAY N2
14	1	2	RESURFACE TAXIWAY D, TAXIWAY S1 AND TAXIWAY U PAVEMENT
15	6, 10	7, 8	CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
16	7, 11	7, 8	CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N

ACEIT Model Notes and Assumptions

Project Setup

Weather data affects the emission factors used in ACEIT. ACEIT model is used to derive construction equipment hours and VMT, and MOVES emission factors are used to calculate emissions. Therefore, precise Weather data is not needed and Weather is set to Summer for all scenarios to run ACEIT model.
Scenario Years and months are based on preliminary phasing schedule.

Project Types

Taxiways - "Clearing and grubbing" construction activity type removed. All remaining default construction activity types used, including both asphalt placement (shoulders) and concrete placement (taxiways).
Demolition - Asphalt and Demolition - Concrete - All default activity types used.
Construction equipment fuel type assumed to be diesel and all default equipment used.

Overall Size

Taxiway and demolition size details are based on area quantities provided by design engineers.
Maximum width of "demolition - asphalt" assumed to be 50' to represent taxiway shoulders. Maximum length calculated based on area quantities provided by design engineers
Maximum width of "demolition - concrete" assumed to be 100' to represent taxiway mainline. Maximum length calculated based on area quantities provided by design engineers
Maximum width of "taxiways" assumed to be 200' to represent 100' taxiway mainline and 50' shoulders.
Cost details are rough order of magnitude costs based on historical reconstruction costs used to determine a cost/SY. Demolition costs are assumed to be 15% of total reconstruction cost.

Details **Scenario 1 (Work Area 1)**

New Pavement Area (SY):	2047
Demolition Pavement Area (SY):	2117

Projects Included

5 RECONSTRUCT EXISTING EXIT TAXIWAY K

TAXIWAY DEMOLITION (Demolition - Asphalt, Demolition - Concrete)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**		**Cost**
Taxiway K							
Asphalt Shoulders	191	50	--	9528.00	1058.67		$88,089.13
Concrete Taxiway	95	100	--	9528.00	1058.67		$88,089.13
			TOTAL	**19,056**	**2117**		**$176,178.27**

Assume 50' wide shoulders and 100' wide taxiway (50% asphalt shoulders and 50% concrete taxiway)

TAXIWAY CONSTRUCTION (Taxiways)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**	**Volume (CY)**	**Cost**
Taxiway K							
Full Depth			23	18418.00	2046.44	1307.45	$730,580.67
Shoulders			14	11432.00	1270.22	493.98	$267,762.84
	92	200	**TOTAL**	**18418**	**2047**		**$998,343.51**

Mainline-PCC	$859,506.67
Shoulders-AC	$315,015.11
TOTAL COST	**$1,174,521.78**

Scenario 2 (Work Area 1)

Reconstruction Pavement Area (SY):	11499

Projects Included

20 RELOCATE HOLDING POSITION MARKINGS

14 RESURFACE TAXIWAY D, TAXIWAY S1 AND TAXIWAY U PAVEMENT

TAXIWAY RECONSTRUCTION (Taxiways)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**	**Volume (CY)**	**Cost**
Partial Depth, D, S1, U	1,035	100	10	103490.00	11498.89	3194.14	$4,829,533.33
			TOTAL	**103490**	**11499**		**$4,829,533.33**

"Concrete Placement" assumed for partial depth taxiway reconstruction. No asphalt placement.

HOLDING POSITION MARKINGS (Runway Markings Project Type)				50,000

800 ft x 4 ft

TOTAL COST **$4,829,533.33**

Scenario 3 (Work Area 2 and 2A)

New Pavement Area (SY):	75761
Demolition Pavement Area (SY):	22545

Projects Included

2 MODIFY EXISTING CONNECTOR TAXIWAY F AND REDESIGNATE AS TAXIWAY E
3* REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F
4 CONSTRUCT EXIT TAXIWAY S5
6 RECONSTRUCT EXISTING EXIT TAXIWAY P TO A HIGH-SPEED EXIT AND REDESIGNATE AS TAXIWAY S8
7 REMOVE EXISTING TAXIWAY P BETWEEN RUNWAYS 8L-26R AND 8R-26L
8 CONSTRUCT BYPASS TAXIWAY S11
9* CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8R-26L AND 8L-26R
21 RELOCATE RUNWAY 8R PAPI
10 CONSTRUCT BYPASS TAXIWAY S3
17 REPLACE/REHABILITATE PANELS ON TAXIWAY K BETWEEN RUNWAYS
19 CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAYS

*Project construction overlaps Scenario 3 and 4.

TAXIWAY DEMOLITION (Demolition - Asphalt, Demolition - Concrete)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**		**Cost**
Taxiway Demolition, F, P							
Asphalt Shoulders	2,029	50		101452.00	11272.44		$2,031,766.43
Concrete Taxiway	1,015	100		101452.00	11272.44		$2,031,766.43
			TOTAL	**202904**	**22545**		**$4,063,533.00**

Assume 50' wide shoulders and 100' wide taxiway (50% asphalt shoulders and 50% concrete taxiway)

TAXIWAY CONSTRUCTION (Taxiways)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**	**Volume (CY)**	**Cost**
Taxiways S3, E, F, S5, S8, Q, K, S11							
Full Depth			23	434389.00	48265.44	30836.26	$17,230,763.67
Shoulders			14	247454.00	27494.89		$5,795,922.58
	3,409	200	**TOTAL**	**681843**	**75761**		**$23,026,686.24**

RELOCATE RUNWAY 8R PAPI (NAVAIDS - PAPI)

$100,000

Mainline-PCC $20,271,486.67

Details **Scenario 4 (Work Area 3)**

New Pavement Area (SY):	19890
Demolition Pavement Area (SY):	4854

Projects Included

3* REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F

9* CONSTRUCT CROSSING TAXIWAY E

*Project construction overlaps Scenario 3 and 4.

TAXIWAY DEMOLITION (Demolition - Asphalt, Demolition - Concrete)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**		**Cost**
Taxiways P,Q, F							
Asphalt Shoulders	437	50	--	21844.00	2427.11		$550,732.40
Concrete Taxiway	218	100	--	21844.00	2427.11		$550,732.40
			TOTAL	**43,688**	**4854.22**		**$1,101,465.00**

Assume 50' wide shoulders and 100' wide taxiway (50% asphalt shoulders and 50% concrete taxiway)

TAXIWAY CONSTRUCTION (Taxiways)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**	**Volume (CY)**	**Cost**
Taxiways E, F, P and T							
Full Depth			23	126136.00	14015.11	8954.10	$5,003,394.67
Shoulders			14	52866.00	5874.00		$1,238,239.20
	895	200	**TOTAL**	**179002**	**19890**		**$6,241,634.00**

Mainline-PCC	$5,886,346.67
Shoulders-AC	$1,456,752.00
TOTAL COST	**$7,343,099.00**

Details **Scenario 5 (Work Area 3A)**

Projects Included

25 RELOCATE SOUTH ELECTRICAL VAULT

RELOCATED ELECTRICAL VAULT (Building - 10000 sqft - 1 story)

TOTAL COST	**$3,000,000.00**

Scenario 6 (Work Area 4 and 5)

New Pavement Area (SY):	700
Demolition Pavement Area (SY):	0
Reconstruction Pavement Area (SY):	56774

Projects Included

1 REHABILITATE RUNWAY 8R-26L
23 RELOCATE RUNWAY 26L (8R END) LOCALIZER EQUIPMENT BUILDING
24 MODIFY EXISTING VEHICLE SERVICE ROAD

RUNWAY8R/26L DEMO/CONSTRUCTION (Rehabilitate Runway)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**	**Volume (CY)**	**Cost**
RNWY 8R/26L Keel (concrete)	3,406	150	23	510966.00	56774.00	36272.28	$23,845,080.00
Shoulders (asphalt)	12,648	50	14	632417.00	70268.56	27326.66	$17,426,601.78
Blast Pads (asphalt)	796	250	23	198923.00	22102.56	14121.08	$5,481,433.78
	5,369	250	**TOTAL**	**1342306.00**	**56774**		**$46,753,115.56**

VSR (Service Road)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**	**Volume (CY)**	**Cost**
VSR Pavement (asphalt)	1,298	30	12	38946.00	4327.33	1442.44	$150,000.00
				TOTAL	**4328**		**$150,000.00**

*Approximately 700 SY of 4328 SY is new VSR pavement.

Relocated Localizer (NAVAIDS - ILS Localizer) $100,000 Cost

Scenario 7 (Work Area 6 and 7)

New Pavement Area (SY):	13757
Demolition Pavement Area (SY):	501

Projects Included

11* CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8L-26R AND TAXIWAY N
15* CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
16* CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
12* RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED TAXIWAY
18* CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAY 8L-26R AND TAXIWAY N
13* CONSTRUCT BYPASS TAXIWAY N2
22 RELOCATE PERIMETER FENCE AND REMOVE OBJECTS WITHIN ROFA

*Project construction overlaps Scenario 2 and 3.

TAXIWAY DEMOLITION (Demolition - concrete)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**	**Volume (CY)**	**Cost**
Taxiway K (concrete)	45	100		4505.00	500.56		$1,212,280.27
				TOTAL	**501**		**$1,212,280.27**

TAXIWAY CONSTRUCTION (Taxiways)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**	**Volume (CY)**	**Cost**
Taxiways N2, E, F, K, L and Q							
Full depth	1,238	100	23	123812.00	13756.89	8789.12	$4,911,209.33
Shoulders	1,672	50	14	83612.00	9290.22	3612.86	$1,958,378.84
	1,037	200	**TOTAL**	**207424.00**	**13757**		**$6,869,588.18**

Perimeter Fence (Fencing)	Cost	$200,000
	Length	1500 ft

Mainline-PCC	$ 5,777,893.33
Shoulders-AC	$ 2,303,975.11

Scenario 8 (Work Areas 10 and 11)

New Pavement Area (SY):	30726
Demolition Pavement Area (SY):	1586

Projects Included

11*	CONSTRUCT CROSSING TAXIWAY E
15*	CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
16*	CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
12*	RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED TAXIWAY
18*	CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY P BETWEEN RUNWAY 8L-26R AND TAXIWAY N
13*	CONSTRUCT BYPASS TAXIWAY N2

*Project construction overlaps Scenario 2 and 3.

TAXIWAY DEMOLITION (Demolition - Concrete)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**	**Volume (CY)**	**Cost**
Taxiway L (concrete)	143	100		14270.00	1585.56		$ 1,615,432.00
				TOTAL	**1586**		**$ 1,615,432.00**

TAXIWAY CONNECTOR CONSTRUCTION (Taxiways)							
Location	**Length (ft)**	**Width (ft)**	**Thickness (in)**	**Area (SF)**	**Area (SY)**	**Volume (CY)**	**Cost**
Taxiways N2, E, F, K, L and P							
Full Depth	1,648	100	23	164808.00	18312.00	11699.33	$ 6,537,384.00
Shoulder	2,234	50	14	111720.00	12413.33	4827.41	$ 2,616,730.67
	1,383	200	**TOTAL**	**276528.00**	**30726**		**$ 9,154,114.67**

Mainline-PCC	$ 7,691,040.00
Shoulders-AC	$ 3,078,506.67
TOTAL COST	**$ 10,769,546.67**

Attachment 1-B
ACEIT Input Summary

Airport Constrcution Emission Inventory Tool (ACEIT)
Version 1.0

==========

Setup
--

Study Name
ONT Supplemental EIR

Study Description
ONT Supplemental EIR for the the Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

State/County
California
San Bernardino County

Scenarios

Scenario ID	Year	Number of Months	Season	Average Daily	Max Daily Temp Chang	Min Daily Temp Change (degF)
1	2023	2	Summer	50 < T <= 80	10 <= Change in T < 20	10 <= Change in T < 20
2	2023	2	Summer	50 < T <= 80	10 <= Change in T < 20	10 <= Change in T < 20
3	2023	6	Summer	50 < T <= 80	10 <= Change in T < 20	10 <= Change in T < 20
4	2023	3	Summer	50 < T <= 80	10 <= Change in T < 20	10 <= Change in T < 20
5	2023	9	Summer	50 < T <= 80	10 <= Change in T < 20	10 <= Change in T < 20
6	2024	9	Summer	50 < T <= 80	10 <= Change in T < 20	10 <= Change in T < 20
7	2025	5	Summer	50 < T <= 80	10 <= Change in T < 20	10 <= Change in T < 20
8	2025	5	Summer	50 < T <= 80	10 <= Change in T < 20	10 <= Change in T < 20
9						

==========

Project
--

Scenario ID
1
2
3
4
5
6
7
8

Selected Project

1	Demolition - Asphalt	SetSelected
1	Demolition - Concrete	SetSelected
1	Taxiways	SetSelected
2	Runway Markings	SetSelected
2	Taxiways	SetSelected
3	Demolition - Asphalt	SetSelected
3	Demolition - Concrete	SetSelected
3	NAVAIDS	SetSelected
3	Taxiways	SetSelected
4	Demolition - Asphalt	SetSelected
4	Demolition - Concrete	SetSelected
4	Taxiways	SetSelected
5	Building - 10000 sqft- 1 story	SetSelected
6	NAVAIDS	SetSelected
6	Rehabilitate Runway	SetSelected
6	Service Road	SetSelected
7	Fencing	SetSelected
8	Demolition - Concrete	SetSelected
8	Taxiways	SetSelected

Selected Construction Activities

1	Demolition - Asphalt	Asphalt Demolition	SetSelected
1	Demolition - Concrete	Concrete Demolition	SetSelected
1	Taxiways	Asphalt Placement	SetSelected
1	Taxiways	Concrete Placement	SetSelected
1	Taxiways	Drainage - 24 inch SICPP	SetSelected
1	Taxiways	Drainage - 6 inch Perforated Underdrain	SetSelected
1	Taxiways	Dust Control	SetSelected
1	Taxiways	Excavation (Borrow)	SetSelected
1	Taxiways	Excavation (Cut to Fill)	SetSelected
1	Taxiways	Excavation (Topsoil Stripping)	SetSelected
1	Taxiways	Fencing	SetSelected
1	Taxiways	Grading	SetSelected
1	Taxiways	Hydroseeding	SetSelected
1	Taxiways	Lighting	SetSelected
1	Taxiways	Markings	SetSelected
1	Taxiways	Soil Erosion/Sediment Control	SetSelected
1	Taxiways	Subbase Placement	SetSelected
1	Taxiways	Topsoil Placement	SetSelected
2	Runway Markings	Marking Removal	SetSelected
2	Runway Markings	Markings	SetSelected
2	Taxiways	Asphalt Placement	SetSelected
2	Taxiways	Concrete Placement	SetSelected
2	Taxiways	Drainage - 24 inch SICPP	SetSelected
2	Taxiways	Drainage - 6 inch Perforated Underdrain	SetSelected
2	Taxiways	Dust Control	SetSelected
2	Taxiways	Excavation (Borrow)	SetSelected
2	Taxiways	Excavation (Cut to Fill)	SetSelected
2	Taxiways	Excavation (Topsoil Stripping)	SetSelected
2	Taxiways	Fencing	SetSelected
2	Taxiways	Grading	SetSelected
2	Taxiways	Hydroseeding	SetSelected
2	Taxiways	Lighting	SetSelected
2	Taxiways	Markings	SetSelected
2	Taxiways	Soil Erosion/Sediment Control	SetSelected
2	Taxiways	Subbase Placement	SetSelected
2	Taxiways	Topsoil Placement	SetSelected
3	Demolition - Asphalt	Asphalt Demolition	SetSelected
3	Demolition - Concrete	Concrete Demolition	SetSelected
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	SetSelected
3	Taxiways	Asphalt Placement	SetSelected
3	Taxiways	Concrete Placement	SetSelected
3	Taxiways	Drainage - 24 inch SICPP	SetSelected
3	Taxiways	Drainage - 6 inch Perforated Underdrain	SetSelected
3	Taxiways	Dust Control	SetSelected
3	Taxiways	Excavation (Borrow)	SetSelected
3	Taxiways	Excavation (Cut to Fill)	SetSelected
3	Taxiways	Excavation (Topsoil Stripping)	SetSelected
3	Taxiways	Fencing	SetSelected
3	Taxiways	Grading	SetSelected
3	Taxiways	Hydroseeding	SetSelected
3	Taxiways	Lighting	SetSelected
3	Taxiways	Markings	SetSelected
3	Taxiways	Soil Erosion/Sediment Control	SetSelected
3	Taxiways	Subbase Placement	SetSelected
3	Taxiways	Topsoil Placement	SetSelected
4	Demolition - Asphalt	Asphalt Demolition	SetSelected
4	Demolition - Concrete	Concrete Demolition	SetSelected
4	Taxiways	Asphalt Placement	SetSelected
4	Taxiways	Concrete Placement	SetSelected
4	Taxiways	Drainage - 24 inch SICPP	SetSelected
4	Taxiways	Drainage - 6 inch Perforated Underdrain	SetSelected
4	Taxiways	Dust Control	SetSelected
4	Taxiways	Excavation (Borrow)	SetSelected
4	Taxiways	Excavation (Cut to Fill)	SetSelected
4	Taxiways	Excavation (Topsoil Stripping)	SetSelected
4	Taxiways	Fencing	SetSelected
4	Taxiways	Grading	SetSelected
4	Taxiways	Hydroseeding	SetSelected
4	Taxiways	Lighting	SetSelected
4	Taxiways	Markings	SetSelected
4	Taxiways	Soil Erosion/Sediment Control	SetSelected
4	Taxiways	Subbase Placement	SetSelected
4	Taxiways	Topsoil Placement	SetSelected
5	Building - 10000 sqft- 1 story	Concrete Foundations	SetSelected
5	Building - 10000 sqft- 1 story	Construction Mob & Layout	SetSelected
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	SetSelected
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	SetSelected
5	Building - 10000 sqft- 1 story	Roofing	SetSelected
5	Building - 10000 sqft- 1 story	Security & Safety Systems	SetSelected
5	Building - 10000 sqft- 1 story	Structural Steel Erection	SetSelected
6	NAVAIDS	Instrument Landing System (ILS) Localizer	SetSelected
6	Rehabilitate Runway	Asphalt Placement	SetSelected
6	Rehabilitate Runway	Cold Milling	SetSelected
6	Rehabilitate Runway	Concrete Demolition	SetSelected
6	Rehabilitate Runway	Concrete Placement	SetSelected
6	Rehabilitate Runway	Dust Control	SetSelected
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	SetSelected
6	Rehabilitate Runway	Excavation (Topsoil Stripping)	SetSelected
6	Rehabilitate Runway	Grading	SetSelected
6	Rehabilitate Runway	Hydroseeding	SetSelected
6	Rehabilitate Runway	Lighting	SetSelected
6	Rehabilitate Runway	Markings	SetSelected
6	Rehabilitate Runway	Sealing Random Cracks	SetSelected
6	Rehabilitate Runway	Soil Erosion/Sediment Control	SetSelected
6	Rehabilitate Runway	Subbase Placement	SetSelected
6	Rehabilitate Runway	Topsoil Placement	SetSelected
6	Service Road	Asphalt Placement	SetSelected
6	Service Road	Clearing and Grubbing	SetSelected
6	Service Road	Concrete Placement	SetSelected
6	Service Road	Drainage - 24 inch SICPP	SetSelected
6	Service Road	Drainage - 6 inch Perforated Underdrain	SetSelected
6	Service Road	Dust Control	SetSelected
6	Service Road	Excavation (Borrow)	SetSelected
6	Service Road	Excavation (Cut to Fill)	SetSelected
6	Service Road	Excavation (Topsoil Stripping)	SetSelected
6	Service Road	Fencing	SetSelected
6	Service Road	Grading	SetSelected
6	Service Road	Hydroseeding	SetSelected
6	Service Road	Markings	SetSelected
6	Service Road	Soil Erosion/Sediment Control	SetSelected
6	Service Road	Subbase Placement	SetSelected
6	Service Road	Topsoil Placement	SetSelected
7	Demolition - Concrete	Concrete Demolition	SetSelected
7	Fencing	Clearing and Grubbing	SetSelected

7	Fencing	Excavation (Cut to Fill)	SetSelected
7	Fencing	Fencing	SetSelected
7	Fencing	Grading	SetSelected
7	Fencing	Hydroseeding	SetSelected
7	Fencing	Soil Erosion/Sediment Control	SetSelected
7	Fencing	Topsoil Placement	SetSelected
7	Taxiways	Asphalt Placement	SetSelected
7	Taxiways	Concrete Placement	SetSelected
7	Taxiways	Drainage - 24 inch SICPP	SetSelected
7	Taxiways	Drainage - 6 inch Perforated Underdrain	SetSelected
7	Taxiways	Dust Control	SetSelected
7	Taxiways	Excavation (Borrow)	SetSelected
7	Taxiways	Excavation (Cut to Fill)	SetSelected
7	Taxiways	Excavation (Topsoil Stripping)	SetSelected
7	Taxiways	Fencing	SetSelected
7	Taxiways	Grading	SetSelected
7	Taxiways	Hydroseeding	SetSelected
7	Taxiways	Lighting	SetSelected
7	Taxiways	Markings	SetSelected
7	Taxiways	Soil Erosion/Sediment Control	SetSelected
7	Taxiways	Subbase Placement	SetSelected
7	Taxiways	Topsoil Placement	SetSelected
8	Demolition - Concrete	Concrete Demolition	SetSelected
8	Taxiways	Asphalt Placement	SetSelected
8	Taxiways	Concrete Placement	SetSelected
8	Taxiways	Drainage - 24 inch SICPP	SetSelected
8	Taxiways	Drainage - 6 inch Perforated Underdrain	SetSelected
8	Taxiways	Dust Control	SetSelected
8	Taxiways	Excavation (Borrow)	SetSelected
8	Taxiways	Excavation (Cut to Fill)	SetSelected
8	Taxiways	Excavation (Topsoil Stripping)	SetSelected
8	Taxiways	Fencing	SetSelected
8	Taxiways	Grading	SetSelected
8	Taxiways	Hydroseeding	SetSelected
8	Taxiways	Lighting	SetSelected
8	Taxiways	Markings	SetSelected
8	Taxiways	Soil Erosion/Sediment Control	SetSelected
8	Taxiways	Subbase Placement	SetSelected
8	Taxiways	Topsoil Placement	SetSelected

Selected Fuel Types

1	Diesel
2	Diesel
3	Diesel
4	Diesel
5	Diesel
6	Diesel
7	Diesel
8	Diesel

Selected Equipment

1	Demolition - Asphalt	Asphalt Demolition	Dozer	SetSelected
1	Demolition - Asphalt	Asphalt Demolition	Excavator	SetSelected
1	Demolition - Asphalt	Asphalt Demolition	Pickup Truck	SetSelected
1	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	SetSelected
1	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	SetSelected
1	Demolition - Concrete	Concrete Demolition	Pickup Truck	SetSelected
1	Taxiways	Asphalt Placement	Asphalt Paver	SetSelected
1	Taxiways	Asphalt Placement	Dump Truck	SetSelected
1	Taxiways	Asphalt Placement	Other General Equipment	SetSelected
1	Taxiways	Asphalt Placement	Pickup Truck	SetSelected
1	Taxiways	Asphalt Placement	Roller	SetSelected
1	Taxiways	Asphalt Placement	Skid Steer Loader	SetSelected
1	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	SetSelected
1	Taxiways	Concrete Placement	Air Compressor	SetSelected
1	Taxiways	Concrete Placement	Concrete Saws	SetSelected
1	Taxiways	Concrete Placement	Concrete Truck	SetSelected
1	Taxiways	Concrete Placement	Other General Equipment	SetSelected
1	Taxiways	Concrete Placement	Pickup Truck	SetSelected
1	Taxiways	Concrete Placement	Rubber Tired Loader	SetSelected
1	Taxiways	Concrete Placement	Slip Form Paver	SetSelected
1	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	SetSelected
1	Taxiways	Drainage - 24 inch SICPP	Dozer	SetSelected
1	Taxiways	Drainage - 24 inch SICPP	Dump Truck	SetSelected
1	Taxiways	Drainage - 24 inch SICPP	Excavator	SetSelected
1	Taxiways	Drainage - 24 inch SICPP	Loader	SetSelected
1	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	SetSelected
1	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	SetSelected
1	Taxiways	Drainage - 24 inch SICPP	Roller	SetSelected
1	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	SetSelected
1	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	SetSelected
1	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	SetSelected
1	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	SetSelected
1	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	SetSelected
1	Taxiways	Dust Control	Water Truck	SetSelected
1	Taxiways	Excavation (Borrow)	Dozer	SetSelected
1	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	SetSelected
1	Taxiways	Excavation (Borrow)	Pickup Truck	SetSelected
1	Taxiways	Excavation (Borrow)	Roller	SetSelected
1	Taxiways	Excavation (Cut to Fill)	Dozer	SetSelected
1	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	SetSelected
1	Taxiways	Excavation (Cut to Fill)	Excavator	SetSelected
1	Taxiways	Excavation (Cut to Fill)	Pickup Truck	SetSelected
1	Taxiways	Excavation (Cut to Fill)	Roller	SetSelected
1	Taxiways	Excavation (Cut to Fill)	Scraper	SetSelected
1	Taxiways	Excavation (Topsoil Stripping)	Dozer	SetSelected
1	Taxiways	Fencing	Concrete Truck	SetSelected
1	Taxiways	Fencing	Dump Truck	SetSelected
1	Taxiways	Fencing	Other General Equipment	SetSelected
1	Taxiways	Fencing	Pickup Truck	SetSelected
1	Taxiways	Fencing	Skid Steer Loader	SetSelected
1	Taxiways	Fencing	Tractors/Loader/Backhoe	SetSelected
1	Taxiways	Grading	Dozer	SetSelected
1	Taxiways	Grading	Grader	SetSelected
1	Taxiways	Grading	Roller	SetSelected
1	Taxiways	Hydroseeding	Hydroseeder	SetSelected
1	Taxiways	Hydroseeding	Off-Road Truck	SetSelected
1	Taxiways	Lighting	Dump Truck	SetSelected
1	Taxiways	Lighting	Loader	SetSelected
1	Taxiways	Lighting	Other General Equipment	SetSelected
1	Taxiways	Lighting	Pickup Truck	SetSelected
1	Taxiways	Lighting	Skid Steer Loader	SetSelected
1	Taxiways	Lighting	Tractors/Loader/Backhoe	SetSelected
1	Taxiways	Markings	Flatbed Truck	SetSelected
1	Taxiways	Markings	Other General Equipment	SetSelected
1	Taxiways	Markings	Pickup Truck	SetSelected
1	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	SetSelected
1	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	SetSelected
1	Taxiways	Soil Erosion/Sediment Control	Pumps	SetSelected
1	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	SetSelected
1	Taxiways	Subbase Placement	Dozer	SetSelected
1	Taxiways	Subbase Placement	Dump Truck (12 cy)	SetSelected
1	Taxiways	Subbase Placement	Pickup Truck	SetSelected
1	Taxiways	Subbase Placement	Roller	SetSelected
1	Taxiways	Topsoil Placement	Dozer	SetSelected
1	Taxiways	Topsoil Placement	Dump Truck	SetSelected
1	Taxiways	Topsoil Placement	Pickup Truck	SetSelected
2	Runway Markings	Marking Removal	Pickup Truck	SetSelected
2	Runway Markings	Marking Removal	Pressure Washer	SetSelected
2	Runway Markings	Marking Removal	Sweepers/Scrubbers	SetSelected
2	Runway Markings	Marking Removal	Water Truck	SetSelected
2	Runway Markings	Markings	Flatbed Truck	SetSelected
2	Runway Markings	Markings	Other General Equipment	SetSelected
2	Runway Markings	Markings	Pickup Truck	SetSelected
2	Taxiways	Asphalt Placement	Asphalt Paver	SetSelected
2	Taxiways	Asphalt Placement	Dump Truck	SetSelected
2	Taxiways	Asphalt Placement	Other General Equipment	SetSelected
2	Taxiways	Asphalt Placement	Pickup Truck	SetSelected
2	Taxiways	Asphalt Placement	Roller	SetSelected
2	Taxiways	Asphalt Placement	Skid Steer Loader	SetSelected
2	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	SetSelected
2	Taxiways	Concrete Placement	Air Compressor	SetSelected
2	Taxiways	Concrete Placement	Concrete Saws	SetSelected
2	Taxiways	Concrete Placement	Concrete Truck	SetSelected
2	Taxiways	Concrete Placement	Other General Equipment	SetSelected
2	Taxiways	Concrete Placement	Pickup Truck	SetSelected
2	Taxiways	Concrete Placement	Rubber Tired Loader	SetSelected
2	Taxiways	Concrete Placement	Slip Form Paver	SetSelected
2	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	SetSelected
2	Taxiways	Drainage - 24 inch SICPP	Dozer	SetSelected
2	Taxiways	Drainage - 24 inch SICPP	Dump Truck	SetSelected
2	Taxiways	Drainage - 24 inch SICPP	Excavator	SetSelected
2	Taxiways	Drainage - 24 inch SICPP	Loader	SetSelected
2	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	SetSelected
2	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	SetSelected
2	Taxiways	Drainage - 24 inch SICPP	Roller	SetSelected
2	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	SetSelected
2	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	SetSelected
2	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	SetSelected
2	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	SetSelected
2	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	SetSelected
2	Taxiways	Dust Control	Water Truck	SetSelected
2	Taxiways	Excavation (Borrow)	Dozer	SetSelected
2	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	SetSelected
2	Taxiways	Excavation (Borrow)	Pickup Truck	SetSelected
2	Taxiways	Excavation (Borrow)	Roller	SetSelected
2	Taxiways	Excavation (Cut to Fill)	Dozer	SetSelected
2	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	SetSelected
2	Taxiways	Excavation (Cut to Fill)	Excavator	SetSelected
2	Taxiways	Excavation (Cut to Fill)	Pickup Truck	SetSelected
2	Taxiways	Excavation (Cut to Fill)	Roller	SetSelected
2	Taxiways	Excavation (Cut to Fill)	Scraper	SetSelected
2	Taxiways	Excavation (Topsoil Stripping)	Dozer	SetSelected
2	Taxiways	Fencing	Concrete Truck	SetSelected
2	Taxiways	Fencing	Dump Truck	SetSelected
2	Taxiways	Fencing	Other General Equipment	SetSelected
2	Taxiways	Fencing	Pickup Truck	SetSelected
2	Taxiways	Fencing	Skid Steer Loader	SetSelected
2	Taxiways	Fencing	Tractors/Loader/Backhoe	SetSelected
2	Taxiways	Grading	Dozer	SetSelected

2	Taxiways	Grading	Grader	SetSelected
2	Taxiways	Grading	Roller	SetSelected
2	Taxiways	Hydroseeding	Hydroseeder	SetSelected
2	Taxiways	Hydroseeding	Off-Road Truck	SetSelected
2	Taxiways	Lighting	Dump Truck	SetSelected
2	Taxiways	Lighting	Loader	SetSelected
2	Taxiways	Lighting	Other General Equipment	SetSelected
2	Taxiways	Lighting	Pickup Truck	SetSelected
2	Taxiways	Lighting	Skid Steer Loader	SetSelected
2	Taxiways	Lighting	Tractors/Loader/Backhoe	SetSelected
2	Taxiways	Markings	Flatbed Truck	SetSelected
2	Taxiways	Markings	Other General Equipment	SetSelected
2	Taxiways	Markings	Pickup Truck	SetSelected
2	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	SetSelected
2	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	SetSelected
2	Taxiways	Soil Erosion/Sediment Control	Pumps	SetSelected
2	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	SetSelected
2	Taxiways	Subbase Placement	Dozer	SetSelected
2	Taxiways	Subbase Placement	Dump Truck (12 cy)	SetSelected
2	Taxiways	Subbase Placement	Pickup Truck	SetSelected
2	Taxiways	Subbase Placement	Roller	SetSelected
2	Taxiways	Topsoil Placement	Dozer	SetSelected
2	Taxiways	Topsoil Placement	Dump Truck	SetSelected
2	Taxiways	Topsoil Placement	Pickup Truck	SetSelected
3	Demolition - Asphalt	Asphalt Demolition	Dozer	SetSelected
3	Demolition - Asphalt	Asphalt Demolition	Excavator	SetSelected
3	Demolition - Asphalt	Asphalt Demolition	Pickup Truck	SetSelected
3	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	SetSelected
3	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	SetSelected
3	Demolition - Concrete	Concrete Demolition	Pickup Truck	SetSelected
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Air Compressor	SetSelected
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Dump Truck	SetSelected
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Other General Equipment	SetSelected
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Pickup Truck	SetSelected
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Skid Steer Loader	SetSelected
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Tractors/Loader/Backhoe	SetSelected
3	Taxiways	Asphalt Placement	Asphalt Paver	SetSelected
3	Taxiways	Asphalt Placement	Dump Truck	SetSelected
3	Taxiways	Asphalt Placement	Other General Equipment	SetSelected
3	Taxiways	Asphalt Placement	Pickup Truck	SetSelected
3	Taxiways	Asphalt Placement	Roller	SetSelected
3	Taxiways	Asphalt Placement	Skid Steer Loader	SetSelected
3	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	SetSelected
3	Taxiways	Concrete Placement	Air Compressor	SetSelected
3	Taxiways	Concrete Placement	Concrete Saws	SetSelected
3	Taxiways	Concrete Placement	Concrete Truck	SetSelected
3	Taxiways	Concrete Placement	Other General Equipment	SetSelected
3	Taxiways	Concrete Placement	Pickup Truck	SetSelected
3	Taxiways	Concrete Placement	Rubber Tired Loader	SetSelected
3	Taxiways	Concrete Placement	Slip Form Paver	SetSelected
3	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	SetSelected
3	Taxiways	Drainage - 24 inch SICPP	Dozer	SetSelected
3	Taxiways	Drainage - 24 inch SICPP	Dump Truck	SetSelected
3	Taxiways	Drainage - 24 inch SICPP	Excavator	SetSelected
3	Taxiways	Drainage - 24 inch SICPP	Loader	SetSelected
3	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	SetSelected
3	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	SetSelected
3	Taxiways	Drainage - 24 inch SICPP	Roller	SetSelected
3	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	SetSelected
3	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	SetSelected
3	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	SetSelected
3	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	SetSelected
3	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	SetSelected
3	Taxiways	Dust Control	Water Truck	SetSelected
3	Taxiways	Excavation (Borrow)	Dozer	SetSelected
3	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	SetSelected
3	Taxiways	Excavation (Borrow)	Pickup Truck	SetSelected
3	Taxiways	Excavation (Borrow)	Roller	SetSelected
3	Taxiways	Excavation (Cut to Fill)	Dozer	SetSelected
3	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	SetSelected
3	Taxiways	Excavation (Cut to Fill)	Excavator	SetSelected
3	Taxiways	Excavation (Cut to Fill)	Pickup Truck	SetSelected
3	Taxiways	Excavation (Cut to Fill)	Roller	SetSelected
3	Taxiways	Excavation (Cut to Fill)	Scraper	SetSelected
3	Taxiways	Excavation (Topsoil Stripping)	Dozer	SetSelected
3	Taxiways	Fencing	Concrete Truck	SetSelected
3	Taxiways	Fencing	Dump Truck	SetSelected
3	Taxiways	Fencing	Other General Equipment	SetSelected
3	Taxiways	Fencing	Pickup Truck	SetSelected
3	Taxiways	Fencing	Skid Steer Loader	SetSelected
3	Taxiways	Fencing	Tractors/Loader/Backhoe	SetSelected
3	Taxiways	Grading	Dozer	SetSelected
3	Taxiways	Grading	Grader	SetSelected
3	Taxiways	Grading	Roller	SetSelected
3	Taxiways	Hydroseeding	Hydroseeder	SetSelected
3	Taxiways	Hydroseeding	Off-Road Truck	SetSelected
3	Taxiways	Lighting	Dump Truck	SetSelected
3	Taxiways	Lighting	Loader	SetSelected
3	Taxiways	Lighting	Other General Equipment	SetSelected
3	Taxiways	Lighting	Pickup Truck	SetSelected
3	Taxiways	Lighting	Skid Steer Loader	SetSelected
3	Taxiways	Lighting	Tractors/Loader/Backhoe	SetSelected
3	Taxiways	Markings	Flatbed Truck	SetSelected
3	Taxiways	Markings	Other General Equipment	SetSelected
3	Taxiways	Markings	Pickup Truck	SetSelected
3	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	SetSelected
3	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	SetSelected
3	Taxiways	Soil Erosion/Sediment Control	Pumps	SetSelected
3	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	SetSelected
3	Taxiways	Subbase Placement	Dozer	SetSelected
3	Taxiways	Subbase Placement	Dump Truck (12 cy)	SetSelected
3	Taxiways	Subbase Placement	Pickup Truck	SetSelected
3	Taxiways	Subbase Placement	Roller	SetSelected
3	Taxiways	Topsoil Placement	Dozer	SetSelected
3	Taxiways	Topsoil Placement	Dump Truck	SetSelected
3	Taxiways	Topsoil Placement	Pickup Truck	SetSelected
4	Demolition - Asphalt	Asphalt Demolition	Dozer	SetSelected
4	Demolition - Asphalt	Asphalt Demolition	Excavator	SetSelected
4	Demolition - Asphalt	Asphalt Demolition	Pickup Truck	SetSelected
4	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	SetSelected
4	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	SetSelected
4	Demolition - Concrete	Concrete Demolition	Pickup Truck	SetSelected
4	Taxiways	Asphalt Placement	Asphalt Paver	SetSelected
4	Taxiways	Asphalt Placement	Dump Truck	SetSelected
4	Taxiways	Asphalt Placement	Other General Equipment	SetSelected
4	Taxiways	Asphalt Placement	Pickup Truck	SetSelected
4	Taxiways	Asphalt Placement	Roller	SetSelected
4	Taxiways	Asphalt Placement	Skid Steer Loader	SetSelected
4	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	SetSelected
4	Taxiways	Concrete Placement	Air Compressor	SetSelected
4	Taxiways	Concrete Placement	Concrete Saws	SetSelected
4	Taxiways	Concrete Placement	Concrete Truck	SetSelected
4	Taxiways	Concrete Placement	Other General Equipment	SetSelected
4	Taxiways	Concrete Placement	Pickup Truck	SetSelected
4	Taxiways	Concrete Placement	Rubber Tired Loader	SetSelected
4	Taxiways	Concrete Placement	Slip Form Paver	SetSelected
4	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	SetSelected
4	Taxiways	Drainage - 24 inch SICPP	Dozer	SetSelected
4	Taxiways	Drainage - 24 inch SICPP	Dump Truck	SetSelected
4	Taxiways	Drainage - 24 inch SICPP	Excavator	SetSelected
4	Taxiways	Drainage - 24 inch SICPP	Loader	SetSelected
4	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	SetSelected
4	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	SetSelected
4	Taxiways	Drainage - 24 inch SICPP	Roller	SetSelected
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	SetSelected
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	SetSelected
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	SetSelected
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	SetSelected
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	SetSelected
4	Taxiways	Dust Control	Water Truck	SetSelected
4	Taxiways	Excavation (Borrow)	Dozer	SetSelected
4	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	SetSelected
4	Taxiways	Excavation (Borrow)	Pickup Truck	SetSelected
4	Taxiways	Excavation (Borrow)	Roller	SetSelected
4	Taxiways	Excavation (Cut to Fill)	Dozer	SetSelected
4	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	SetSelected
4	Taxiways	Excavation (Cut to Fill)	Excavator	SetSelected
4	Taxiways	Excavation (Cut to Fill)	Pickup Truck	SetSelected
4	Taxiways	Excavation (Cut to Fill)	Roller	SetSelected
4	Taxiways	Excavation (Cut to Fill)	Scraper	SetSelected
4	Taxiways	Excavation (Topsoil Stripping)	Dozer	SetSelected
4	Taxiways	Fencing	Concrete Truck	SetSelected
4	Taxiways	Fencing	Dump Truck	SetSelected
4	Taxiways	Fencing	Other General Equipment	SetSelected
4	Taxiways	Fencing	Pickup Truck	SetSelected
4	Taxiways	Fencing	Skid Steer Loader	SetSelected
4	Taxiways	Fencing	Tractors/Loader/Backhoe	SetSelected
4	Taxiways	Grading	Dozer	SetSelected
4	Taxiways	Grading	Grader	SetSelected
4	Taxiways	Grading	Roller	SetSelected
4	Taxiways	Hydroseeding	Hydroseeder	SetSelected
4	Taxiways	Hydroseeding	Off-Road Truck	SetSelected
4	Taxiways	Lighting	Dump Truck	SetSelected
4	Taxiways	Lighting	Loader	SetSelected
4	Taxiways	Lighting	Other General Equipment	SetSelected
4	Taxiways	Lighting	Pickup Truck	SetSelected
4	Taxiways	Lighting	Skid Steer Loader	SetSelected
4	Taxiways	Lighting	Tractors/Loader/Backhoe	SetSelected
4	Taxiways	Markings	Flatbed Truck	SetSelected
4	Taxiways	Markings	Other General Equipment	SetSelected
4	Taxiways	Markings	Pickup Truck	SetSelected
4	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	SetSelected
4	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	SetSelected
4	Taxiways	Soil Erosion/Sediment Control	Pumps	SetSelected
4	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	SetSelected
4	Taxiways	Subbase Placement	Dozer	SetSelected
4	Taxiways	Subbase Placement	Dump Truck (12 cy)	SetSelected
4	Taxiways	Subbase Placement	Pickup Truck	SetSelected
4	Taxiways	Subbase Placement	Roller	SetSelected
4	Taxiways	Topsoil Placement	Dozer	SetSelected

4	Taxiways	Topsoil Placement	Dump Truck	SetSelected
4	Taxiways	Topsoil Placement	Pickup Truck	SetSelected
5	Building - 10000 sqft- 1 story	Concrete Foundations	Backhoe	SetSelected
5	Building - 10000 sqft- 1 story	Concrete Foundations	Concrete Ready Mix Trucks	SetSelected
5	Building - 10000 sqft- 1 story	Concrete Foundations	Fork Truck	SetSelected
5	Building - 10000 sqft- 1 story	Concrete Foundations	Tool Truck	SetSelected
5	Building - 10000 sqft- 1 story	Concrete Foundations	Tractor Trailer- Material Delivery	SetSelected
5	Building - 10000 sqft- 1 story	Construction Mob & Layout	Survey Crew Trucks	SetSelected
5	Building - 10000 sqft- 1 story	Construction Mob & Layout	Tractor Trailers Temp Fac.	SetSelected
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Fork Truck	SetSelected
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Man Lift	SetSelected
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Tool Truck	SetSelected
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Tractor Trailer- Material Delivery	SetSelected
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Fork Truck	SetSelected
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Man Lift	SetSelected
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Tool Truck	SetSelected
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Tractor Trailer- Material Delivery	SetSelected
5	Building - 10000 sqft- 1 story	Roofing	High Lift	SetSelected
5	Building - 10000 sqft- 1 story	Roofing	Man Lift (Fascia Construction)	SetSelected
5	Building - 10000 sqft- 1 story	Roofing	Material Deliveries	SetSelected
5	Building - 10000 sqft- 1 story	Roofing	Tractor Trailer- Material Delivery	SetSelected
5	Building - 10000 sqft- 1 story	Security & Safety Systems	High Lift	SetSelected
5	Building - 10000 sqft- 1 story	Security & Safety Systems	Tool Truck	SetSelected
5	Building - 10000 sqft- 1 story	Structural Steel Erection	40 Ton Crane	SetSelected
5	Building - 10000 sqft- 1 story	Structural Steel Erection	Fork Truck	SetSelected
5	Building - 10000 sqft- 1 story	Structural Steel Erection	Tool Truck	SetSelected
5	Building - 10000 sqft- 1 story	Structural Steel Erection	Tractor Trailer- Steel Deliveries	SetSelected
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Air Compressor	SetSelected
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Crane	SetSelected
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Dozer	SetSelected
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Dump Truck	SetSelected
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Excavator	SetSelected
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Other General Equipment	SetSelected
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Pickup Truck	SetSelected
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Skid Steer Loader	SetSelected
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Tractors/Loader/Backhoe	SetSelected
6	Rehabilitate Runway	Asphalt Placement	Asphalt Paver	SetSelected
6	Rehabilitate Runway	Asphalt Placement	Dump Truck	SetSelected
6	Rehabilitate Runway	Asphalt Placement	Other General Equipment	SetSelected
6	Rehabilitate Runway	Asphalt Placement	Pickup Truck	SetSelected
6	Rehabilitate Runway	Asphalt Placement	Roller	SetSelected
6	Rehabilitate Runway	Asphalt Placement	Skid Steer Loader	SetSelected
6	Rehabilitate Runway	Asphalt Placement	Surfacing Equipment (Grooving)	SetSelected
6	Rehabilitate Runway	Cold Milling	Cold Planer	SetSelected
6	Rehabilitate Runway	Cold Milling	Dump Truck	SetSelected
6	Rehabilitate Runway	Cold Milling	Pickup Truck	SetSelected
6	Rehabilitate Runway	Cold Milling	Sweepers	SetSelected
6	Rehabilitate Runway	Cold Milling	Water Truck	SetSelected
6	Rehabilitate Runway	Concrete Demolition	Concrete Saws	SetSelected
6	Rehabilitate Runway	Concrete Demolition	Dump Truck	SetSelected
6	Rehabilitate Runway	Concrete Demolition	Excavator	SetSelected
6	Rehabilitate Runway	Concrete Demolition	Hydralic Hammer	SetSelected
6	Rehabilitate Runway	Concrete Demolition	Other General Equipment	SetSelected
6	Rehabilitate Runway	Concrete Demolition	Pickup Truck	SetSelected
6	Rehabilitate Runway	Concrete Placement	Air Compressor	SetSelected
6	Rehabilitate Runway	Concrete Placement	Concrete Saws	SetSelected
6	Rehabilitate Runway	Concrete Placement	Concrete Truck	SetSelected
6	Rehabilitate Runway	Concrete Placement	Other General Equipment	SetSelected
6	Rehabilitate Runway	Concrete Placement	Pickup Truck	SetSelected
6	Rehabilitate Runway	Concrete Placement	Rubber Tired Loader	SetSelected
6	Rehabilitate Runway	Concrete Placement	Slip Form Paver	SetSelected
6	Rehabilitate Runway	Concrete Placement	Surfacing Equipment (Grooving)	SetSelected
6	Rehabilitate Runway	Dust Control	Water Truck	SetSelected
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Dozer	SetSelected
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Dump Truck (12 cy)	SetSelected
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Excavator	SetSelected
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Pickup Truck	SetSelected
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Roller	SetSelected
6	Rehabilitate Runway	Excavation (Topsoil Stripping)	Dozer	SetSelected
6	Rehabilitate Runway	Grading	Dozer	SetSelected
6	Rehabilitate Runway	Grading	Grader	SetSelected
6	Rehabilitate Runway	Grading	Roller	SetSelected
6	Rehabilitate Runway	Hydroseeding	Hydroseeder	SetSelected
6	Rehabilitate Runway	Hydroseeding	Off-Road Truck	SetSelected
6	Rehabilitate Runway	Lighting	Dump Truck	SetSelected
6	Rehabilitate Runway	Lighting	Loader	SetSelected
6	Rehabilitate Runway	Lighting	Other General Equipment	SetSelected
6	Rehabilitate Runway	Lighting	Pickup Truck	SetSelected
6	Rehabilitate Runway	Lighting	Skid Steer Loader	SetSelected
6	Rehabilitate Runway	Lighting	Tractors/Loader/Backhoe	SetSelected
6	Rehabilitate Runway	Markings	Flatbed Truck	SetSelected
6	Rehabilitate Runway	Markings	Other General Equipment	SetSelected
6	Rehabilitate Runway	Markings	Pickup Truck	SetSelected
6	Rehabilitate Runway	Sealing Random Cracks	Crack Cleaner	SetSelected
6	Rehabilitate Runway	Sealing Random Cracks	Crack Filler (Trailer Mounted)	SetSelected
6	Rehabilitate Runway	Sealing Random Cracks	Flatbed Truck	SetSelected
6	Rehabilitate Runway	Sealing Random Cracks	Other General Equipment	SetSelected
6	Rehabilitate Runway	Sealing Random Cracks	Pickup Truck	SetSelected
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Other General Equipment	SetSelected
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Pickup Truck	SetSelected
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Pumps	SetSelected
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	SetSelected
6	Rehabilitate Runway	Subbase Placement	Dozer	SetSelected
6	Rehabilitate Runway	Subbase Placement	Dump Truck (12 cy)	SetSelected
6	Rehabilitate Runway	Subbase Placement	Pickup Truck	SetSelected
6	Rehabilitate Runway	Subbase Placement	Roller	SetSelected
6	Rehabilitate Runway	Topsoil Placement	Dozer	SetSelected
6	Rehabilitate Runway	Topsoil Placement	Dump Truck	SetSelected
6	Rehabilitate Runway	Topsoil Placement	Pickup Truck	SetSelected
6	Service Road	Asphalt Placement	Asphalt Paver	SetSelected
6	Service Road	Asphalt Placement	Dump Truck	SetSelected
6	Service Road	Asphalt Placement	Other General Equipment	SetSelected
6	Service Road	Asphalt Placement	Pickup Truck	SetSelected
6	Service Road	Asphalt Placement	Roller	SetSelected
6	Service Road	Asphalt Placement	Skid Steer Loader	SetSelected
6	Service Road	Asphalt Placement	Surfacing Equipment (Grooving)	SetSelected
6	Service Road	Clearing and Grubbing	Chain Saw	SetSelected
6	Service Road	Clearing and Grubbing	Chipper/Stump Grinder	SetSelected
6	Service Road	Clearing and Grubbing	Pickup Truck	SetSelected
6	Service Road	Concrete Placement	Air Compressor	SetSelected
6	Service Road	Concrete Placement	Concrete Saws	SetSelected
6	Service Road	Concrete Placement	Concrete Truck	SetSelected
6	Service Road	Concrete Placement	Other General Equipment	SetSelected
6	Service Road	Concrete Placement	Pickup Truck	SetSelected
6	Service Road	Concrete Placement	Rubber Tired Loader	SetSelected
6	Service Road	Concrete Placement	Slip Form Paver	SetSelected
6	Service Road	Concrete Placement	Surfacing Equipment (Grooving)	SetSelected
6	Service Road	Drainage - 24 inch SICPP	Dozer	SetSelected
6	Service Road	Drainage - 24 inch SICPP	Dump Truck	SetSelected
6	Service Road	Drainage - 24 inch SICPP	Excavator	SetSelected
6	Service Road	Drainage - 24 inch SICPP	Loader	SetSelected
6	Service Road	Drainage - 24 inch SICPP	Other General Equipment	SetSelected
6	Service Road	Drainage - 24 inch SICPP	Pickup Truck	SetSelected
6	Service Road	Drainage - 24 inch SICPP	Roller	SetSelected
6	Service Road	Drainage - 6 inch Perforated Underdrain	Dump Truck	SetSelected
6	Service Road	Drainage - 6 inch Perforated Underdrain	Loader	SetSelected
6	Service Road	Drainage - 6 inch Perforated Underdrain	Other General Equipment	SetSelected
6	Service Road	Drainage - 6 inch Perforated Underdrain	Pickup Truck	SetSelected
6	Service Road	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	SetSelected
6	Service Road	Dust Control	Water Truck	SetSelected
6	Service Road	Excavation (Borrow)	Dozer	SetSelected
6	Service Road	Excavation (Borrow)	Dump Truck (12 cy)	SetSelected
6	Service Road	Excavation (Borrow)	Pickup Truck	SetSelected
6	Service Road	Excavation (Borrow)	Roller	SetSelected
6	Service Road	Excavation (Cut to Fill)	Dozer	SetSelected
6	Service Road	Excavation (Cut to Fill)	Dump Truck (12 cy)	SetSelected
6	Service Road	Excavation (Cut to Fill)	Excavator	SetSelected
6	Service Road	Excavation (Cut to Fill)	Pickup Truck	SetSelected
6	Service Road	Excavation (Cut to Fill)	Roller	SetSelected
6	Service Road	Excavation (Cut to Fill)	Scraper	SetSelected
6	Service Road	Excavation (Topsoil Stripping)	Dozer	SetSelected
6	Service Road	Fencing	Concrete Truck	SetSelected
6	Service Road	Fencing	Dump Truck	SetSelected
6	Service Road	Fencing	Other General Equipment	SetSelected
6	Service Road	Fencing	Pickup Truck	SetSelected
6	Service Road	Fencing	Skid Steer Loader	SetSelected
6	Service Road	Fencing	Tractors/Loader/Backhoe	SetSelected
6	Service Road	Grading	Dozer	SetSelected
6	Service Road	Grading	Grader	SetSelected
6	Service Road	Grading	Roller	SetSelected
6	Service Road	Hydroseeding	Hydroseeder	SetSelected
6	Service Road	Hydroseeding	Off-Road Truck	SetSelected
6	Service Road	Markings	Flatbed Truck	SetSelected
6	Service Road	Markings	Other General Equipment	SetSelected
6	Service Road	Markings	Pickup Truck	SetSelected
6	Service Road	Soil Erosion/Sediment Control	Other General Equipment	SetSelected
6	Service Road	Soil Erosion/Sediment Control	Pickup Truck	SetSelected
6	Service Road	Soil Erosion/Sediment Control	Pumps	SetSelected
6	Service Road	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	SetSelected
6	Service Road	Subbase Placement	Dozer	SetSelected
6	Service Road	Subbase Placement	Dump Truck (12 cy)	SetSelected
6	Service Road	Subbase Placement	Pickup Truck	SetSelected
6	Service Road	Subbase Placement	Roller	SetSelected
6	Service Road	Topsoil Placement	Dozer	SetSelected
6	Service Road	Topsoil Placement	Dump Truck	SetSelected
6	Service Road	Topsoil Placement	Pickup Truck	SetSelected
7	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	SetSelected
7	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	SetSelected
7	Demolition - Concrete	Concrete Demolition	Pickup Truck	SetSelected
7	Fencing	Clearing and Grubbing	Chain Saw	SetSelected
7	Fencing	Clearing and Grubbing	Chipper/Stump Grinder	SetSelected
7	Fencing	Clearing and Grubbing	Pickup Truck	SetSelected
7	Fencing	Excavation (Cut to Fill)	Dozer	SetSelected
7	Fencing	Excavation (Cut to Fill)	Dump Truck (12 cy)	SetSelected
7	Fencing	Excavation (Cut to Fill)	Excavator	SetSelected
7	Fencing	Excavation (Cut to Fill)	Pickup Truck	SetSelected
7	Fencing	Excavation (Cut to Fill)	Roller	SetSelected
7	Fencing	Fencing	Concrete Truck	SetSelected
7	Fencing	Fencing	Dump Truck	SetSelected
7	Fencing	Fencing	Other General Equipment	SetSelected

7 Fencing	Fencing	Pickup Truck	SetSelected
7 Fencing	Fencing	Skid Steer Loader	SetSelected
7 Fencing	Fencing	Tractors/Loader/Backhoe	SetSelected
7 Fencing	Grading	Dozer	SetSelected
7 Fencing	Grading	Grader	SetSelected
7 Fencing	Grading	Roller	SetSelected
7 Fencing	Hydroseeding	Hydroseeder	SetSelected
7 Fencing	Hydroseeding	Off-Road Truck	SetSelected
7 Fencing	Soil Erosion/Sediment Control	Other General Equipment	SetSelected
7 Fencing	Soil Erosion/Sediment Control	Pickup Truck	SetSelected
7 Fencing	Soil Erosion/Sediment Control	Pumps	SetSelected
7 Fencing	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	SetSelected
7 Fencing	Topsoil Placement	Dozer	SetSelected
7 Fencing	Topsoil Placement	Dump Truck	SetSelected
7 Fencing	Topsoil Placement	Pickup Truck	SetSelected
7 Taxiways	Asphalt Placement	Asphalt Paver	SetSelected
7 Taxiways	Asphalt Placement	Dump Truck	SetSelected
7 Taxiways	Asphalt Placement	Other General Equipment	SetSelected
7 Taxiways	Asphalt Placement	Pickup Truck	SetSelected
7 Taxiways	Asphalt Placement	Roller	SetSelected
7 Taxiways	Asphalt Placement	Skid Steer Loader	SetSelected
7 Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	SetSelected
7 Taxiways	Concrete Placement	Air Compressor	SetSelected
7 Taxiways	Concrete Placement	Concrete Saws	SetSelected
7 Taxiways	Concrete Placement	Concrete Truck	SetSelected
7 Taxiways	Concrete Placement	Other General Equipment	SetSelected
7 Taxiways	Concrete Placement	Pickup Truck	SetSelected
7 Taxiways	Concrete Placement	Rubber Tired Loader	SetSelected
7 Taxiways	Concrete Placement	Slip Form Paver	SetSelected
7 Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	SetSelected
7 Taxiways	Drainage - 24 inch SICPP	Dozer	SetSelected
7 Taxiways	Drainage - 24 inch SICPP	Dump Truck	SetSelected
7 Taxiways	Drainage - 24 inch SICPP	Excavator	SetSelected
7 Taxiways	Drainage - 24 inch SICPP	Loader	SetSelected
7 Taxiways	Drainage - 24 inch SICPP	Other General Equipment	SetSelected
7 Taxiways	Drainage - 24 inch SICPP	Pickup Truck	SetSelected
7 Taxiways	Drainage - 24 inch SICPP	Roller	SetSelected
7 Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	SetSelected
7 Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	SetSelected
7 Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	SetSelected
7 Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	SetSelected
7 Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	SetSelected
7 Taxiways	Dust Control	Water Truck	SetSelected
7 Taxiways	Excavation (Borrow)	Dozer	SetSelected
7 Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	SetSelected
7 Taxiways	Excavation (Borrow)	Pickup Truck	SetSelected
7 Taxiways	Excavation (Borrow)	Roller	SetSelected
7 Taxiways	Excavation (Cut to Fill)	Dozer	SetSelected
7 Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	SetSelected
7 Taxiways	Excavation (Cut to Fill)	Excavator	SetSelected
7 Taxiways	Excavation (Cut to Fill)	Pickup Truck	SetSelected
7 Taxiways	Excavation (Cut to Fill)	Roller	SetSelected
7 Taxiways	Excavation (Cut to Fill)	Scraper	SetSelected
7 Taxiways	Excavation (Topsoil Stripping)	Dozer	SetSelected
7 Taxiways	Fencing	Concrete Truck	SetSelected
7 Taxiways	Fencing	Dump Truck	SetSelected
7 Taxiways	Fencing	Other General Equipment	SetSelected
7 Taxiways	Fencing	Pickup Truck	SetSelected
7 Taxiways	Fencing	Skid Steer Loader	SetSelected
7 Taxiways	Fencing	Tractors/Loader/Backhoe	SetSelected
7 Taxiways	Grading	Dozer	SetSelected
7 Taxiways	Grading	Grader	SetSelected
7 Taxiways	Grading	Roller	SetSelected
7 Taxiways	Hydroseeding	Hydroseeder	SetSelected
7 Taxiways	Hydroseeding	Off-Road Truck	SetSelected
7 Taxiways	Lighting	Dump Truck	SetSelected
7 Taxiways	Lighting	Loader	SetSelected
7 Taxiways	Lighting	Other General Equipment	SetSelected
7 Taxiways	Lighting	Pickup Truck	SetSelected
7 Taxiways	Lighting	Skid Steer Loader	SetSelected
7 Taxiways	Lighting	Tractors/Loader/Backhoe	SetSelected
7 Taxiways	Markings	Flatbed Truck	SetSelected
7 Taxiways	Markings	Other General Equipment	SetSelected
7 Taxiways	Markings	Pickup Truck	SetSelected
7 Taxiways	Soil Erosion/Sediment Control	Other General Equipment	SetSelected
7 Taxiways	Soil Erosion/Sediment Control	Pickup Truck	SetSelected
7 Taxiways	Soil Erosion/Sediment Control	Pumps	SetSelected
7 Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	SetSelected
7 Taxiways	Subbase Placement	Dozer	SetSelected
7 Taxiways	Subbase Placement	Dump Truck (12 cy)	SetSelected
7 Taxiways	Subbase Placement	Pickup Truck	SetSelected
7 Taxiways	Subbase Placement	Roller	SetSelected
7 Taxiways	Topsoil Placement	Dozer	SetSelected
7 Taxiways	Topsoil Placement	Dump Truck	SetSelected
7 Taxiways	Topsoil Placement	Pickup Truck	SetSelected
8 Demolition - Concrete	Concrete Demolition	Excavator with Bucket	SetSelected
8 Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	SetSelected
8 Demolition - Concrete	Concrete Demolition	Pickup Truck	SetSelected
8 Taxiways	Asphalt Placement	Asphalt Paver	SetSelected
8 Taxiways	Asphalt Placement	Dump Truck	SetSelected
8 Taxiways	Asphalt Placement	Other General Equipment	SetSelected
8 Taxiways	Asphalt Placement	Pickup Truck	SetSelected
8 Taxiways	Asphalt Placement	Roller	SetSelected
8 Taxiways	Asphalt Placement	Skid Steer Loader	SetSelected
8 Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	SetSelected
8 Taxiways	Concrete Placement	Air Compressor	SetSelected
8 Taxiways	Concrete Placement	Concrete Saws	SetSelected
8 Taxiways	Concrete Placement	Concrete Truck	SetSelected
8 Taxiways	Concrete Placement	Other General Equipment	SetSelected
8 Taxiways	Concrete Placement	Pickup Truck	SetSelected
8 Taxiways	Concrete Placement	Rubber Tired Loader	SetSelected
8 Taxiways	Concrete Placement	Slip Form Paver	SetSelected
8 Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	SetSelected
8 Taxiways	Drainage - 24 inch SICPP	Dozer	SetSelected
8 Taxiways	Drainage - 24 inch SICPP	Dump Truck	SetSelected
8 Taxiways	Drainage - 24 inch SICPP	Excavator	SetSelected
8 Taxiways	Drainage - 24 inch SICPP	Loader	SetSelected
8 Taxiways	Drainage - 24 inch SICPP	Other General Equipment	SetSelected
8 Taxiways	Drainage - 24 inch SICPP	Pickup Truck	SetSelected
8 Taxiways	Drainage - 24 inch SICPP	Roller	SetSelected
8 Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	SetSelected
8 Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	SetSelected
8 Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	SetSelected
8 Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	SetSelected
8 Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	SetSelected
8 Taxiways	Dust Control	Water Truck	SetSelected
8 Taxiways	Excavation (Borrow)	Dozer	SetSelected
8 Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	SetSelected
8 Taxiways	Excavation (Borrow)	Pickup Truck	SetSelected
8 Taxiways	Excavation (Borrow)	Roller	SetSelected
8 Taxiways	Excavation (Cut to Fill)	Dozer	SetSelected
8 Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	SetSelected
8 Taxiways	Excavation (Cut to Fill)	Excavator	SetSelected
8 Taxiways	Excavation (Cut to Fill)	Pickup Truck	SetSelected
8 Taxiways	Excavation (Cut to Fill)	Roller	SetSelected
8 Taxiways	Excavation (Cut to Fill)	Scraper	SetSelected
8 Taxiways	Excavation (Topsoil Stripping)	Dozer	SetSelected
8 Taxiways	Fencing	Concrete Truck	SetSelected
8 Taxiways	Fencing	Dump Truck	SetSelected
8 Taxiways	Fencing	Other General Equipment	SetSelected
8 Taxiways	Fencing	Pickup Truck	SetSelected
8 Taxiways	Fencing	Skid Steer Loader	SetSelected
8 Taxiways	Fencing	Tractors/Loader/Backhoe	SetSelected
8 Taxiways	Grading	Dozer	SetSelected
8 Taxiways	Grading	Grader	SetSelected
8 Taxiways	Grading	Roller	SetSelected
8 Taxiways	Hydroseeding	Hydroseeder	SetSelected
8 Taxiways	Hydroseeding	Off-Road Truck	SetSelected
8 Taxiways	Lighting	Dump Truck	SetSelected
8 Taxiways	Lighting	Loader	SetSelected
8 Taxiways	Lighting	Other General Equipment	SetSelected
8 Taxiways	Lighting	Pickup Truck	SetSelected
8 Taxiways	Lighting	Skid Steer Loader	SetSelected
8 Taxiways	Lighting	Tractors/Loader/Backhoe	SetSelected
8 Taxiways	Markings	Flatbed Truck	SetSelected
8 Taxiways	Markings	Other General Equipment	SetSelected
8 Taxiways	Markings	Pickup Truck	SetSelected
8 Taxiways	Soil Erosion/Sediment Control	Other General Equipment	SetSelected
8 Taxiways	Soil Erosion/Sediment Control	Pickup Truck	SetSelected
8 Taxiways	Soil Erosion/Sediment Control	Pumps	SetSelected
8 Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	SetSelected
8 Taxiways	Subbase Placement	Dozer	SetSelected
8 Taxiways	Subbase Placement	Dump Truck (12 cy)	SetSelected
8 Taxiways	Subbase Placement	Pickup Truck	SetSelected
8 Taxiways	Subbase Placement	Roller	SetSelected
8 Taxiways	Topsoil Placement	Dozer	SetSelected
8 Taxiways	Topsoil Placement	Dump Truck	SetSelected
8 Taxiways	Topsoil Placement	Pickup Truck	SetSelected

Final Selections

1 Demolition - Asphalt	Asphalt Demolition	Dozer	Diesel
1 Demolition - Asphalt	Asphalt Demolition	Excavator	Diesel
1 Demolition - Asphalt	Asphalt Demolition	Pickup Truck	Diesel
1 Demolition - Concrete	Concrete Demolition	Excavator with Bucket	Diesel
1 Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	Diesel
1 Demolition - Concrete	Concrete Demolition	Pickup Truck	Diesel
1 Taxiways	Asphalt Placement	Asphalt Paver	Diesel
1 Taxiways	Asphalt Placement	Dump Truck	Diesel
1 Taxiways	Asphalt Placement	Other General Equipment	Diesel
1 Taxiways	Asphalt Placement	Pickup Truck	Diesel
1 Taxiways	Asphalt Placement	Roller	Diesel
1 Taxiways	Asphalt Placement	Skid Steer Loader	Diesel
1 Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel
1 Taxiways	Concrete Placement	Air Compressor	Diesel
1 Taxiways	Concrete Placement	Concrete Saws	Diesel
1 Taxiways	Concrete Placement	Concrete Truck	Diesel
1 Taxiways	Concrete Placement	Other General Equipment	Diesel
1 Taxiways	Concrete Placement	Pickup Truck	Diesel
1 Taxiways	Concrete Placement	Rubber Tired Loader	Diesel
1 Taxiways	Concrete Placement	Slip Form Paver	Diesel

1	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel
1	Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel
1	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel
1	Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel
1	Taxiways	Drainage - 24 inch SICPP	Loader	Diesel
1	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel
1	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel
1	Taxiways	Drainage - 24 inch SICPP	Roller	Diesel
1	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel
1	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel
1	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel
1	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel
1	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel
1	Taxiways	Dust Control	Water Truck	Diesel
1	Taxiways	Excavation (Borrow)	Dozer	Diesel
1	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel
1	Taxiways	Excavation (Borrow)	Pickup Truck	Diesel
1	Taxiways	Excavation (Borrow)	Roller	Diesel
1	Taxiways	Excavation (Cut to Fill)	Dozer	Diesel
1	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel
1	Taxiways	Excavation (Cut to Fill)	Excavator	Diesel
1	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel
1	Taxiways	Excavation (Cut to Fill)	Roller	Diesel
1	Taxiways	Excavation (Cut to Fill)	Scraper	Diesel
1	Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel
1	Taxiways	Fencing	Concrete Truck	Diesel
1	Taxiways	Fencing	Dump Truck	Diesel
1	Taxiways	Fencing	Other General Equipment	Diesel
1	Taxiways	Fencing	Pickup Truck	Diesel
1	Taxiways	Fencing	Skid Steer Loader	Diesel
1	Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel
1	Taxiways	Grading	Dozer	Diesel
1	Taxiways	Grading	Grader	Diesel
1	Taxiways	Grading	Roller	Diesel
1	Taxiways	Hydroseeding	Hydroseeder	Diesel
1	Taxiways	Hydroseeding	Off-Road Truck	Diesel
1	Taxiways	Lighting	Dump Truck	Diesel
1	Taxiways	Lighting	Loader	Diesel
1	Taxiways	Lighting	Other General Equipment	Diesel
1	Taxiways	Lighting	Pickup Truck	Diesel
1	Taxiways	Lighting	Skid Steer Loader	Diesel
1	Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel
1	Taxiways	Markings	Flatbed Truck	Diesel
1	Taxiways	Markings	Other General Equipment	Diesel
1	Taxiways	Markings	Pickup Truck	Diesel
1	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel
1	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel
1	Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel
1	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel
1	Taxiways	Subbase Placement	Dozer	Diesel
1	Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel
1	Taxiways	Subbase Placement	Pickup Truck	Diesel
1	Taxiways	Subbase Placement	Roller	Diesel
1	Taxiways	Topsoil Placement	Dozer	Diesel
1	Taxiways	Topsoil Placement	Dump Truck	Diesel
1	Taxiways	Topsoil Placement	Pickup Truck	Diesel
2	Runway Markings	Marking Removal	Pickup Truck	Diesel
2	Runway Markings	Marking Removal	Pressure Washer	Diesel
2	Runway Markings	Marking Removal	Sweepers/Scrubbers	Diesel
2	Runway Markings	Marking Removal	Water Truck	Diesel
2	Runway Markings	Markings	Flatbed Truck	Diesel
2	Runway Markings	Markings	Other General Equipment	Diesel
2	Runway Markings	Markings	Pickup Truck	Diesel
2	Taxiways	Asphalt Placement	Asphalt Paver	Diesel
2	Taxiways	Asphalt Placement	Dump Truck	Diesel
2	Taxiways	Asphalt Placement	Other General Equipment	Diesel
2	Taxiways	Asphalt Placement	Pickup Truck	Diesel
2	Taxiways	Asphalt Placement	Roller	Diesel
2	Taxiways	Asphalt Placement	Skid Steer Loader	Diesel
2	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel
2	Taxiways	Concrete Placement	Air Compressor	Diesel
2	Taxiways	Concrete Placement	Concrete Saws	Diesel
2	Taxiways	Concrete Placement	Concrete Truck	Diesel
2	Taxiways	Concrete Placement	Other General Equipment	Diesel
2	Taxiways	Concrete Placement	Pickup Truck	Diesel
2	Taxiways	Concrete Placement	Rubber Tired Loader	Diesel
2	Taxiways	Concrete Placement	Slip Form Paver	Diesel
2	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel
2	Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel
2	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel
2	Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel
2	Taxiways	Drainage - 24 inch SICPP	Loader	Diesel
2	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel
2	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel
2	Taxiways	Drainage - 24 inch SICPP	Roller	Diesel
2	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel
2	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel
2	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel
2	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel
2	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel
2	Taxiways	Dust Control	Water Truck	Diesel
2	Taxiways	Excavation (Borrow)	Dozer	Diesel
2	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel
2	Taxiways	Excavation (Borrow)	Pickup Truck	Diesel
2	Taxiways	Excavation (Borrow)	Roller	Diesel
2	Taxiways	Excavation (Cut to Fill)	Dozer	Diesel
2	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel
2	Taxiways	Excavation (Cut to Fill)	Excavator	Diesel
2	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel
2	Taxiways	Excavation (Cut to Fill)	Roller	Diesel
2	Taxiways	Excavation (Cut to Fill)	Scraper	Diesel
2	Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel
2	Taxiways	Fencing	Concrete Truck	Diesel
2	Taxiways	Fencing	Dump Truck	Diesel
2	Taxiways	Fencing	Other General Equipment	Diesel
2	Taxiways	Fencing	Pickup Truck	Diesel
2	Taxiways	Fencing	Skid Steer Loader	Diesel
2	Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel
2	Taxiways	Grading	Dozer	Diesel
2	Taxiways	Grading	Grader	Diesel
2	Taxiways	Grading	Roller	Diesel
2	Taxiways	Hydroseeding	Hydroseeder	Diesel
2	Taxiways	Hydroseeding	Off-Road Truck	Diesel
2	Taxiways	Lighting	Dump Truck	Diesel
2	Taxiways	Lighting	Loader	Diesel
2	Taxiways	Lighting	Other General Equipment	Diesel
2	Taxiways	Lighting	Pickup Truck	Diesel
2	Taxiways	Lighting	Skid Steer Loader	Diesel
2	Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel
2	Taxiways	Markings	Flatbed Truck	Diesel
2	Taxiways	Markings	Other General Equipment	Diesel
2	Taxiways	Markings	Pickup Truck	Diesel
2	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel
2	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel
2	Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel
2	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel
2	Taxiways	Subbase Placement	Dozer	Diesel
2	Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel
2	Taxiways	Subbase Placement	Pickup Truck	Diesel
2	Taxiways	Subbase Placement	Roller	Diesel
2	Taxiways	Topsoil Placement	Dozer	Diesel
2	Taxiways	Topsoil Placement	Dump Truck	Diesel
2	Taxiways	Topsoil Placement	Pickup Truck	Diesel
3	Demolition - Asphalt	Asphalt Demolition	Dozer	Diesel
3	Demolition - Asphalt	Asphalt Demolition	Excavator	Diesel
3	Demolition - Asphalt	Asphalt Demolition	Pickup Truck	Diesel
3	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	Diesel
3	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	Diesel
3	Demolition - Concrete	Concrete Demolition	Pickup Truck	Diesel
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Air Compressor	Diesel
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Dump Truck	Diesel
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Other General Equipment	Diesel
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Pickup Truck	Diesel
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Skid Steer Loader	Diesel
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	Tractors/Loader/Backhoe	Diesel
3	Taxiways	Asphalt Placement	Asphalt Paver	Diesel
3	Taxiways	Asphalt Placement	Dump Truck	Diesel
3	Taxiways	Asphalt Placement	Other General Equipment	Diesel
3	Taxiways	Asphalt Placement	Pickup Truck	Diesel
3	Taxiways	Asphalt Placement	Roller	Diesel
3	Taxiways	Asphalt Placement	Skid Steer Loader	Diesel
3	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel
3	Taxiways	Concrete Placement	Air Compressor	Diesel
3	Taxiways	Concrete Placement	Concrete Saws	Diesel
3	Taxiways	Concrete Placement	Concrete Truck	Diesel
3	Taxiways	Concrete Placement	Other General Equipment	Diesel
3	Taxiways	Concrete Placement	Pickup Truck	Diesel
3	Taxiways	Concrete Placement	Rubber Tired Loader	Diesel
3	Taxiways	Concrete Placement	Slip Form Paver	Diesel
3	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel
3	Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel
3	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel
3	Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel
3	Taxiways	Drainage - 24 inch SICPP	Loader	Diesel
3	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel
3	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel
3	Taxiways	Drainage - 24 inch SICPP	Roller	Diesel
3	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel
3	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel
3	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel
3	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel
3	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel
3	Taxiways	Dust Control	Water Truck	Diesel
3	Taxiways	Excavation (Borrow)	Dozer	Diesel
3	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel
3	Taxiways	Excavation (Borrow)	Pickup Truck	Diesel
3	Taxiways	Excavation (Borrow)	Roller	Diesel
3	Taxiways	Excavation (Cut to Fill)	Dozer	Diesel
3	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel
3	Taxiways	Excavation (Cut to Fill)	Excavator	Diesel

3	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel
3	Taxiways	Excavation (Cut to Fill)	Roller	Diesel
3	Taxiways	Excavation (Cut to Fill)	Scraper	Diesel
3	Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel
3	Taxiways	Fencing	Concrete Truck	Diesel
3	Taxiways	Fencing	Dump Truck	Diesel
3	Taxiways	Fencing	Other General Equipment	Diesel
3	Taxiways	Fencing	Pickup Truck	Diesel
3	Taxiways	Fencing	Skid Steer Loader	Diesel
3	Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel
3	Taxiways	Grading	Dozer	Diesel
3	Taxiways	Grading	Grader	Diesel
3	Taxiways	Grading	Roller	Diesel
3	Taxiways	Hydroseeding	Hydroseeder	Diesel
3	Taxiways	Hydroseeding	Off-Road Truck	Diesel
3	Taxiways	Lighting	Dump Truck	Diesel
3	Taxiways	Lighting	Loader	Diesel
3	Taxiways	Lighting	Other General Equipment	Diesel
3	Taxiways	Lighting	Pickup Truck	Diesel
3	Taxiways	Lighting	Skid Steer Loader	Diesel
3	Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel
3	Taxiways	Markings	Flatbed Truck	Diesel
3	Taxiways	Markings	Other General Equipment	Diesel
3	Taxiways	Markings	Pickup Truck	Diesel
3	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel
3	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel
3	Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel
3	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel
3	Taxiways	Subbase Placement	Dozer	Diesel
3	Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel
3	Taxiways	Subbase Placement	Pickup Truck	Diesel
3	Taxiways	Subbase Placement	Roller	Diesel
3	Taxiways	Topsoil Placement	Dozer	Diesel
3	Taxiways	Topsoil Placement	Dump Truck	Diesel
3	Taxiways	Topsoil Placement	Pickup Truck	Diesel
4	Demolition - Asphalt	Asphalt Demolition	Dozer	Diesel
4	Demolition - Asphalt	Asphalt Demolition	Excavator	Diesel
4	Demolition - Asphalt	Asphalt Demolition	Pickup Truck	Diesel
4	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	Diesel
4	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	Diesel
4	Demolition - Concrete	Concrete Demolition	Pickup Truck	Diesel
4	Taxiways	Asphalt Placement	Asphalt Paver	Diesel
4	Taxiways	Asphalt Placement	Dump Truck	Diesel
4	Taxiways	Asphalt Placement	Other General Equipment	Diesel
4	Taxiways	Asphalt Placement	Pickup Truck	Diesel
4	Taxiways	Asphalt Placement	Roller	Diesel
4	Taxiways	Asphalt Placement	Skid Steer Loader	Diesel
4	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel
4	Taxiways	Concrete Placement	Air Compressor	Diesel
4	Taxiways	Concrete Placement	Concrete Saws	Diesel
4	Taxiways	Concrete Placement	Concrete Truck	Diesel
4	Taxiways	Concrete Placement	Other General Equipment	Diesel
4	Taxiways	Concrete Placement	Pickup Truck	Diesel
4	Taxiways	Concrete Placement	Rubber Tired Loader	Diesel
4	Taxiways	Concrete Placement	Slip Form Paver	Diesel
4	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel
4	Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel
4	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel
4	Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel
4	Taxiways	Drainage - 24 inch SICPP	Loader	Diesel
4	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel
4	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel
4	Taxiways	Drainage - 24 inch SICPP	Roller	Diesel
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel
4	Taxiways	Dust Control	Water Truck	Diesel
4	Taxiways	Excavation (Borrow)	Dozer	Diesel
4	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel
4	Taxiways	Excavation (Borrow)	Pickup Truck	Diesel
4	Taxiways	Excavation (Borrow)	Roller	Diesel
4	Taxiways	Excavation (Cut to Fill)	Dozer	Diesel
4	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel
4	Taxiways	Excavation (Cut to Fill)	Excavator	Diesel
4	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel
4	Taxiways	Excavation (Cut to Fill)	Roller	Diesel
4	Taxiways	Excavation (Cut to Fill)	Scraper	Diesel
4	Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel
4	Taxiways	Fencing	Concrete Truck	Diesel
4	Taxiways	Fencing	Dump Truck	Diesel
4	Taxiways	Fencing	Other General Equipment	Diesel
4	Taxiways	Fencing	Pickup Truck	Diesel
4	Taxiways	Fencing	Skid Steer Loader	Diesel
4	Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel
4	Taxiways	Grading	Dozer	Diesel
4	Taxiways	Grading	Grader	Diesel
4	Taxiways	Grading	Roller	Diesel
4	Taxiways	Hydroseeding	Hydroseeder	Diesel
4	Taxiways	Hydroseeding	Off-Road Truck	Diesel
4	Taxiways	Lighting	Dump Truck	Diesel
4	Taxiways	Lighting	Loader	Diesel
4	Taxiways	Lighting	Other General Equipment	Diesel
4	Taxiways	Lighting	Pickup Truck	Diesel
4	Taxiways	Lighting	Skid Steer Loader	Diesel
4	Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel
4	Taxiways	Markings	Flatbed Truck	Diesel
4	Taxiways	Markings	Other General Equipment	Diesel
4	Taxiways	Markings	Pickup Truck	Diesel
4	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel
4	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel
4	Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel
4	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel
4	Taxiways	Subbase Placement	Dozer	Diesel
4	Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel
4	Taxiways	Subbase Placement	Pickup Truck	Diesel
4	Taxiways	Subbase Placement	Roller	Diesel
4	Taxiways	Topsoil Placement	Dozer	Diesel
4	Taxiways	Topsoil Placement	Dump Truck	Diesel
4	Taxiways	Topsoil Placement	Pickup Truck	Diesel
5	Building - 10000 sqft- 1 story	Concrete Foundations	Backhoe	Diesel
5	Building - 10000 sqft- 1 story	Concrete Foundations	Concrete Ready Mix Trucks	Diesel
5	Building - 10000 sqft- 1 story	Concrete Foundations	Fork Truck	Diesel
5	Building - 10000 sqft- 1 story	Concrete Foundations	Tool Truck	Diesel
5	Building - 10000 sqft- 1 story	Concrete Foundations	Tractor Trailer- Material Delivery	Diesel
5	Building - 10000 sqft- 1 story	Construction Mob & Layout	Survey Crew Trucks	Diesel
5	Building - 10000 sqft- 1 story	Construction Mob & Layout	Tractor Trailers Temp Fac.	Diesel
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Fork Truck	Diesel
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Man Lift	Diesel
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Tool Truck	Diesel
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Tractor Trailer- Material Delivery	Diesel
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Fork Truck	Diesel
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Man Lift	Diesel
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Tool Truck	Diesel
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Tractor Trailer- Material Delivery	Diesel
5	Building - 10000 sqft- 1 story	Roofing	High Lift	Diesel
5	Building - 10000 sqft- 1 story	Roofing	Man Lift (Fascia Construction)	Diesel
5	Building - 10000 sqft- 1 story	Roofing	Material Deliveries	Diesel
5	Building - 10000 sqft- 1 story	Roofing	Tractor Trailer- Material Delivery	Diesel
5	Building - 10000 sqft- 1 story	Security & Safety Systems	High Lift	Diesel
5	Building - 10000 sqft- 1 story	Security & Safety Systems	Tool Truck	Diesel
5	Building - 10000 sqft- 1 story	Structural Steel Erection	40 Ton Crane	Diesel
5	Building - 10000 sqft- 1 story	Structural Steel Erection	Fork Truck	Diesel
5	Building - 10000 sqft- 1 story	Structural Steel Erection	Tool Truck	Diesel
5	Building - 10000 sqft- 1 story	Structural Steel Erection	Tractor Trailer- Steel Deliveries	Diesel
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Air Compressor	Diesel
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Crane	Diesel
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Dozer	Diesel
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Dump Truck	Diesel
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Excavator	Diesel
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Other General Equipment	Diesel
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Pickup Truck	Diesel
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Skid Steer Loader	Diesel
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Tractors/Loader/Backhoe	Diesel
6	Rehabilitate Runway	Asphalt Placement	Asphalt Paver	Diesel
6	Rehabilitate Runway	Asphalt Placement	Dump Truck	Diesel
6	Rehabilitate Runway	Asphalt Placement	Other General Equipment	Diesel
6	Rehabilitate Runway	Asphalt Placement	Pickup Truck	Diesel
6	Rehabilitate Runway	Asphalt Placement	Roller	Diesel
6	Rehabilitate Runway	Asphalt Placement	Skid Steer Loader	Diesel
6	Rehabilitate Runway	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel
6	Rehabilitate Runway	Cold Milling	Cold Planer	Diesel
6	Rehabilitate Runway	Cold Milling	Dump Truck	Diesel
6	Rehabilitate Runway	Cold Milling	Pickup Truck	Diesel
6	Rehabilitate Runway	Cold Milling	Sweepers	Diesel
6	Rehabilitate Runway	Cold Milling	Water Truck	Diesel
6	Rehabilitate Runway	Concrete Demolition	Concrete Saws	Diesel
6	Rehabilitate Runway	Concrete Demolition	Dump Truck	Diesel
6	Rehabilitate Runway	Concrete Demolition	Excavator	Diesel
6	Rehabilitate Runway	Concrete Demolition	Hydralic Hammer	Diesel
6	Rehabilitate Runway	Concrete Demolition	Other General Equipment	Diesel
6	Rehabilitate Runway	Concrete Demolition	Pickup Truck	Diesel
6	Rehabilitate Runway	Concrete Placement	Air Compressor	Diesel
6	Rehabilitate Runway	Concrete Placement	Concrete Saws	Diesel
6	Rehabilitate Runway	Concrete Placement	Concrete Truck	Diesel
6	Rehabilitate Runway	Concrete Placement	Other General Equipment	Diesel
6	Rehabilitate Runway	Concrete Placement	Pickup Truck	Diesel
6	Rehabilitate Runway	Concrete Placement	Rubber Tired Loader	Diesel
6	Rehabilitate Runway	Concrete Placement	Slip Form Paver	Diesel
6	Rehabilitate Runway	Concrete Placement	Surfacing Equipment (Grooving)	Diesel
6	Rehabilitate Runway	Dust Control	Water Truck	Diesel
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Dozer	Diesel
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Dump Truck (12 cy)	Diesel
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Excavator	Diesel
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Pickup Truck	Diesel
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Roller	Diesel
6	Rehabilitate Runway	Excavation (Topsoil Stripping)	Dozer	Diesel
6	Rehabilitate Runway	Grading	Dozer	Diesel
6	Rehabilitate Runway	Grading	Grader	Diesel

6	Rehabilitate Runway	Grading	Roller	Diesel
6	Rehabilitate Runway	Hydroseeding	Hydroseeder	Diesel
6	Rehabilitate Runway	Hydroseeding	Off-Road Truck	Diesel
6	Rehabilitate Runway	Lighting	Dump Truck	Diesel
6	Rehabilitate Runway	Lighting	Loader	Diesel
6	Rehabilitate Runway	Lighting	Other General Equipment	Diesel
6	Rehabilitate Runway	Lighting	Pickup Truck	Diesel
6	Rehabilitate Runway	Lighting	Skid Steer Loader	Diesel
6	Rehabilitate Runway	Lighting	Tractors/Loader/Backhoe	Diesel
6	Rehabilitate Runway	Markings	Flatbed Truck	Diesel
6	Rehabilitate Runway	Markings	Other General Equipment	Diesel
6	Rehabilitate Runway	Markings	Pickup Truck	Diesel
6	Rehabilitate Runway	Sealing Random Cracks	Crack Cleaner	Diesel
6	Rehabilitate Runway	Sealing Random Cracks	Crack Filler (Trailer Mounted)	Diesel
6	Rehabilitate Runway	Sealing Random Cracks	Flatbed Truck	Diesel
6	Rehabilitate Runway	Sealing Random Cracks	Other General Equipment	Diesel
6	Rehabilitate Runway	Sealing Random Cracks	Pickup Truck	Diesel
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Other General Equipment	Diesel
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Pickup Truck	Diesel
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Pumps	Diesel
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel
6	Rehabilitate Runway	Subbase Placement	Dozer	Diesel
6	Rehabilitate Runway	Subbase Placement	Dump Truck (12 cy)	Diesel
6	Rehabilitate Runway	Subbase Placement	Pickup Truck	Diesel
6	Rehabilitate Runway	Subbase Placement	Roller	Diesel
6	Rehabilitate Runway	Topsoil Placement	Dozer	Diesel
6	Rehabilitate Runway	Topsoil Placement	Dump Truck	Diesel
6	Rehabilitate Runway	Topsoil Placement	Pickup Truck	Diesel
6	Service Road	Asphalt Placement	Asphalt Paver	Diesel
6	Service Road	Asphalt Placement	Dump Truck	Diesel
6	Service Road	Asphalt Placement	Other General Equipment	Diesel
6	Service Road	Asphalt Placement	Pickup Truck	Diesel
6	Service Road	Asphalt Placement	Roller	Diesel
6	Service Road	Asphalt Placement	Skid Steer Loader	Diesel
6	Service Road	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel
6	Service Road	Clearing and Grubbing	Chain Saw	Diesel
6	Service Road	Clearing and Grubbing	Chipper/Stump Grinder	Diesel
6	Service Road	Clearing and Grubbing	Pickup Truck	Diesel
6	Service Road	Concrete Placement	Air Compressor	Diesel
6	Service Road	Concrete Placement	Concrete Saws	Diesel
6	Service Road	Concrete Placement	Concrete Truck	Diesel
6	Service Road	Concrete Placement	Other General Equipment	Diesel
6	Service Road	Concrete Placement	Pickup Truck	Diesel
6	Service Road	Concrete Placement	Rubber Tired Loader	Diesel
6	Service Road	Concrete Placement	Slip Form Paver	Diesel
6	Service Road	Concrete Placement	Surfacing Equipment (Grooving)	Diesel
6	Service Road	Drainage - 24 inch SICPP	Dozer	Diesel
6	Service Road	Drainage - 24 inch SICPP	Dump Truck	Diesel
6	Service Road	Drainage - 24 inch SICPP	Excavator	Diesel
6	Service Road	Drainage - 24 inch SICPP	Loader	Diesel
6	Service Road	Drainage - 24 inch SICPP	Other General Equipment	Diesel
6	Service Road	Drainage - 24 inch SICPP	Pickup Truck	Diesel
6	Service Road	Drainage - 24 inch SICPP	Roller	Diesel
6	Service Road	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel
6	Service Road	Drainage - 6 inch Perforated Underdrain	Loader	Diesel
6	Service Road	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel
6	Service Road	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel
6	Service Road	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel
6	Service Road	Dust Control	Water Truck	Diesel
6	Service Road	Excavation (Borrow)	Dozer	Diesel
6	Service Road	Excavation (Borrow)	Dump Truck (12 cy)	Diesel
6	Service Road	Excavation (Borrow)	Pickup Truck	Diesel
6	Service Road	Excavation (Borrow)	Roller	Diesel
6	Service Road	Excavation (Cut to Fill)	Dozer	Diesel
6	Service Road	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel
6	Service Road	Excavation (Cut to Fill)	Excavator	Diesel
6	Service Road	Excavation (Cut to Fill)	Pickup Truck	Diesel
6	Service Road	Excavation (Cut to Fill)	Roller	Diesel
6	Service Road	Excavation (Cut to Fill)	Scraper	Diesel
6	Service Road	Excavation (Topsoil Stripping)	Dozer	Diesel
6	Service Road	Fencing	Concrete Truck	Diesel
6	Service Road	Fencing	Dump Truck	Diesel
6	Service Road	Fencing	Other General Equipment	Diesel
6	Service Road	Fencing	Pickup Truck	Diesel
6	Service Road	Fencing	Skid Steer Loader	Diesel
6	Service Road	Fencing	Tractors/Loader/Backhoe	Diesel
6	Service Road	Grading	Dozer	Diesel
6	Service Road	Grading	Grader	Diesel
6	Service Road	Grading	Roller	Diesel
6	Service Road	Hydroseeding	Hydroseeder	Diesel
6	Service Road	Hydroseeding	Off-Road Truck	Diesel
6	Service Road	Markings	Flatbed Truck	Diesel
6	Service Road	Markings	Other General Equipment	Diesel
6	Service Road	Markings	Pickup Truck	Diesel
6	Service Road	Soil Erosion/Sediment Control	Other General Equipment	Diesel
6	Service Road	Soil Erosion/Sediment Control	Pickup Truck	Diesel
6	Service Road	Soil Erosion/Sediment Control	Pumps	Diesel
6	Service Road	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel
6	Service Road	Subbase Placement	Dozer	Diesel
6	Service Road	Subbase Placement	Dump Truck (12 cy)	Diesel
6	Service Road	Subbase Placement	Pickup Truck	Diesel
6	Service Road	Subbase Placement	Roller	Diesel
6	Service Road	Topsoil Placement	Dozer	Diesel
6	Service Road	Topsoil Placement	Dump Truck	Diesel
6	Service Road	Topsoil Placement	Pickup Truck	Diesel
7	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	Diesel
7	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	Diesel
7	Demolition - Concrete	Concrete Demolition	Pickup Truck	Diesel
7	Fencing	Clearing and Grubbing	Chain Saw	Diesel
7	Fencing	Clearing and Grubbing	Chipper/Stump Grinder	Diesel
7	Fencing	Clearing and Grubbing	Pickup Truck	Diesel
7	Fencing	Excavation (Cut to Fill)	Dozer	Diesel
7	Fencing	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel
7	Fencing	Excavation (Cut to Fill)	Excavator	Diesel
7	Fencing	Excavation (Cut to Fill)	Pickup Truck	Diesel
7	Fencing	Excavation (Cut to Fill)	Roller	Diesel
7	Fencing	Fencing	Concrete Truck	Diesel
7	Fencing	Fencing	Dump Truck	Diesel
7	Fencing	Fencing	Other General Equipment	Diesel
7	Fencing	Fencing	Pickup Truck	Diesel
7	Fencing	Fencing	Skid Steer Loader	Diesel
7	Fencing	Fencing	Tractors/Loader/Backhoe	Diesel
7	Fencing	Grading	Dozer	Diesel
7	Fencing	Grading	Grader	Diesel
7	Fencing	Grading	Roller	Diesel
7	Fencing	Hydroseeding	Hydroseeder	Diesel
7	Fencing	Hydroseeding	Off-Road Truck	Diesel
7	Fencing	Soil Erosion/Sediment Control	Other General Equipment	Diesel
7	Fencing	Soil Erosion/Sediment Control	Pickup Truck	Diesel
7	Fencing	Soil Erosion/Sediment Control	Pumps	Diesel
7	Fencing	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel
7	Fencing	Topsoil Placement	Dozer	Diesel
7	Fencing	Topsoil Placement	Dump Truck	Diesel
7	Fencing	Topsoil Placement	Pickup Truck	Diesel
7	Taxiways	Asphalt Placement	Asphalt Paver	Diesel
7	Taxiways	Asphalt Placement	Dump Truck	Diesel
7	Taxiways	Asphalt Placement	Other General Equipment	Diesel
7	Taxiways	Asphalt Placement	Pickup Truck	Diesel
7	Taxiways	Asphalt Placement	Roller	Diesel
7	Taxiways	Asphalt Placement	Skid Steer Loader	Diesel
7	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel
7	Taxiways	Concrete Placement	Air Compressor	Diesel
7	Taxiways	Concrete Placement	Concrete Saws	Diesel
7	Taxiways	Concrete Placement	Concrete Truck	Diesel
7	Taxiways	Concrete Placement	Other General Equipment	Diesel
7	Taxiways	Concrete Placement	Pickup Truck	Diesel
7	Taxiways	Concrete Placement	Rubber Tired Loader	Diesel
7	Taxiways	Concrete Placement	Slip Form Paver	Diesel
7	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel
7	Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel
7	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel
7	Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel
7	Taxiways	Drainage - 24 inch SICPP	Loader	Diesel
7	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel
7	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel
7	Taxiways	Drainage - 24 inch SICPP	Roller	Diesel
7	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel
7	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel
7	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel
7	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel
7	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel
7	Taxiways	Dust Control	Water Truck	Diesel
7	Taxiways	Excavation (Borrow)	Dozer	Diesel
7	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel
7	Taxiways	Excavation (Borrow)	Pickup Truck	Diesel
7	Taxiways	Excavation (Borrow)	Roller	Diesel
7	Taxiways	Excavation (Cut to Fill)	Dozer	Diesel
7	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel
7	Taxiways	Excavation (Cut to Fill)	Excavator	Diesel
7	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel
7	Taxiways	Excavation (Cut to Fill)	Roller	Diesel
7	Taxiways	Excavation (Cut to Fill)	Scraper	Diesel
7	Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel
7	Taxiways	Fencing	Concrete Truck	Diesel
7	Taxiways	Fencing	Dump Truck	Diesel
7	Taxiways	Fencing	Other General Equipment	Diesel
7	Taxiways	Fencing	Pickup Truck	Diesel
7	Taxiways	Fencing	Skid Steer Loader	Diesel
7	Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel
7	Taxiways	Grading	Dozer	Diesel
7	Taxiways	Grading	Grader	Diesel
7	Taxiways	Grading	Roller	Diesel
7	Taxiways	Hydroseeding	Hydroseeder	Diesel
7	Taxiways	Hydroseeding	Off-Road Truck	Diesel
7	Taxiways	Lighting	Dump Truck	Diesel
7	Taxiways	Lighting	Loader	Diesel
7	Taxiways	Lighting	Other General Equipment	Diesel
7	Taxiways	Lighting	Pickup Truck	Diesel
7	Taxiways	Lighting	Skid Steer Loader	Diesel
7	Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel

7	Taxiways	Markings	Flatbed Truck	Diesel
7	Taxiways	Markings	Other General Equipment	Diesel
7	Taxiways	Markings	Pickup Truck	Diesel
7	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel
7	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel
7	Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel
7	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel
7	Taxiways	Subbase Placement	Dozer	Diesel
7	Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel
7	Taxiways	Subbase Placement	Pickup Truck	Diesel
7	Taxiways	Subbase Placement	Roller	Diesel
7	Taxiways	Topsoil Placement	Dozer	Diesel
7	Taxiways	Topsoil Placement	Dump Truck	Diesel
7	Taxiways	Topsoil Placement	Pickup Truck	Diesel
8	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	Diesel
8	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	Diesel
8	Demolition - Concrete	Concrete Demolition	Pickup Truck	Diesel
8	Taxiways	Asphalt Placement	Asphalt Paver	Diesel
8	Taxiways	Asphalt Placement	Dump Truck	Diesel
8	Taxiways	Asphalt Placement	Other General Equipment	Diesel
8	Taxiways	Asphalt Placement	Pickup Truck	Diesel
8	Taxiways	Asphalt Placement	Roller	Diesel
8	Taxiways	Asphalt Placement	Skid Steer Loader	Diesel
8	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel
8	Taxiways	Concrete Placement	Air Compressor	Diesel
8	Taxiways	Concrete Placement	Concrete Saws	Diesel
8	Taxiways	Concrete Placement	Concrete Truck	Diesel
8	Taxiways	Concrete Placement	Other General Equipment	Diesel
8	Taxiways	Concrete Placement	Pickup Truck	Diesel
8	Taxiways	Concrete Placement	Rubber Tired Loader	Diesel
8	Taxiways	Concrete Placement	Slip Form Paver	Diesel
8	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel
8	Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel
8	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel
8	Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel
8	Taxiways	Drainage - 24 inch SICPP	Loader	Diesel
8	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel
8	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel
8	Taxiways	Drainage - 24 inch SICPP	Roller	Diesel
8	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel
8	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel
8	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel
8	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel
8	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel
8	Taxiways	Dust Control	Water Truck	Diesel
8	Taxiways	Excavation (Borrow)	Dozer	Diesel
8	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel
8	Taxiways	Excavation (Borrow)	Pickup Truck	Diesel
8	Taxiways	Excavation (Borrow)	Roller	Diesel
8	Taxiways	Excavation (Cut to Fill)	Dozer	Diesel
8	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel
8	Taxiways	Excavation (Cut to Fill)	Excavator	Diesel
8	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel
8	Taxiways	Excavation (Cut to Fill)	Roller	Diesel
8	Taxiways	Excavation (Cut to Fill)	Scraper	Diesel
8	Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel
8	Taxiways	Fencing	Concrete Truck	Diesel
8	Taxiways	Fencing	Dump Truck	Diesel
8	Taxiways	Fencing	Other General Equipment	Diesel
8	Taxiways	Fencing	Pickup Truck	Diesel
8	Taxiways	Fencing	Skid Steer Loader	Diesel
8	Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel
8	Taxiways	Grading	Dozer	Diesel
8	Taxiways	Grading	Grader	Diesel
8	Taxiways	Grading	Roller	Diesel
8	Taxiways	Hydroseeding	Hydroseeder	Diesel
8	Taxiways	Hydroseeding	Off-Road Truck	Diesel
8	Taxiways	Lighting	Dump Truck	Diesel
8	Taxiways	Lighting	Loader	Diesel
8	Taxiways	Lighting	Other General Equipment	Diesel
8	Taxiways	Lighting	Pickup Truck	Diesel
8	Taxiways	Lighting	Skid Steer Loader	Diesel
8	Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel
8	Taxiways	Markings	Flatbed Truck	Diesel
8	Taxiways	Markings	Other General Equipment	Diesel
8	Taxiways	Markings	Pickup Truck	Diesel
8	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel
8	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel
8	Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel
8	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel
8	Taxiways	Subbase Placement	Dozer	Diesel
8	Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel
8	Taxiways	Subbase Placement	Pickup Truck	Diesel
8	Taxiways	Subbase Placement	Roller	Diesel
8	Taxiways	Topsoil Placement	Dozer	Diesel
8	Taxiways	Topsoil Placement	Dump Truck	Diesel
8	Taxiways	Topsoil Placement	Pickup Truck	Diesel

==========

Overall Size

--

Scenario ID	Project	Project Size Questions	User Input	Unit
1	Demolition - Asphalt	What is the estimated cost of the project?	0.088	$ Million(s)
1	Demolition - Asphalt	What is the maximum length of demolition area (L) in feet?	191	Feet
1	Demolition - Asphalt	What is the maximum width of demolition area (W) in feet?	50	Feet
1	Demolition - Concrete	What is the estimated cost of the project?	0.088	$ Million(s)
1	Demolition - Concrete	What is the maximum length of demolition area (L) in feet?	95	Feet
1	Demolition - Concrete	What is the maximum width of demolition area (W) in feet?	100	Feet
1	Taxiways	What is the estimated cost of the project?	0.998	$ Million(s)
1	Taxiways	What is the maximum length of the taxiway (L) in feet?	92	Feet
1	Taxiways	What is the maximum width of the taxiway (W) in feet?	200	Feet
2	Runway Markings	What is the estimated cost of the project?	0.05	$ Million(s)
2	Runway Markings	What is the maximum length (L) of the markings in feet?	800	Feet
2	Runway Markings	What is the maximum width (W) of the markings in feet?	4	Feet
2	Taxiways	What is the estimated cost of the project?	4.829	$ Million(s)
2	Taxiways	What is the maximum length of the taxiway (L) in feet?	1035	Feet
2	Taxiways	What is the maximum width of the taxiway (W) in feet?	100	Feet
3	Demolition - Asphalt	What is the estimated cost of the project?	2.032	$ Million(s)
3	Demolition - Asphalt	What is the maximum length of demolition area (L) in feet?	2029	Feet
3	Demolition - Asphalt	What is the maximum width of demolition area (W) in feet?	50	Feet
3	Demolition - Concrete	What is the estimated cost of the project?	2.032	$ Million(s)
3	Demolition - Concrete	What is the maximum length of demolition area (L) in feet?	1015	Feet
3	Demolition - Concrete	What is the maximum width of demolition area (W) in feet?	100	Feet
3	NAVAIDS	What is the estimated cost of the project?	0.1	$ Million(s)
3	NAVAIDS	What is the maximum length of the project area (L) in feet?	150	Feet
3	NAVAIDS	What is the maximum width of the project area (W) in feet?	6	Feet
3	NAVAIDS	What is the number of approach lighting (AL) lights indicated to be install	0	---
3	NAVAIDS	What is the number of instrument landing system glide slopes (ILS-GS) to	0	---
3	NAVAIDS	What is the number of instrument landing system localizers (ILS-L) to be i	0	---
3	NAVAIDS	What is the number of precision approach path indicators (PAPI) to be ins	4	---
3	NAVAIDS	What is the number of rotating beacons (RB) to be installed?	0	---
3	NAVAIDS	What is the number of windcones (WC) to be installed?	0	---
3	Taxiways	What is the estimated cost of the project?	23.027	$ Million(s)
3	Taxiways	What is the maximum length of the taxiway (L) in feet?	3409	Feet
3	Taxiways	What is the maximum width of the taxiway (W) in feet?	200	Feet
4	Demolition - Asphalt	What is the estimated cost of the project?	0.551	$ Million(s)
4	Demolition - Asphalt	What is the maximum length of demolition area (L) in feet?	437	Feet
4	Demolition - Asphalt	What is the maximum width of demolition area (W) in feet?	50	Feet
4	Demolition - Concrete	What is the estimated cost of the project?	0.551	$ Million(s)
4	Demolition - Concrete	What is the maximum length of demolition area (L) in feet?	218	Feet
4	Demolition - Concrete	What is the maximum width of demolition area (W) in feet?	100	Feet
4	Taxiways	What is the estimated cost of the project?	6.242	$ Million(s)
4	Taxiways	What is the maximum length of the taxiway (L) in feet?	895	Feet
4	Taxiways	What is the maximum width of the taxiway (W) in feet?	200	Feet
5	Building - 10000 sqft- 1 story	What is the estimated cost of the project?	3	$ Million(s)
6	NAVAIDS	What is the estimated cost of the project?	0.1	$ Million(s)
6	NAVAIDS	What is the maximum length of the project area (L) in feet?	150	Feet
6	NAVAIDS	What is the maximum width of the project area (W) in feet?	50	Feet
6	NAVAIDS	What is the number of approach lighting (AL) lights indicated to be install	0	---
6	NAVAIDS	What is the number of instrument landing system glide slopes (ILS-GS) to	0	---
6	NAVAIDS	What is the number of instrument landing system localizers (ILS-L) to be i	1	---
6	NAVAIDS	What is the number of precision approach path indicators (PAPI) to be ins	0	---
6	NAVAIDS	What is the number of rotating beacons (RB) to be installed?	0	---
6	NAVAIDS	What is the number of windcones (WC) to be installed?	0	---
6	Rehabilitate Runway	What is the estimated cost of the project?	46.753	$ Million(s)
6	Rehabilitate Runway	What is the maximum length of rehibilitation (L) in feet?	5369	Feet
6	Rehabilitate Runway	What is the maximum width of rehibilitation (W) in feet?	250	Feet
6	Service Road	What is the estimated cost of the project?	0.15	$ Million(s)
6	Service Road	What is the maximum length of the service road (L) in feet?	1298	Feet
6	Service Road	What is the maximum width of the service road (W) in feet?	30	Feet
7	Demolition - Concrete	What is the estimated cost of the project?	1.212	$ Million(s)
7	Demolition - Concrete	What is the maximum length of demolition area (L) in feet?	45	Feet
7	Demolition - Concrete	What is the maximum width of demolition area (W) in feet?	100	Feet
7	Fencing	What is the estimated cost of the project?	0.2	$ Million(s)
7	Fencing	What is the maximum length of the fence (L) in feet?	1500	Feet
7	Taxiways	What is the estimated cost of the project?	6.87	$ Million(s)
7	Taxiways	What is the maximum length of the taxiway (L) in feet?	1037	Feet
7	Taxiways	What is the maximum width of the taxiway (W) in feet?	200	Feet
8	Demolition - Concrete	What is the estimated cost of the project?	1.615	$ Million(s)
8	Demolition - Concrete	What is the maximum length of demolition area (L) in feet?	143	Feet
8	Demolition - Concrete	What is the maximum width of demolition area (W) in feet?	100	Feet
8	Taxiways	What is the estimated cost of the project?	9.154	$ Million(s)
8	Taxiways	What is the maximum length of the taxiway (L) in feet?	1383	Feet
8	Taxiways	What is the maximum width of the taxiway (W) in feet?	200	Feet

==========

Size Detail

--

ScenarioID	Project	Construction Activity	Default Activity Size	Unit	User Activity Size
1	Demolition - Asphalt	Asphalt Demolition	9550	Square Feet	
1	Demolition - Concrete	Concrete Demolition	9500	Square Feet	
1	Taxiways	Asphalt Placement	1270	Square Yards	
1	Taxiways	Concrete Placement	1307	Cubic Yards	
1	Taxiways	Drainage - 24 inch SICPP	102	Linear Feet	
1	Taxiways	Drainage - 6 inch Perforated Underdrain	204	Linear Feet	
1	Taxiways	Dust Control	60	Days	
1	Taxiways	Excavation (Borrow)	851	Cubic Yards	
1	Taxiways	Excavation (Cut to Fill)	851	Cubic Yards	

1	Taxiways	Excavation (Topsoil Stripping)	2042.4	Square Yards
1	Taxiways	Fencing	92	Linear Feet
1	Taxiways	Grading	2377.6	Square Yards
1	Taxiways	Hydroseeding	21420	Square Feet
1	Taxiways	Lighting	584	Linear Feet
1	Taxiways	Markings	18400	Square Feet
1	Taxiways	Soil Erosion/Sediment Control	0.5	Acres
1	Taxiways	Subbase Placement	2042.4	Square Yards
1	Taxiways	Subbase Placement	680.8	Cubic Yards
1	Taxiways	Topsoil Placement	396.3	Cubic Yards
2	Runway Markings	Marking Removal	3200	Square Feet
2	Runway Markings	Markings	3200	Square Feet
2	Taxiways	Asphalt Placement	0	Square Yards
2	Taxiways	Concrete Placement	3194	Cubic Yards
2	Taxiways	Drainage - 24 inch SICPP	1045	Linear Feet
2	Taxiways	Drainage - 6 inch Perforated Underdrain	2090	Linear Feet
2	Taxiways	Dust Control	60	Days
2	Taxiways	Excavation (Borrow)	4786.9	Cubic Yards
2	Taxiways	Excavation (Cut to Fill)	4786.9	Cubic Yards
2	Taxiways	Excavation (Topsoil Stripping)	11488.5	Square Yards
2	Taxiways	Fencing	1035	Linear Feet
2	Taxiways	Grading	12759.5	Square Yards
2	Taxiways	Hydroseeding	114950	Square Feet
2	Taxiways	Lighting	2270	Linear Feet
2	Taxiways	Markings	103500	Square Feet
2	Taxiways	Soil Erosion/Sediment Control	2.6	Acres
2	Taxiways	Subbase Placement	11488.5	Square Yards
2	Taxiways	Subbase Placement	3829.5	Cubic Yards
2	Taxiways	Topsoil Placement	2126.6	Cubic Yards
3	Demolition - Asphalt	Asphalt Demolition	101450	Square Feet
3	Demolition - Concrete	Concrete Demolition	101500	Square Feet
3	NAVAIDS	Precision Approach Path Indicator (PAPI)	4	Units
3	Taxiways	Asphalt Placement	27495	Square Yards
3	Taxiways	Concrete Placement	30836	Cubic Yards
3	Taxiways	Drainage - 24 inch SICPP	3419	Linear Feet
3	Taxiways	Drainage - 6 inch Perforated Underdrain	6838	Linear Feet
3	Taxiways	Dust Control	180	Days
3	Taxiways	Excavation (Borrow)	31533.3	Cubic Yards
3	Taxiways	Excavation (Cut to Fill)	31533.3	Cubic Yards
3	Taxiways	Excavation (Topsoil Stripping)	75679.8	Square Yards
3	Taxiways	Fencing	3409	Linear Feet
3	Taxiways	Grading	79696.9	Square Yards
3	Taxiways	Hydroseeding	717990	Square Feet
3	Taxiways	Lighting	7218	Linear Feet
3	Taxiways	Markings	681800	Square Feet
3	Taxiways	Soil Erosion/Sediment Control	16.5	Acres
3	Taxiways	Subbase Placement	75679.8	Square Yards
3	Taxiways	Subbase Placement	25226.6	Cubic Yards
3	Taxiways	Topsoil Placement	13282.8	Cubic Yards
4	Demolition - Asphalt	Asphalt Demolition	21850	Square Feet
4	Demolition - Concrete	Concrete Demolition	21800	Square Feet
4	Taxiways	Asphalt Placement	5874	Square Yards
4	Taxiways	Concrete Placement	8954	Cubic Yards
4	Taxiways	Drainage - 24 inch SICPP	905	Linear Feet
4	Taxiways	Drainage - 6 inch Perforated Underdrain	1810	Linear Feet
4	Taxiways	Dust Control	90	Days
4	Taxiways	Excavation (Borrow)	8278.8	Cubic Yards
4	Taxiways	Excavation (Cut to Fill)	8278.8	Cubic Yards
4	Taxiways	Excavation (Topsoil Stripping)	19869	Square Yards
4	Taxiways	Fencing	895	Linear Feet
4	Taxiways	Grading	21095.6	Square Yards
4	Taxiways	Hydroseeding	190050	Square Feet
4	Taxiways	Lighting	2190	Linear Feet
4	Taxiways	Markings	179000	Square Feet
4	Taxiways	Soil Erosion/Sediment Control	4.4	Acres
4	Taxiways	Subbase Placement	19869	Square Yards
4	Taxiways	Subbase Placement	6623	Cubic Yards
4	Taxiways	Topsoil Placement	3515.9	Cubic Yards
6	NAVAIDS	Instrument Landing System (ILS) Localizer	1	Units
6	Rehabilitate Runway	Asphalt Placement	92371	Square Yards
6	Rehabilitate Runway	Cold Milling	92371	Square Yards
6	Rehabilitate Runway	Concrete Demolition	0	Square Feet
6	Rehabilitate Runway	Concrete Demolition	510966	Square Feet
6	Rehabilitate Runway	Concrete Placement	36272	Cubic Yards
6	Rehabilitate Runway	Dust Control	210	Days
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	12415.8	Cubic Yards
6	Rehabilitate Runway	Excavation (Topsoil Stripping)	29798	Square Yards
6	Rehabilitate Runway	Grading	31047.6	Square Yards
6	Rehabilitate Runway	Hydroseeding	31047.6	Square Feet
6	Rehabilitate Runway	Lighting	11238	Linear Feet
6	Rehabilitate Runway	Markings	1342250	Square Feet
6	Rehabilitate Runway	Sealing Random Cracks	5369	Linear Feet
6	Rehabilitate Runway	Soil Erosion/Sediment Control	6.4	Acres
6	Rehabilitate Runway	Subbase Placement	148989.8	Square Yards
6	Rehabilitate Runway	Subbase Placement	49663.3	Cubic Yards
6	Rehabilitate Runway	Topsoil Placement	5174.6	Cubic Yards
6	Service Road	Asphalt Placement	4322.3	Square Yards
6	Service Road	Clearing and Grubbing	1.2	Acres
6	Service Road	Concrete Placement	0	Cubic Yards
6	Service Road	Drainage - 24 inch SICPP	1308	Linear Feet
6	Service Road	Drainage - 6 inch Perforated Underdrain	2616	Linear Feet
6	Service Road	Dust Control	210	Days
6	Service Road	Excavation (Borrow)	1801	Cubic Yards
6	Service Road	Excavation (Cut to Fill)	1801	Cubic Yards
6	Service Road	Excavation (Topsoil Stripping)	4322.3	Square Yards
6	Service Road	Fencing	1298	Linear Feet
6	Service Road	Grading	5807.5	Square Yards
6	Service Road	Hydroseeding	52320	Square Feet
6	Service Road	Markings	38940	Square Feet
6	Service Road	Soil Erosion/Sediment Control	1.2	Acres
6	Service Road	Subbase Placement	4322.3	Square Yards
6	Service Road	Subbase Placement	1440.8	Cubic Yards
6	Service Road	Topsoil Placement	967.9	Cubic Yards
7	Demolition - Concrete	Concrete Demolition	4500	Square Feet
7	Fencing	Clearing and Grubbing	0.2	Acres
7	Fencing	Excavation (Cut to Fill)	346.9	Cubic Yards
7	Fencing	Fencing	1500	Linear Feet
7	Fencing	Grading	838.1	Square Yards
7	Fencing	Hydroseeding	7550	Square Feet
7	Fencing	Soil Erosion/Sediment Control	0.2	Acres
7	Fencing	Topsoil Placement	349.2	Cubic Yards
7	Taxiways	Asphalt Placement	9290	Square Yards
7	Taxiways	Concrete Placement	8789	Cubic Yards
7	Taxiways	Drainage - 24 inch SICPP	1047	Linear Feet
7	Taxiways	Drainage - 6 inch Perforated Underdrain	2094	Linear Feet
7	Taxiways	Dust Control	120	Days
7	Taxiways	Excavation (Borrow)	9592.3	Cubic Yards
7	Taxiways	Excavation (Cut to Fill)	9592.3	Cubic Yards
7	Taxiways	Excavation (Topsoil Stripping)	23021.4	Square Yards
7	Taxiways	Fencing	1037	Linear Feet
7	Taxiways	Grading	24405.6	Square Yards
7	Taxiways	Hydroseeding	219870	Square Feet
7	Taxiways	Lighting	2474	Linear Feet
7	Taxiways	Markings	207400	Square Feet
7	Taxiways	Soil Erosion/Sediment Control	5.1	Acres
7	Taxiways	Subbase Placement	23021.4	Square Yards
7	Taxiways	Subbase Placement	7673.8	Cubic Yards
7	Taxiways	Topsoil Placement	4067.6	Cubic Yards
8	Demolition - Concrete	Concrete Demolition	14300	Square Feet
8	Taxiways	Asphalt Placement	12413	Square Yards
8	Taxiways	Concrete Placement	11699	Cubic Yards
8	Taxiways	Drainage - 24 inch SICPP	1393	Linear Feet
8	Taxiways	Drainage - 6 inch Perforated Underdrain	2786	Linear Feet
8	Taxiways	Dust Control	150	Days
8	Taxiways	Excavation (Borrow)	12792.8	Cubic Yards
8	Taxiways	Excavation (Cut to Fill)	12792.8	Cubic Yards
8	Taxiways	Excavation (Topsoil Stripping)	30702.6	Square Yards
8	Taxiways	Fencing	1383	Linear Feet
8	Taxiways	Grading	32470.8	Square Yards
8	Taxiways	Hydroseeding	292530	Square Feet
8	Taxiways	Lighting	3166	Linear Feet
8	Taxiways	Markings	276600	Square Feet
8	Taxiways	Soil Erosion/Sediment Control	6.7	Acres
8	Taxiways	Subbase Placement	30702.6	Square Yards
8	Taxiways	Subbase Placement	10234.2	Cubic Yards
8	Taxiways	Topsoil Placement	5411.8	Cubic Yards

==========

Activity: Non-Road

--

Scenario ID	Project	Construction Activity	Equipment	Fuel Type	Activity Size	Activity Ra	Default Act	Activity Un	User Activity Data
1	Demolition - Asphalt	Asphalt Demolition	Dozer	Diesel	9550.00 SF	8 Hours pe	9.55	hours	21.85
1	Demolition - Asphalt	Asphalt Demolition	Excavator	Diesel	9550.00 SF	8 Hours pe	9.55	hours	21.85
1	Demolition - Asphalt	Asphalt Demolition	Pickup Truck	Diesel	9550.00 SF	8 Hours pe	19.1	hours	43.7
1	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	Diesel	9500.00 SF	8 Hours pe	12.66667	hours	19.07
1	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	Diesel	9500.00 SF	8 Hours pe	12.66667	hours	19.07
1	Demolition - Concrete	Concrete Demolition	Pickup Truck	Diesel	9500.00 SF	8 Hours pe	25.33333	hours	38.13
1	Taxiways	Asphalt Placement	Asphalt Paver	Diesel	2042.40 SY	8 Hours pe	2.553	hours	15.52
1	Taxiways	Asphalt Placement	Dump Truck	Diesel	2042.40 SY	8 Hours pe	9.194823	hours	55.88
1	Taxiways	Asphalt Placement	Other General Equipment	Diesel	2042.40 SY	16 Hours p	5.106	hours	31.03
1	Taxiways	Asphalt Placement	Pickup Truck	Diesel	2042.40 SY	8 Hours pe	2.553	hours	15.52
1	Taxiways	Asphalt Placement	Roller	Diesel	2042.40 SY	8 Hours pe	2.553	hours	15.52
1	Taxiways	Asphalt Placement	Skid Steer Loader	Diesel	2042.40 SY	8 Hours pe	2.553	hours	15.52
1	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel	2042.40 SY	8 Hours pe	3.26784	hours	19.86
1	Taxiways	Concrete Placement	Air Compressor	Diesel	851.00 CY	8 Hours pe	6.808	hours	93.59
1	Taxiways	Concrete Placement	Concrete Saws	Diesel	851.00 CY	8 Hours pe	6.808	hours	93.59
1	Taxiways	Concrete Placement	Concrete Truck	Diesel	851.00 CY	8 Hours pe	28.36667	hours	389.97
1	Taxiways	Concrete Placement	Other General Equipment	Diesel	851.00 CY	16 Hours p	13.616	hours	187.18
1	Taxiways	Concrete Placement	Pickup Truck	Diesel	851.00 CY	24 Hours p	20.424	hours	280.78
1	Taxiways	Concrete Placement	Rubber Tired Loader	Diesel	851.00 CY	8 Hours pe	6.808	hours	93.59
1	Taxiways	Concrete Placement	Slip Form Paver	Diesel	851.00 CY	8 Hours pe	6.808	hours	93.59
1	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel	851.00 CY	8 Hours pe	6.808	hours	93.59
1	Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel	102.00 LF	8 Hours pe	3.264	hours	44.58
1	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel	102.00 LF	8 Hours pe	3.264	hours	44.58
1	Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel	102.00 LF	8 Hours pe	3.264	hours	44.58
1	Taxiways	Drainage - 24 inch SICPP	Loader	Diesel	102.00 LF	8 Hours pe	3.264	hours	44.58
1	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel	102.00 LF	8 Hours pe	3.264	hours	44.58
1	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel	102.00 LF	8 Hours pe	3.264	hours	44.58
1	Taxiways	Drainage - 24 inch SICPP	Roller	Diesel	102.00 LF	8 Hours pe	3.264	hours	44.58

1 Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel	204.00 LF	8 Hours pe	1.813333	hours	24.76
1 Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel	204.00 LF	8 Hours pe	1.813333	hours	24.76
1 Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel	204.00 LF	8 Hours pe	1.813333	hours	24.76
1 Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel	204.00 LF	8 Hours pe	1.813333	hours	24.76
1 Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel	204.00 LF	8 Hours pe	1.813333	hours	24.76
1 Taxiways	Dust Control	Water Truck	Diesel	60.00 Day	8 Hours pe	480	hours	1200
1 Taxiways	Excavation (Borrow)	Dozer	Diesel	851.00 CY	8 Hours pe	11.34667	hours	170.57
1 Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel	851.00 CY	8 Hours pe	11.34667	hours	170.57
1 Taxiways	Excavation (Borrow)	Pickup Truck	Diesel	851.00 CY	8 Hours pe	11.34667	hours	170.57
1 Taxiways	Excavation (Borrow)	Roller	Diesel	851.00 CY	8 Hours pe	5.236923	hours	78.73
1 Taxiways	Excavation (Cut to Fill)	Dozer	Diesel	851.00 CY	8 Hours pe	8.51	hours	127.93
1 Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel	851.00 CY	8 Hours pe	22.69333	hours	341.14
1 Taxiways	Excavation (Cut to Fill)	Excavator	Diesel	851.00 CY	8 Hours pe	6.808	hours	102.34
1 Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel	851.00 CY	8 Hours pe	6.808	hours	102.34
1 Taxiways	Excavation (Cut to Fill)	Roller	Diesel	851.00 CY	8 Hours pe	6.808	hours	102.34
1 Taxiways	Excavation (Cut to Fill)	Scraper	Diesel	851.00 CY	8 Hours pe	8.51	hours	127.93
1 Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel	2042.40 SY	8 Hours pe	3.203765	hours	48.16
1 Taxiways	Fencing	Concrete Truck	Diesel	92.00 LF	2 Hours pe	1.022222	hours	15.37
1 Taxiways	Fencing	Dump Truck	Diesel	92.00 LF	8 Hours pe	4.088889	hours	61.47
1 Taxiways	Fencing	Other General Equipment	Diesel	92.00 LF	8 Hours pe	4.088889	hours	61.47
1 Taxiways	Fencing	Pickup Truck	Diesel	92.00 LF	8 Hours pe	4.088889	hours	61.47
1 Taxiways	Fencing	Skid Steer Loader	Diesel	92.00 LF	8 Hours pe	4.088889	hours	61.47
1 Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel	92.00 LF	8 Hours pe	4.088889	hours	61.47
1 Taxiways	Grading	Dozer	Diesel	2377.60 SY	8 Hours pe	2.3776	hours	32.47
1 Taxiways	Grading	Grader	Diesel	2377.60 SY	8 Hours pe	2.3776	hours	32.47
1 Taxiways	Grading	Roller	Diesel	2377.60 SY	8 Hours pe	2.3776	hours	32.47
1 Taxiways	Hydroseeding	Hydroseeder	Diesel	21420.00 SF	8 Hours pe	2.142	hours	29.25
1 Taxiways	Hydroseeding	Off-Road Truck	Diesel	21420.00 SF	8 Hours pe	2.142	hours	29.25
1 Taxiways	Lighting	Dump Truck	Diesel	584.00 LF	8 Hours pe	3.893333	hours	21.11
1 Taxiways	Lighting	Loader	Diesel	584.00 LF	8 Hours pe	3.893333	hours	21.11
1 Taxiways	Lighting	Other General Equipment	Diesel	584.00 LF	8 Hours pe	3.893333	hours	21.11
1 Taxiways	Lighting	Pickup Truck	Diesel	584.00 LF	8 Hours pe	3.893333	hours	21.11
1 Taxiways	Lighting	Skid Steer Loader	Diesel	584.00 LF	8 Hours pe	3.893333	hours	21.11
1 Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel	584.00 LF	8 Hours pe	3.893333	hours	21.11
1 Taxiways	Markings	Flatbed Truck	Diesel	18400.00 SF	8 Hours pe	42.05714	hours	632.23
1 Taxiways	Markings	Other General Equipment	Diesel	18400.00 SF	8 Hours pe	42.05714	hours	632.23
1 Taxiways	Markings	Pickup Truck	Diesel	18400.00 SF	8 Hours pe	42.05714	hours	632.23
1 Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel	0.50 Acre	4 Hours pe	2	hours	26.8
1 Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel	0.50 Acre	8 Hours pe	4	hours	53.6
1 Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel	0.50 Acre	4 Hours pe	2	hours	26.8
1 Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel	0.50 Acre	4 Hours pe	2	hours	26.8
1 Taxiways	Subbase Placement	Dozer	Diesel	2042.40 SY	8 Hours pe	4.299789	hours	64.64
1 Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel	680.80 CY	8 Hours pe	30.25778	hours	454.85
1 Taxiways	Subbase Placement	Pickup Truck	Diesel	2042.40 SY	8 Hours pe	4.299789	hours	64.64
1 Taxiways	Subbase Placement	Roller	Diesel	680.80 CY	8 Hours pe	4.189538	hours	62.98
1 Taxiways	Topsoil Placement	Dozer	Diesel	396.30 CY	8 Hours pe	5.284	hours	72.16
1 Taxiways	Topsoil Placement	Dump Truck	Diesel	396.30 CY	8 Hours pe	5.284	hours	72.16
1 Taxiways	Topsoil Placement	Pickup Truck	Diesel	396.30 CY	8 Hours pe	5.284	hours	72.16
2 Runway Markings	Marking Removal	Pickup Truck	Diesel	3200.00 SF	8 Hours pe	3.2	hours	
2 Runway Markings	Marking Removal	Pressure Washer	Diesel	3200.00 SF	8 Hours pe	3.2	hours	
2 Runway Markings	Marking Removal	Sweepers/Scrubbers	Diesel	3200.00 SF	8 Hours pe	3.2	hours	
2 Runway Markings	Marking Removal	Water Truck	Diesel	3200.00 SF	8 Hours pe	3.2	hours	
2 Runway Markings	Markings	Flatbed Truck	Diesel	3200.00 SF	8 Hours pe	7.314286	hours	
2 Runway Markings	Markings	Other General Equipment	Diesel	3200.00 SF	8 Hours pe	7.314286	hours	
2 Runway Markings	Markings	Pickup Truck	Diesel	3200.00 SF	8 Hours pe	7.314286	hours	
2 Taxiways	Asphalt Placement	Asphalt Paver	Diesel	11488.50 SY	8 Hours pe	14.36063	hours	15.52
2 Taxiways	Asphalt Placement	Dump Truck	Diesel	11488.50 SY	8 Hours pe	51.72088	hours	55.88
2 Taxiways	Asphalt Placement	Other General Equipment	Diesel	11488.50 SY	16 Hours p	28.72125	hours	31.03
2 Taxiways	Asphalt Placement	Pickup Truck	Diesel	11488.50 SY	8 Hours pe	14.36063	hours	15.52
2 Taxiways	Asphalt Placement	Roller	Diesel	11488.50 SY	8 Hours pe	14.36063	hours	15.52
2 Taxiways	Asphalt Placement	Skid Steer Loader	Diesel	11488.50 SY	8 Hours pe	14.36063	hours	15.52
2 Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel	11488.50 SY	8 Hours pe	18.3816	hours	19.86
2 Taxiways	Concrete Placement	Air Compressor	Diesel	4786.90 CY	8 Hours pe	38.2952	hours	93.59
2 Taxiways	Concrete Placement	Concrete Saws	Diesel	4786.90 CY	8 Hours pe	38.2952	hours	93.59
2 Taxiways	Concrete Placement	Concrete Truck	Diesel	4786.90 CY	8 Hours pe	159.5633	hours	389.97
2 Taxiways	Concrete Placement	Other General Equipment	Diesel	4786.90 CY	16 Hours p	76.5904	hours	187.18
2 Taxiways	Concrete Placement	Pickup Truck	Diesel	4786.90 CY	24 Hours p	114.8856	hours	280.78
2 Taxiways	Concrete Placement	Rubber Tired Loader	Diesel	4786.90 CY	8 Hours pe	38.2952	hours	93.59
2 Taxiways	Concrete Placement	Slip Form Paver	Diesel	4786.90 CY	8 Hours pe	38.2952	hours	93.59
2 Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel	4786.90 CY	8 Hours pe	38.2952	hours	93.59
2 Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel	1045.00 LF	8 Hours pe	33.44	hours	44.58
2 Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel	1045.00 LF	8 Hours pe	33.44	hours	44.58
2 Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel	1045.00 LF	8 Hours pe	33.44	hours	44.58
2 Taxiways	Drainage - 24 inch SICPP	Loader	Diesel	1045.00 LF	8 Hours pe	33.44	hours	44.58
2 Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel	1045.00 LF	8 Hours pe	33.44	hours	44.58
2 Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel	1045.00 LF	8 Hours pe	33.44	hours	44.58
2 Taxiways	Drainage - 24 inch SICPP	Roller	Diesel	1045.00 LF	8 Hours pe	33.44	hours	44.58
2 Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel	2090.00 LF	8 Hours pe	18.57778	hours	24.76
2 Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel	2090.00 LF	8 Hours pe	18.57778	hours	24.76
2 Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel	2090.00 LF	8 Hours pe	18.57778	hours	24.76
2 Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel	2090.00 LF	8 Hours pe	18.57778	hours	24.76
2 Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel	2090.00 LF	8 Hours pe	18.57778	hours	24.76
2 Taxiways	Dust Control	Water Truck	Diesel	60.00 Day	8 Hours pe	480	hours	1200
2 Taxiways	Excavation (Borrow)	Dozer	Diesel	4786.90 CY	8 Hours pe	63.82533	hours	170.57
2 Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel	4786.90 CY	8 Hours pe	63.82533	hours	170.57
2 Taxiways	Excavation (Borrow)	Pickup Truck	Diesel	4786.90 CY	8 Hours pe	63.82533	hours	170.57
2 Taxiways	Excavation (Borrow)	Roller	Diesel	4786.90 CY	8 Hours pe	29.45785	hours	78.73
2 Taxiways	Excavation (Cut to Fill)	Dozer	Diesel	4786.90 CY	8 Hours pe	47.869	hours	127.93
2 Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel	4786.90 CY	8 Hours pe	127.6507	hours	341.14
2 Taxiways	Excavation (Cut to Fill)	Excavator	Diesel	4786.90 CY	8 Hours pe	38.2952	hours	102.34
2 Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel	4786.90 CY	8 Hours pe	38.2952	hours	102.34
2 Taxiways	Excavation (Cut to Fill)	Roller	Diesel	4786.90 CY	8 Hours pe	38.2952	hours	102.34
2 Taxiways	Excavation (Cut to Fill)	Scraper	Diesel	4786.90 CY	8 Hours pe	47.869	hours	127.93
2 Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel	11488.50 SY	8 Hours pe	18.02118	hours	48.16
2 Taxiways	Fencing	Concrete Truck	Diesel	1035.00 LF	2 Hours pe	11.5	hours	15.37
2 Taxiways	Fencing	Dump Truck	Diesel	1035.00 LF	8 Hours pe	46	hours	61.47
2 Taxiways	Fencing	Other General Equipment	Diesel	1035.00 LF	8 Hours pe	46	hours	61.47
2 Taxiways	Fencing	Pickup Truck	Diesel	1035.00 LF	8 Hours pe	46	hours	61.47
2 Taxiways	Fencing	Skid Steer Loader	Diesel	1035.00 LF	8 Hours pe	46	hours	61.47
2 Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel	1035.00 LF	8 Hours pe	46	hours	61.47
2 Taxiways	Grading	Dozer	Diesel	12759.50 SY	8 Hours pe	12.7595	hours	32.47
2 Taxiways	Grading	Grader	Diesel	12759.50 SY	8 Hours pe	12.7595	hours	32.47
2 Taxiways	Grading	Roller	Diesel	12759.50 SY	8 Hours pe	12.7595	hours	32.47
2 Taxiways	Hydroseeding	Hydroseeder	Diesel	114950.00 SF	8 Hours pe	11.495	hours	29.25
2 Taxiways	Hydroseeding	Off-Road Truck	Diesel	114950.00 SF	8 Hours pe	11.495	hours	29.25
2 Taxiways	Lighting	Dump Truck	Diesel	2270.00 LF	8 Hours pe	15.13333	hours	21.11
2 Taxiways	Lighting	Loader	Diesel	2270.00 LF	8 Hours pe	15.13333	hours	21.11
2 Taxiways	Lighting	Other General Equipment	Diesel	2270.00 LF	8 Hours pe	15.13333	hours	21.11
2 Taxiways	Lighting	Pickup Truck	Diesel	2270.00 LF	8 Hours pe	15.13333	hours	21.11
2 Taxiways	Lighting	Skid Steer Loader	Diesel	2270.00 LF	8 Hours pe	15.13333	hours	21.11
2 Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel	2270.00 LF	8 Hours pe	15.13333	hours	21.11
2 Taxiways	Markings	Flatbed Truck	Diesel	103500.00 SF	8 Hours pe	236.5714	hours	632.23
2 Taxiways	Markings	Other General Equipment	Diesel	103500.00 SF	8 Hours pe	236.5714	hours	632.23
2 Taxiways	Markings	Pickup Truck	Diesel	103500.00 SF	8 Hours pe	236.5714	hours	632.23
2 Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel	2.60 Acre	4 Hours pe	10.4	hours	26.8
2 Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel	2.60 Acre	8 Hours pe	20.8	hours	53.6
2 Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel	2.60 Acre	4 Hours pe	10.4	hours	26.8
2 Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel	2.60 Acre	4 Hours pe	10.4	hours	26.8
2 Taxiways	Subbase Placement	Dozer	Diesel	11488.50 SY	8 Hours pe	24.18632	hours	64.64
2 Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel	3829.50 CY	8 Hours pe	170.2	hours	454.85
2 Taxiways	Subbase Placement	Pickup Truck	Diesel	11488.50 SY	8 Hours pe	24.18632	hours	64.64
2 Taxiways	Subbase Placement	Roller	Diesel	3829.50 CY	8 Hours pe	23.56615	hours	62.98
2 Taxiways	Topsoil Placement	Dozer	Diesel	2126.60 CY	8 Hours pe	28.35467	hours	72.16
2 Taxiways	Topsoil Placement	Dump Truck	Diesel	2126.60 CY	8 Hours pe	28.35467	hours	72.16
2 Taxiways	Topsoil Placement	Pickup Truck	Diesel	2126.60 CY	8 Hours pe	28.35467	hours	72.16
3 Demolition - Asphalt	Asphalt Demolition	Dozer	Diesel	101450.00 SF	8 Hours pe	101.45	hours	21.85
3 Demolition - Asphalt	Asphalt Demolition	Excavator	Diesel	101450.00 SF	8 Hours pe	101.45	hours	21.85
3 Demolition - Asphalt	Asphalt Demolition	Pickup Truck	Diesel	101450.00 SF	8 Hours pe	202.9	hours	43.7
3 Demolition - Concrete	Concrete Demolition	Excavator with Bucket	Diesel	101500.00 SF	8 Hours pe	135.3333	hours	19.07
3 Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	Diesel	101500.00 SF	8 Hours pe	135.3333	hours	19.07
3 Demolition - Concrete	Concrete Demolition	Pickup Truck	Diesel	101500.00 SF	8 Hours pe	270.6667	hours	38.13
3 NAVAIDS	Precision Approach Path Indicator (PAPI)	Air Compressor	Diesel	4.00 Unit	4 Hours pe	16	hours	
3 NAVAIDS	Precision Approach Path Indicator (PAPI)	Dump Truck	Diesel	4.00 Unit	4 Hours pe	16	hours	
3 NAVAIDS	Precision Approach Path Indicator (PAPI)	Other General Equipment	Diesel	4.00 Unit	4 Hours pe	16	hours	
3 NAVAIDS	Precision Approach Path Indicator (PAPI)	Pickup Truck	Diesel	4.00 Unit	4 Hours pe	16	hours	
3 NAVAIDS	Precision Approach Path Indicator (PAPI)	Skid Steer Loader	Diesel	4.00 Unit	4 Hours pe	16	hours	
3 NAVAIDS	Precision Approach Path Indicator (PAPI)	Tractors/Loader/Backhoe	Diesel	4.00 Unit	4 Hours pe	16	hours	
3 Taxiways	Asphalt Placement	Asphalt Paver	Diesel	75679.80 SY	8 Hours pe	94.59975	hours	15.52
3 Taxiways	Asphalt Placement	Dump Truck	Diesel	75679.80 SY	8 Hours pe	340.7082	hours	55.88
3 Taxiways	Asphalt Placement	Other General Equipment	Diesel	75679.80 SY	16 Hours p	189.1995	hours	31.03
3 Taxiways	Asphalt Placement	Pickup Truck	Diesel	75679.80 SY	8 Hours pe	94.59975	hours	15.52
3 Taxiways	Asphalt Placement	Roller	Diesel	75679.80 SY	8 Hours pe	94.59975	hours	15.52
3 Taxiways	Asphalt Placement	Skid Steer Loader	Diesel	75679.80 SY	8 Hours pe	94.59975	hours	15.52
3 Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel	75679.80 SY	8 Hours pe	121.0877	hours	19.86
3 Taxiways	Concrete Placement	Air Compressor	Diesel	31533.30 CY	8 Hours pe	252.2664	hours	93.59
3 Taxiways	Concrete Placement	Concrete Saws	Diesel	31533.30 CY	8 Hours pe	252.2664	hours	93.59
3 Taxiways	Concrete Placement	Concrete Truck	Diesel	31533.30 CY	8 Hours pe	1051.11	hours	389.97
3 Taxiways	Concrete Placement	Other General Equipment	Diesel	31533.30 CY	16 Hours p	504.5328	hours	187.18
3 Taxiways	Concrete Placement	Pickup Truck	Diesel	31533.30 CY	24 Hours p	756.7992	hours	280.78
3 Taxiways	Concrete Placement	Rubber Tired Loader	Diesel	31533.30 CY	8 Hours pe	252.2664	hours	93.59
3 Taxiways	Concrete Placement	Slip Form Paver	Diesel	31533.30 CY	8 Hours pe	252.2664	hours	93.59
3 Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel	31533.30 CY	8 Hours pe	252.2664	hours	93.59
3 Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel	3419.00 LF	8 Hours pe	109.408	hours	44.58
3 Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel	3419.00 LF	8 Hours pe	109.408	hours	44.58
3 Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel	3419.00 LF	8 Hours pe	109.408	hours	44.58
3 Taxiways	Drainage - 24 inch SICPP	Loader	Diesel	3419.00 LF	8 Hours pe	109.408	hours	44.58
3 Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel	3419.00 LF	8 Hours pe	109.408	hours	44.58
3 Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel	3419.00 LF	8 Hours pe	109.408	hours	44.58
3 Taxiways	Drainage - 24 inch SICPP	Roller	Diesel	3419.00 LF	8 Hours pe	109.408	hours	44.58
3 Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel	6838.00 LF	8 Hours pe	60.78222	hours	24.76
3 Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel	6838.00 LF	8 Hours pe	60.78222	hours	24.76
3 Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel	6838.00 LF	8 Hours pe	60.78222	hours	24.76
3 Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel	6838.00 LF	8 Hours pe	60.78222	hours	24.76
3 Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel	6838.00 LF	8 Hours pe	60.78222	hours	24.76
3 Taxiways	Dust Control	Water Truck	Diesel	180.00 Day	8 Hours pe	1440	hours	1200
3 Taxiways	Excavation (Borrow)	Dozer	Diesel	31533.30 CY	8 Hours pe	420.444	hours	170.57
3 Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel	31533.30 CY	8 Hours pe	420.444	hours	170.57
3 Taxiways	Excavation (Borrow)	Pickup Truck	Diesel	31533.30 CY	8 Hours pe	420.444	hours	170.57
3 Taxiways	Excavation (Borrow)	Roller	Diesel	31533.30 CY	8 Hours pe	194.0511	hours	78.73
3 Taxiways	Excavation (Cut to Fill)	Dozer	Diesel	31533.30 CY	8 Hours pe	315.333	hours	127.93
3 Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel	31533.30 CY	8 Hours pe	840.888	hours	341.14
3 Taxiways	Excavation (Cut to Fill)	Excavator	Diesel	31533.30 CY	8 Hours pe	252.2664	hours	102.34
3 Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel	31533.30 CY	8 Hours pe	252.2664	hours	102.34
3 Taxiways	Excavation (Cut to Fill)	Roller	Diesel	31533.30 CY	8 Hours pe	252.2664	hours	102.34
3 Taxiways	Excavation (Cut to Fill)	Scraper	Diesel	31533.30 CY	8 Hours pe	315.333	hours	127.93
3 Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel	75679.80 SY	8 Hours pe	118.7134	hours	48.16
3 Taxiways	Fencing	Concrete Truck	Diesel	3409.00 LF	2 Hours pe	37.87778	hours	15.37
3 Taxiways	Fencing	Dump Truck	Diesel	3409.00 LF	8 Hours pe	151.5111	hours	61.47
3 Taxiways	Fencing	Other General Equipment	Diesel	3409.00 LF	8 Hours pe	151.5111	hours	61.47
3 Taxiways	Fencing	Pickup Truck	Diesel	3409.00 LF	8 Hours pe	151.5111	hours	61.47

3	Taxiways	Fencing	Skid Steer Loader	Diesel	3409.00 LF	8 Hours pe	151.5111 hours	61.47
3	Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel	3409.00 LF	8 Hours pe	151.5111 hours	61.47
3	Taxiways	Grading	Dozer	Diesel	79696.90 SY	8 Hours pe	79.6969 hours	32.47
3	Taxiways	Grading	Grader	Diesel	79696.90 SY	8 Hours pe	79.6969 hours	32.47
3	Taxiways	Grading	Roller	Diesel	79696.90 SY	8 Hours pe	79.6969 hours	32.47
3	Taxiways	Hydroseeding	Hydroseeder	Diesel	717990.00 SF	8 Hours pe	71.799 hours	29.25
3	Taxiways	Hydroseeding	Off-Road Truck	Diesel	717990.00 SF	8 Hours pe	71.799 hours	29.25
3	Taxiways	Lighting	Dump Truck	Diesel	7218.00 LF	8 Hours pe	48.12 hours	21.11
3	Taxiways	Lighting	Loader	Diesel	7218.00 LF	8 Hours pe	48.12 hours	21.11
3	Taxiways	Lighting	Other General Equipment	Diesel	7218.00 LF	8 Hours pe	48.12 hours	21.11
3	Taxiways	Lighting	Pickup Truck	Diesel	7218.00 LF	8 Hours pe	48.12 hours	21.11
3	Taxiways	Lighting	Skid Steer Loader	Diesel	7218.00 LF	8 Hours pe	48.12 hours	21.11
3	Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel	7218.00 LF	8 Hours pe	48.12 hours	21.11
3	Taxiways	Markings	Flatbed Truck	Diesel	681800.00 SF	8 Hours pe	1558.4 hours	632.23
3	Taxiways	Markings	Other General Equipment	Diesel	681800.00 SF	8 Hours pe	1558.4 hours	632.23
3	Taxiways	Markings	Pickup Truck	Diesel	681800.00 SF	8 Hours pe	1558.4 hours	632.23
3	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel	16.50 Acre	4 Hours pe	66 hours	26.8
3	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel	16.50 Acre	8 Hours pe	132 hours	53.6
3	Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel	16.50 Acre	4 Hours pe	66 hours	26.8
3	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel	16.50 Acre	4 Hours pe	66 hours	26.8
3	Taxiways	Subbase Placement	Dozer	Diesel	75679.80 SY	8 Hours pe	159.3259 hours	64.64
3	Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel	25226.60 CY	8 Hours pe	1121.182 hours	454.85
3	Taxiways	Subbase Placement	Pickup Truck	Diesel	75679.80 SY	8 Hours pe	159.3259 hours	64.64
3	Taxiways	Subbase Placement	Roller	Diesel	25226.60 CY	8 Hours pe	155.2406 hours	62.98
3	Taxiways	Topsoil Placement	Dozer	Diesel	13282.80 CY	8 Hours pe	177.104 hours	72.16
3	Taxiways	Topsoil Placement	Dump Truck	Diesel	13282.80 CY	8 Hours pe	177.104 hours	72.16
3	Taxiways	Topsoil Placement	Pickup Truck	Diesel	13282.80 CY	8 Hours pe	177.104 hours	72.16
4	Demolition - Asphalt	Asphalt Demolition	Dozer	Diesel	21850.00 SF	8 Hours pe	21.85 hours	
4	Demolition - Asphalt	Asphalt Demolition	Excavator	Diesel	21850.00 SF	8 Hours pe	21.85 hours	
4	Demolition - Asphalt	Asphalt Demolition	Pickup Truck	Diesel	21850.00 SF	8 Hours pe	43.7 hours	
4	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	Diesel	21800.00 SF	8 Hours pe	29.06667 hours	19.07
4	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	Diesel	21800.00 SF	8 Hours pe	29.06667 hours	19.07
4	Demolition - Concrete	Concrete Demolition	Pickup Truck	Diesel	21800.00 SF	8 Hours pe	58.13333 hours	38.13
4	Taxiways	Asphalt Placement	Asphalt Paver	Diesel	19869.00 SY	8 Hours pe	24.83625 hours	15.52
4	Taxiways	Asphalt Placement	Dump Truck	Diesel	19869.00 SY	8 Hours pe	89.44963 hours	55.88
4	Taxiways	Asphalt Placement	Other General Equipment	Diesel	19869.00 SY	16 Hours p	49.6725 hours	31.03
4	Taxiways	Asphalt Placement	Pickup Truck	Diesel	19869.00 SY	8 Hours pe	24.83625 hours	15.52
4	Taxiways	Asphalt Placement	Roller	Diesel	19869.00 SY	8 Hours pe	24.83625 hours	15.52
4	Taxiways	Asphalt Placement	Skid Steer Loader	Diesel	19869.00 SY	8 Hours pe	24.83625 hours	15.52
4	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel	19869.00 SY	8 Hours pe	31.7904 hours	19.86
4	Taxiways	Concrete Placement	Air Compressor	Diesel	8278.80 CY	8 Hours pe	66.2304 hours	93.59
4	Taxiways	Concrete Placement	Concrete Saws	Diesel	8278.80 CY	8 Hours pe	66.2304 hours	93.59
4	Taxiways	Concrete Placement	Concrete Truck	Diesel	8278.80 CY	8 Hours pe	275.96 hours	389.97
4	Taxiways	Concrete Placement	Other General Equipment	Diesel	8278.80 CY	16 Hours p	132.4608 hours	187.18
4	Taxiways	Concrete Placement	Pickup Truck	Diesel	8278.80 CY	24 Hours p	198.6912 hours	280.78
4	Taxiways	Concrete Placement	Rubber Tired Loader	Diesel	8278.80 CY	8 Hours pe	66.2304 hours	93.59
4	Taxiways	Concrete Placement	Slip Form Paver	Diesel	8278.80 CY	8 Hours pe	66.2304 hours	93.59
4	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel	8278.80 CY	8 Hours pe	66.2304 hours	93.59
4	Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel	905.00 LF	8 Hours pe	28.96 hours	44.58
4	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel	905.00 LF	8 Hours pe	28.96 hours	44.58
4	Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel	905.00 LF	8 Hours pe	28.96 hours	44.58
4	Taxiways	Drainage - 24 inch SICPP	Loader	Diesel	905.00 LF	8 Hours pe	28.96 hours	44.58
4	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel	905.00 LF	8 Hours pe	28.96 hours	44.58
4	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel	905.00 LF	8 Hours pe	28.96 hours	44.58
4	Taxiways	Drainage - 24 inch SICPP	Roller	Diesel	905.00 LF	8 Hours pe	28.96 hours	44.58
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel	1810.00 LF	8 Hours pe	16.08889 hours	24.76
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel	1810.00 LF	8 Hours pe	16.08889 hours	24.76
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel	1810.00 LF	8 Hours pe	16.08889 hours	24.76
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel	1810.00 LF	8 Hours pe	16.08889 hours	24.76
4	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel	1810.00 LF	8 Hours pe	16.08889 hours	24.76
4	Taxiways	Dust Control	Water Truck	Diesel	90.00 Day	8 Hours pe	720 hours	1200
4	Taxiways	Excavation (Borrow)	Dozer	Diesel	8278.80 CY	8 Hours pe	110.384 hours	170.57
4	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel	8278.80 CY	8 Hours pe	110.384 hours	170.57
4	Taxiways	Excavation (Borrow)	Pickup Truck	Diesel	8278.80 CY	8 Hours pe	110.384 hours	170.57
4	Taxiways	Excavation (Borrow)	Roller	Diesel	8278.80 CY	8 Hours pe	50.94646 hours	78.73
4	Taxiways	Excavation (Cut to Fill)	Dozer	Diesel	8278.80 CY	8 Hours pe	82.788 hours	127.93
4	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel	8278.80 CY	8 Hours pe	220.768 hours	341.14
4	Taxiways	Excavation (Cut to Fill)	Excavator	Diesel	8278.80 CY	8 Hours pe	66.2304 hours	102.34
4	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel	8278.80 CY	8 Hours pe	66.2304 hours	102.34
4	Taxiways	Excavation (Cut to Fill)	Roller	Diesel	8278.80 CY	8 Hours pe	66.2304 hours	102.34
4	Taxiways	Excavation (Cut to Fill)	Scraper	Diesel	8278.80 CY	8 Hours pe	82.788 hours	127.93
4	Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel	19869.00 SY	8 Hours pe	31.16706 hours	48.16
4	Taxiways	Fencing	Concrete Truck	Diesel	895.00 LF	2 Hours pe	9.944444 hours	15.37
4	Taxiways	Fencing	Dump Truck	Diesel	895.00 LF	8 Hours pe	39.77778 hours	61.47
4	Taxiways	Fencing	Other General Equipment	Diesel	895.00 LF	8 Hours pe	39.77778 hours	61.47
4	Taxiways	Fencing	Pickup Truck	Diesel	895.00 LF	8 Hours pe	39.77778 hours	61.47
4	Taxiways	Fencing	Skid Steer Loader	Diesel	895.00 LF	8 Hours pe	39.77778 hours	61.47
4	Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel	895.00 LF	8 Hours pe	39.77778 hours	61.47
4	Taxiways	Grading	Dozer	Diesel	21095.60 SY	8 Hours pe	21.0956 hours	32.47
4	Taxiways	Grading	Grader	Diesel	21095.60 SY	8 Hours pe	21.0956 hours	32.47
4	Taxiways	Grading	Roller	Diesel	21095.60 SY	8 Hours pe	21.0956 hours	32.47
4	Taxiways	Hydroseeding	Hydroseeder	Diesel	190050.00 SF	8 Hours pe	19.005 hours	29.25
4	Taxiways	Hydroseeding	Off-Road Truck	Diesel	190050.00 SF	8 Hours pe	19.005 hours	29.25
4	Taxiways	Lighting	Dump Truck	Diesel	2190.00 LF	8 Hours pe	14.6 hours	21.11
4	Taxiways	Lighting	Loader	Diesel	2190.00 LF	8 Hours pe	14.6 hours	21.11
4	Taxiways	Lighting	Other General Equipment	Diesel	2190.00 LF	8 Hours pe	14.6 hours	21.11
4	Taxiways	Lighting	Pickup Truck	Diesel	2190.00 LF	8 Hours pe	14.6 hours	21.11
4	Taxiways	Lighting	Skid Steer Loader	Diesel	2190.00 LF	8 Hours pe	14.6 hours	21.11
4	Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel	2190.00 LF	8 Hours pe	14.6 hours	21.11
4	Taxiways	Markings	Flatbed Truck	Diesel	179000.00 SF	8 Hours pe	409.1429 hours	632.23
4	Taxiways	Markings	Other General Equipment	Diesel	179000.00 SF	8 Hours pe	409.1429 hours	632.23
4	Taxiways	Markings	Pickup Truck	Diesel	179000.00 SF	8 Hours pe	409.1429 hours	632.23
4	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel	4.40 Acre	4 Hours pe	17.6 hours	26.8
4	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel	4.40 Acre	8 Hours pe	35.2 hours	53.6
4	Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel	4.40 Acre	4 Hours pe	17.6 hours	26.8
4	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel	4.40 Acre	4 Hours pe	17.6 hours	26.8
4	Taxiways	Subbase Placement	Dozer	Diesel	19869.00 SY	8 Hours pe	41.82947 hours	64.64
4	Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel	6623.00 CY	8 Hours pe	294.3556 hours	454.85
4	Taxiways	Subbase Placement	Pickup Truck	Diesel	19869.00 SY	8 Hours pe	41.82947 hours	64.64
4	Taxiways	Subbase Placement	Roller	Diesel	6623.00 CY	8 Hours pe	40.75692 hours	62.98
4	Taxiways	Topsoil Placement	Dozer	Diesel	3515.90 CY	8 Hours pe	46.87867 hours	72.16
4	Taxiways	Topsoil Placement	Dump Truck	Diesel	3515.90 CY	8 Hours pe	46.87867 hours	72.16
4	Taxiways	Topsoil Placement	Pickup Truck	Diesel	3515.90 CY	8 Hours pe	46.87867 hours	72.16
5	Building - 10000 sqft- 1 story	Concrete Foundations	Backhoe	Diesel	10000.00 SF	0.032 Hour	320 hours	
5	Building - 10000 sqft- 1 story	Concrete Foundations	Concrete Ready Mix Trucks	Diesel	10000.00 SF	0.006 Hour	60 hours	
5	Building - 10000 sqft- 1 story	Concrete Foundations	Fork Truck	Diesel	10000.00 SF	0.032 Hour	320 hours	
5	Building - 10000 sqft- 1 story	Concrete Foundations	Tool Truck	Diesel	10000.00 SF	0.008 Hour	80 hours	
5	Building - 10000 sqft- 1 story	Concrete Foundations	Tractor Trailer- Material Delivery	Diesel	10000.00 SF	0.0016 Hou	16 hours	
5	Building - 10000 sqft- 1 story	Construction Mob & Layout	Survey Crew Trucks	Diesel	10000.00 SF	0.001 Hour	10 hours	
5	Building - 10000 sqft- 1 story	Construction Mob & Layout	Tractor Trailers Temp Fac.	Diesel	10000.00 SF	0.0004 Hou	4 hours	
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Fork Truck	Diesel	10000.00 SF	0.024 Hour	240 hours	
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Man Lift	Diesel	10000.00 SF	0.024 Hour	240 hours	
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Tool Truck	Diesel	10000.00 SF	0.006 Hour	60 hours	
5	Building - 10000 sqft- 1 story	Exterior Wall Framing	Tractor Trailer- Material Delivery	Diesel	10000.00 SF	0.0024 Hou	24 hours	
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Fork Truck	Diesel	10000.00 SF	0.096 Hour	960 hours	
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Man Lift	Diesel	10000.00 SF	0.096 Hour	960 hours	
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Tool Truck	Diesel	10000.00 SF	0.012 Hour	120 hours	
5	Building - 10000 sqft- 1 story	Interior Build-Out/ Finishes	Tractor Trailer- Material Delivery	Diesel	10000.00 SF	0.012 Hour	120 hours	
5	Building - 10000 sqft- 1 story	Roofing	High Lift	Diesel	10000.00 SF	0.012 Hour	120 hours	
5	Building - 10000 sqft- 1 story	Roofing	Man Lift (Fascia Construction)	Diesel	10000.00 SF	0.012 Hour	120 hours	
5	Building - 10000 sqft- 1 story	Roofing	Material Deliveries	Diesel	10000.00 SF	0.0008 Hou	8 hours	
5	Building - 10000 sqft- 1 story	Roofing	Tractor Trailer- Material Delivery	Diesel	10000.00 SF	0.0012 Hou	12 hours	
5	Building - 10000 sqft- 1 story	Security & Safety Systems	High Lift	Diesel	10000.00 SF	0.032 Hour	320 hours	
5	Building - 10000 sqft- 1 story	Security & Safety Systems	Tool Truck	Diesel	10000.00 SF	0.008 Hour	80 hours	
5	Building - 10000 sqft- 1 story	Structural Steel Erection	40 Ton Crane	Diesel	10000.00 SF	0.024 Hour	240 hours	
5	Building - 10000 sqft- 1 story	Structural Steel Erection	Fork Truck	Diesel	10000.00 SF	0.012 Hour	120 hours	
5	Building - 10000 sqft- 1 story	Structural Steel Erection	Tool Truck	Diesel	10000.00 SF	0.006 Hour	60 hours	
5	Building - 10000 sqft- 1 story	Structural Steel Erection	Tractor Trailer- Steel Deliveries	Diesel	10000.00 SF	0.0016 Hou	16 hours	
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Air Compressor	Diesel	1.00 Unit	8 Hours pe	8 hours	
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Crane	Diesel	1.00 Unit	8 Hours pe	8 hours	
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Dozer	Diesel	1.00 Unit	16 Hours p	16 hours	
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Dump Truck	Diesel	1.00 Unit	20 Hours p	20 hours	
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Excavator	Diesel	1.00 Unit	8 Hours pe	8 hours	
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Other General Equipment	Diesel	1.00 Unit	24 Hours p	24 hours	
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Pickup Truck	Diesel	1.00 Unit	4 Hours pe	4 hours	
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Skid Steer Loader	Diesel	1.00 Unit	24 Hours p	24 hours	
6	NAVAIDS	Instrument Landing System (ILS) Localizer	Tractors/Loader/Backhoe	Diesel	1.00 Unit	24 Hours p	24 hours	
6	Rehabilitate Runway	Asphalt Placement	Asphalt Paver	Diesel	148989.80 SY	8 Hours pe	186.2373 hours	115.46
6	Rehabilitate Runway	Asphalt Placement	Dump Truck	Diesel	148989.80 SY	8 Hours pe	670.7476 hours	415.85
6	Rehabilitate Runway	Asphalt Placement	Other General Equipment	Diesel	148989.80 SY	16 Hours p	372.4745 hours	230.93
6	Rehabilitate Runway	Asphalt Placement	Pickup Truck	Diesel	148989.80 SY	8 Hours pe	186.2373 hours	115.46
6	Rehabilitate Runway	Asphalt Placement	Roller	Diesel	148989.80 SY	8 Hours pe	186.2373 hours	115.46
6	Rehabilitate Runway	Asphalt Placement	Skid Steer Loader	Diesel	148989.80 SY	8 Hours pe	186.2373 hours	115.46
6	Rehabilitate Runway	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel	148989.80 SY	8 Hours pe	238.3837 hours	147.79
6	Rehabilitate Runway	Cold Milling	Cold Planer	Diesel	148989.80 SY	8 Hours pe	297.9796 hours	184.74
6	Rehabilitate Runway	Cold Milling	Dump Truck	Diesel	148989.80 SY	8 Hours pe	297.9796 hours	184.74
6	Rehabilitate Runway	Cold Milling	Pickup Truck	Diesel	148989.80 SY	8 Hours pe	297.9796 hours	184.74
6	Rehabilitate Runway	Cold Milling	Sweepers	Diesel	148989.80 SY	8 Hours pe	297.9796 hours	184.74
6	Rehabilitate Runway	Cold Milling	Water Truck	Diesel	148989.80 SY	8 Hours pe	297.9796 hours	184.74
6	Rehabilitate Runway	Concrete Demolition	Concrete Saws	Diesel	1342250.00 SF	8 Hours pe	2684.5 hours	1021.93
6	Rehabilitate Runway	Concrete Demolition	Dump Truck	Diesel	1342250.00 SF	8 Hours pe	2684.5 hours	1021.93
6	Rehabilitate Runway	Concrete Demolition	Excavator	Diesel	1342250.00 SF	8 Hours pe	2684.5 hours	1021.93
6	Rehabilitate Runway	Concrete Demolition	Hydralic Hammer	Diesel	1342250.00 SF	8 Hours pe	2684.5 hours	1021.93
6	Rehabilitate Runway	Concrete Demolition	Other General Equipment	Diesel	1342250.00 SF	8 Hours pe	2684.5 hours	1021.93
6	Rehabilitate Runway	Concrete Demolition	Pickup Truck	Diesel	1342250.00 SF	8 Hours pe	2684.5 hours	1021.93
6	Rehabilitate Runway	Concrete Placement	Air Compressor	Diesel	62079.10 CY	8 Hours pe	496.6328 hours	290.18
6	Rehabilitate Runway	Concrete Placement	Concrete Saws	Diesel	62079.10 CY	8 Hours pe	496.6328 hours	290.18
6	Rehabilitate Runway	Concrete Placement	Concrete Truck	Diesel	62079.10 CY	8 Hours pe	2069.303 hours	1209.07
6	Rehabilitate Runway	Concrete Placement	Other General Equipment	Diesel	62079.10 CY	16 Hours p	993.2656 hours	580.35
6	Rehabilitate Runway	Concrete Placement	Pickup Truck	Diesel	62079.10 CY	24 Hours p	1489.898 hours	870.53
6	Rehabilitate Runway	Concrete Placement	Rubber Tired Loader	Diesel	62079.10 CY	8 Hours pe	496.6328 hours	290.18
6	Rehabilitate Runway	Concrete Placement	Slip Form Paver	Diesel	62079.10 CY	8 Hours pe	496.6328 hours	290.18
6	Rehabilitate Runway	Concrete Placement	Surfacing Equipment (Grooving)	Diesel	62079.10 CY	8 Hours pe	496.6328 hours	290.18
6	Rehabilitate Runway	Dust Control	Water Truck	Diesel	210.00 Day	8 Hours pe	1680 hours	
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Dozer	Diesel	12415.80 CY	8 Hours pe	99.3264 hours	
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Dump Truck (12 cy)	Diesel	12415.80 CY	8 Hours pe	331.088 hours	
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Excavator	Diesel	12415.80 CY	8 Hours pe	99.3264 hours	
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Pickup Truck	Diesel	12415.80 CY	8 Hours pe	99.3264 hours	
6	Rehabilitate Runway	Excavation (Cut to Fill) (Assume 20% reconstruction)	Roller	Diesel	12415.80 CY	8 Hours pe	99.3264 hours	
6	Rehabilitate Runway	Excavation (Topsoil Stripping)	Dozer	Diesel	29798.00 SY	8 Hours pe	46.74196 hours	
6	Rehabilitate Runway	Grading	Dozer	Diesel	31047.60 SY	8 Hours pe	31.0476 hours	
6	Rehabilitate Runway	Grading	Grader	Diesel	31047.60 SY	8 Hours pe	31.0476 hours	
6	Rehabilitate Runway	Grading	Roller	Diesel	31047.60 SY	8 Hours pe	31.0476 hours	
6	Rehabilitate Runway	Hydroseeding	Hydroseeder	Diesel	31047.60 SF	8 Hours pe	3.10476 hours	
6	Rehabilitate Runway	Hydroseeding	Off-Road Truck	Diesel	31047.60 SF	8 Hours pe	3.10476 hours	
6	Rehabilitate Runway	Lighting	Dump Truck	Diesel	11238.00 LF	8 Hours pe	74.92 hours	
6	Rehabilitate Runway	Lighting	Loader	Diesel	11238.00 LF	8 Hours pe	74.92 hours	
6	Rehabilitate Runway	Lighting	Other General Equipment	Diesel	11238.00 LF	8 Hours pe	74.92 hours	
6	Rehabilitate Runway	Lighting	Pickup Truck	Diesel	11238.00 LF	8 Hours pe	74.92 hours	
6	Rehabilitate Runway	Lighting	Skid Steer Loader	Diesel	11238.00 LF	8 Hours pe	74.92 hours	

6	Rehabilitate Runway	Lighting	Tractors/Loader/Backhoe	Diesel	11238.00 LF	8 Hours pe	74.92	hours	
6	Rehabilitate Runway	Markings	Flatbed Truck	Diesel	1342250.00 SF	8 Hours pe	3068	hours	
6	Rehabilitate Runway	Markings	Other General Equipment	Diesel	1342250.00 SF	8 Hours pe	3068	hours	
6	Rehabilitate Runway	Markings	Pickup Truck	Diesel	1342250.00 SF	8 Hours pe	3068	hours	
6	Rehabilitate Runway	Sealing Random Cracks	Crack Cleaner	Diesel	5369.00 LF	8 Hours pe	15.34	hours	
6	Rehabilitate Runway	Sealing Random Cracks	Crack Filler (Trailer Mounted)	Diesel	5369.00 LF	8 Hours pe	15.34	hours	
6	Rehabilitate Runway	Sealing Random Cracks	Flatbed Truck	Diesel	5369.00 LF	8 Hours pe	15.34	hours	
6	Rehabilitate Runway	Sealing Random Cracks	Other General Equipment	Diesel	5369.00 LF	8 Hours pe	15.34	hours	
6	Rehabilitate Runway	Sealing Random Cracks	Pickup Truck	Diesel	5369.00 LF	8 Hours pe	15.34	hours	
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Other General Equipment	Diesel	6.40 Acre	4 Hours pe	25.6	hours	
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Pickup Truck	Diesel	6.40 Acre	8 Hours pe	51.2	hours	
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Pumps	Diesel	6.40 Acre	4 Hours pe	25.6	hours	
6	Rehabilitate Runway	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel	6.40 Acre	4 Hours pe	25.6	hours	
6	Rehabilitate Runway	Subbase Placement	Dozer	Diesel	148989.80 SY	8 Hours pe	313.6627	hours	
6	Rehabilitate Runway	Subbase Placement	Dump Truck (12 cy)	Diesel	49663.30 CY	8 Hours pe	2207.258	hours	
6	Rehabilitate Runway	Subbase Placement	Pickup Truck	Diesel	148989.80 SY	8 Hours pe	313.6627	hours	
6	Rehabilitate Runway	Subbase Placement	Roller	Diesel	49663.30 CY	8 Hours pe	305.6203	hours	
6	Rehabilitate Runway	Topsoil Placement	Dozer	Diesel	5174.60 CY	8 Hours pe	68.99467	hours	
6	Rehabilitate Runway	Topsoil Placement	Dump Truck	Diesel	5174.60 CY	8 Hours pe	68.99467	hours	
6	Rehabilitate Runway	Topsoil Placement	Pickup Truck	Diesel	5174.60 CY	8 Hours pe	68.99467	hours	
6	Service Road	Asphalt Placement	Asphalt Paver	Diesel	4322.30 SY	8 Hours pe	5.402875	hours	
6	Service Road	Asphalt Placement	Dump Truck	Diesel	4322.30 SY	8 Hours pe	19.45886	hours	
6	Service Road	Asphalt Placement	Other General Equipment	Diesel	4322.30 SY	16 Hours p	10.80575	hours	
6	Service Road	Asphalt Placement	Pickup Truck	Diesel	4322.30 SY	8 Hours pe	5.402875	hours	
6	Service Road	Asphalt Placement	Roller	Diesel	4322.30 SY	8 Hours pe	5.402875	hours	
6	Service Road	Asphalt Placement	Skid Steer Loader	Diesel	4322.30 SY	8 Hours pe	5.402875	hours	
6	Service Road	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel	4322.30 SY	8 Hours pe	6.91568	hours	
6	Service Road	Clearing and Grubbing	Chain Saw	Diesel	1.20 Acre	12 Hours p	14.4	hours	
6	Service Road	Clearing and Grubbing	Chipper/Stump Grinder	Diesel	1.20 Acre	12 Hours p	14.4	hours	
6	Service Road	Clearing and Grubbing	Pickup Truck	Diesel	1.20 Acre	16 Hours p	19.2	hours	
6	Service Road	Concrete Placement	Air Compressor	Diesel	1801.00 CY	8 Hours pe	14.408	hours	0
6	Service Road	Concrete Placement	Concrete Saws	Diesel	1801.00 CY	8 Hours pe	14.408	hours	0
6	Service Road	Concrete Placement	Concrete Truck	Diesel	1801.00 CY	8 Hours pe	60.03333	hours	0
6	Service Road	Concrete Placement	Other General Equipment	Diesel	1801.00 CY	16 Hours p	28.816	hours	0
6	Service Road	Concrete Placement	Pickup Truck	Diesel	1801.00 CY	24 Hours p	43.224	hours	0
6	Service Road	Concrete Placement	Rubber Tired Loader	Diesel	1801.00 CY	8 Hours pe	14.408	hours	0
6	Service Road	Concrete Placement	Slip Form Paver	Diesel	1801.00 CY	8 Hours pe	14.408	hours	0
6	Service Road	Concrete Placement	Surfacing Equipment (Grooving)	Diesel	1801.00 CY	8 Hours pe	14.408	hours	0
6	Service Road	Drainage - 24 inch SICPP	Dozer	Diesel	1308.00 LF	8 Hours pe	41.856	hours	
6	Service Road	Drainage - 24 inch SICPP	Dump Truck	Diesel	1308.00 LF	8 Hours pe	41.856	hours	
6	Service Road	Drainage - 24 inch SICPP	Excavator	Diesel	1308.00 LF	8 Hours pe	41.856	hours	
6	Service Road	Drainage - 24 inch SICPP	Loader	Diesel	1308.00 LF	8 Hours pe	41.856	hours	
6	Service Road	Drainage - 24 inch SICPP	Other General Equipment	Diesel	1308.00 LF	8 Hours pe	41.856	hours	
6	Service Road	Drainage - 24 inch SICPP	Pickup Truck	Diesel	1308.00 LF	8 Hours pe	41.856	hours	
6	Service Road	Drainage - 24 inch SICPP	Roller	Diesel	1308.00 LF	8 Hours pe	41.856	hours	
6	Service Road	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel	2616.00 LF	8 Hours pe	23.25333	hours	
6	Service Road	Drainage - 6 inch Perforated Underdrain	Loader	Diesel	2616.00 LF	8 Hours pe	23.25333	hours	
6	Service Road	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel	2616.00 LF	8 Hours pe	23.25333	hours	
6	Service Road	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel	2616.00 LF	8 Hours pe	23.25333	hours	
6	Service Road	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel	2616.00 LF	8 Hours pe	23.25333	hours	
6	Service Road	Dust Control	Water Truck	Diesel	210.00 Day	8 Hours pe	1680	hours	
6	Service Road	Excavation (Borrow)	Dozer	Diesel	1801.00 CY	8 Hours pe	24.01333	hours	
6	Service Road	Excavation (Borrow)	Dump Truck (12 cy)	Diesel	1801.00 CY	8 Hours pe	24.01333	hours	
6	Service Road	Excavation (Borrow)	Pickup Truck	Diesel	1801.00 CY	8 Hours pe	24.01333	hours	
6	Service Road	Excavation (Borrow)	Roller	Diesel	1801.00 CY	8 Hours pe	11.08308	hours	
6	Service Road	Excavation (Cut to Fill)	Dozer	Diesel	1801.00 CY	8 Hours pe	18.01	hours	
6	Service Road	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel	1801.00 CY	8 Hours pe	48.02667	hours	
6	Service Road	Excavation (Cut to Fill)	Excavator	Diesel	1801.00 CY	8 Hours pe	14.408	hours	
6	Service Road	Excavation (Cut to Fill)	Pickup Truck	Diesel	1801.00 CY	8 Hours pe	14.408	hours	
6	Service Road	Excavation (Cut to Fill)	Roller	Diesel	1801.00 CY	8 Hours pe	14.408	hours	
6	Service Road	Excavation (Cut to Fill)	Scraper	Diesel	1801.00 CY	8 Hours pe	18.01	hours	
6	Service Road	Excavation (Topsoil Stripping)	Dozer	Diesel	4322.30 SY	8 Hours pe	6.780078	hours	
6	Service Road	Fencing	Concrete Truck	Diesel	1298.00 LF	2 Hours pe	14.42222	hours	
6	Service Road	Fencing	Dump Truck	Diesel	1298.00 LF	8 Hours pe	57.68889	hours	
6	Service Road	Fencing	Other General Equipment	Diesel	1298.00 LF	8 Hours pe	57.68889	hours	
6	Service Road	Fencing	Pickup Truck	Diesel	1298.00 LF	8 Hours pe	57.68889	hours	
6	Service Road	Fencing	Skid Steer Loader	Diesel	1298.00 LF	8 Hours pe	57.68889	hours	
6	Service Road	Fencing	Tractors/Loader/Backhoe	Diesel	1298.00 LF	8 Hours pe	57.68889	hours	
6	Service Road	Grading	Dozer	Diesel	5807.50 SY	8 Hours pe	5.8075	hours	
6	Service Road	Grading	Grader	Diesel	5807.50 SY	8 Hours pe	5.8075	hours	
6	Service Road	Grading	Roller	Diesel	5807.50 SY	8 Hours pe	5.8075	hours	
6	Service Road	Hydroseeding	Hydroseeder	Diesel	52320.00 SF	8 Hours pe	5.232	hours	
6	Service Road	Hydroseeding	Off-Road Truck	Diesel	52320.00 SF	8 Hours pe	5.232	hours	
6	Service Road	Markings	Flatbed Truck	Diesel	38940.00 SF	8 Hours pe	89.00571	hours	
6	Service Road	Markings	Other General Equipment	Diesel	38940.00 SF	8 Hours pe	89.00571	hours	
6	Service Road	Markings	Pickup Truck	Diesel	38940.00 SF	8 Hours pe	89.00571	hours	
6	Service Road	Soil Erosion/Sediment Control	Other General Equipment	Diesel	1.20 Acre	4 Hours pe	4.8	hours	
6	Service Road	Soil Erosion/Sediment Control	Pickup Truck	Diesel	1.20 Acre	8 Hours pe	9.6	hours	
6	Service Road	Soil Erosion/Sediment Control	Pumps	Diesel	1.20 Acre	4 Hours pe	4.8	hours	
6	Service Road	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel	1.20 Acre	4 Hours pe	4.8	hours	
6	Service Road	Subbase Placement	Dozer	Diesel	4322.30 SY	8 Hours pe	9.099579	hours	
6	Service Road	Subbase Placement	Dump Truck (12 cy)	Diesel	1440.80 CY	8 Hours pe	64.03556	hours	
6	Service Road	Subbase Placement	Pickup Truck	Diesel	4322.30 SY	8 Hours pe	9.099579	hours	
6	Service Road	Subbase Placement	Roller	Diesel	1440.80 CY	8 Hours pe	8.866462	hours	
6	Service Road	Topsoil Placement	Dozer	Diesel	967.90 CY	8 Hours pe	12.90533	hours	
6	Service Road	Topsoil Placement	Dump Truck	Diesel	967.90 CY	8 Hours pe	12.90533	hours	
6	Service Road	Topsoil Placement	Pickup Truck	Diesel	967.90 CY	8 Hours pe	12.90533	hours	
7	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	Diesel	4500.00 SF	8 Hours pe	6	hours	19.07
7	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	Diesel	4500.00 SF	8 Hours pe	6	hours	19.07
7	Demolition - Concrete	Concrete Demolition	Pickup Truck	Diesel	4500.00 SF	8 Hours pe	12	hours	38.13
7	Fencing	Clearing and Grubbing	Chain Saw	Diesel	0.20 Acre	12 Hours p	2.4	hours	
7	Fencing	Clearing and Grubbing	Chipper/Stump Grinder	Diesel	0.20 Acre	12 Hours p	2.4	hours	
7	Fencing	Clearing and Grubbing	Pickup Truck	Diesel	0.20 Acre	16 Hours p	3.2	hours	
7	Fencing	Excavation (Cut to Fill)	Dozer	Diesel	346.90 CY	8 Hours pe	2.7752	hours	
7	Fencing	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel	346.90 CY	8 Hours pe	9.250667	hours	
7	Fencing	Excavation (Cut to Fill)	Excavator	Diesel	346.90 CY	8 Hours pe	2.7752	hours	
7	Fencing	Excavation (Cut to Fill)	Pickup Truck	Diesel	346.90 CY	8 Hours pe	2.7752	hours	
7	Fencing	Excavation (Cut to Fill)	Roller	Diesel	346.90 CY	8 Hours pe	2.7752	hours	
7	Fencing	Fencing	Concrete Truck	Diesel	1500.00 LF	2 Hours pe	16.66667	hours	
7	Fencing	Fencing	Dump Truck	Diesel	1500.00 LF	8 Hours pe	66.66667	hours	
7	Fencing	Fencing	Other General Equipment	Diesel	1500.00 LF	8 Hours pe	66.66667	hours	
7	Fencing	Fencing	Pickup Truck	Diesel	1500.00 LF	8 Hours pe	66.66667	hours	
7	Fencing	Fencing	Skid Steer Loader	Diesel	1500.00 LF	8 Hours pe	66.66667	hours	
7	Fencing	Fencing	Tractors/Loader/Backhoe	Diesel	1500.00 LF	8 Hours pe	66.66667	hours	
7	Fencing	Grading	Dozer	Diesel	838.10 SY	8 Hours pe	0.8381	hours	
7	Fencing	Grading	Grader	Diesel	838.10 SY	8 Hours pe	0.8381	hours	
7	Fencing	Grading	Roller	Diesel	838.10 SY	8 Hours pe	0.8381	hours	
7	Fencing	Hydroseeding	Hydroseeder	Diesel	7550.00 SF	8 Hours pe	0.755	hours	
7	Fencing	Hydroseeding	Off-Road Truck	Diesel	7550.00 SF	8 Hours pe	0.755	hours	
7	Fencing	Soil Erosion/Sediment Control	Other General Equipment	Diesel	0.20 Acre	4 Hours pe	0.8	hours	
7	Fencing	Soil Erosion/Sediment Control	Pickup Truck	Diesel	0.20 Acre	8 Hours pe	1.6	hours	
7	Fencing	Soil Erosion/Sediment Control	Pumps	Diesel	0.20 Acre	4 Hours pe	0.8	hours	
7	Fencing	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel	0.20 Acre	4 Hours pe	0.8	hours	
7	Fencing	Topsoil Placement	Dozer	Diesel	349.20 CY	8 Hours pe	4.656	hours	
7	Fencing	Topsoil Placement	Dump Truck	Diesel	349.20 CY	8 Hours pe	4.656	hours	
7	Fencing	Topsoil Placement	Pickup Truck	Diesel	349.20 CY	8 Hours pe	4.656	hours	
7	Taxiways	Asphalt Placement	Asphalt Paver	Diesel	23021.40 SY	8 Hours pe	28.77675	hours	15.52
7	Taxiways	Asphalt Placement	Dump Truck	Diesel	23021.40 SY	8 Hours pe	103.6416	hours	55.88
7	Taxiways	Asphalt Placement	Other General Equipment	Diesel	23021.40 SY	16 Hours p	57.5535	hours	31.03
7	Taxiways	Asphalt Placement	Pickup Truck	Diesel	23021.40 SY	8 Hours pe	28.77675	hours	15.52
7	Taxiways	Asphalt Placement	Roller	Diesel	23021.40 SY	8 Hours pe	28.77675	hours	15.52
7	Taxiways	Asphalt Placement	Skid Steer Loader	Diesel	23021.40 SY	8 Hours pe	28.77675	hours	15.52
7	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel	23021.40 SY	8 Hours pe	36.83424	hours	19.86
7	Taxiways	Concrete Placement	Air Compressor	Diesel	9592.30 CY	8 Hours pe	76.7384	hours	93.59
7	Taxiways	Concrete Placement	Concrete Saws	Diesel	9592.30 CY	8 Hours pe	76.7384	hours	93.59
7	Taxiways	Concrete Placement	Concrete Truck	Diesel	9592.30 CY	8 Hours pe	319.7433	hours	389.97
7	Taxiways	Concrete Placement	Other General Equipment	Diesel	9592.30 CY	16 Hours p	153.4768	hours	187.18
7	Taxiways	Concrete Placement	Pickup Truck	Diesel	9592.30 CY	24 Hours p	230.2152	hours	280.78
7	Taxiways	Concrete Placement	Rubber Tired Loader	Diesel	9592.30 CY	8 Hours pe	76.7384	hours	93.59
7	Taxiways	Concrete Placement	Slip Form Paver	Diesel	9592.30 CY	8 Hours pe	76.7384	hours	93.59
7	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel	9592.30 CY	8 Hours pe	76.7384	hours	93.59
7	Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel	1047.00 LF	8 Hours pe	33.504	hours	44.58
7	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel	1047.00 LF	8 Hours pe	33.504	hours	44.58
7	Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel	1047.00 LF	8 Hours pe	33.504	hours	44.58
7	Taxiways	Drainage - 24 inch SICPP	Loader	Diesel	1047.00 LF	8 Hours pe	33.504	hours	44.58
7	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel	1047.00 LF	8 Hours pe	33.504	hours	44.58
7	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel	1047.00 LF	8 Hours pe	33.504	hours	44.58
7	Taxiways	Drainage - 24 inch SICPP	Roller	Diesel	1047.00 LF	8 Hours pe	33.504	hours	44.58
7	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel	2094.00 LF	8 Hours pe	18.61333	hours	24.76
7	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel	2094.00 LF	8 Hours pe	18.61333	hours	24.76
7	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel	2094.00 LF	8 Hours pe	18.61333	hours	24.76
7	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel	2094.00 LF	8 Hours pe	18.61333	hours	24.76
7	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel	2094.00 LF	8 Hours pe	18.61333	hours	24.76
7	Taxiways	Dust Control	Water Truck	Diesel	120.00 Day	8 Hours pe	960	hours	1200
7	Taxiways	Excavation (Borrow)	Dozer	Diesel	9592.30 CY	8 Hours pe	127.8973	hours	170.57
7	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel	9592.30 CY	8 Hours pe	127.8973	hours	170.57
7	Taxiways	Excavation (Borrow)	Pickup Truck	Diesel	9592.30 CY	8 Hours pe	127.8973	hours	170.57
7	Taxiways	Excavation (Borrow)	Roller	Diesel	9592.30 CY	8 Hours pe	59.02954	hours	78.73
7	Taxiways	Excavation (Cut to Fill)	Dozer	Diesel	9592.30 CY	8 Hours pe	95.923	hours	127.93
7	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel	9592.30 CY	8 Hours pe	255.7947	hours	341.14
7	Taxiways	Excavation (Cut to Fill)	Excavator	Diesel	9592.30 CY	8 Hours pe	76.7384	hours	102.34
7	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel	9592.30 CY	8 Hours pe	76.7384	hours	102.34
7	Taxiways	Excavation (Cut to Fill)	Roller	Diesel	9592.30 CY	8 Hours pe	76.7384	hours	102.34
7	Taxiways	Excavation (Cut to Fill)	Scraper	Diesel	9592.30 CY	8 Hours pe	95.923	hours	127.93
7	Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel	23021.40 SY	8 Hours pe	36.112	hours	48.16
7	Taxiways	Fencing	Concrete Truck	Diesel	1037.00 LF	2 Hours pe	11.52222	hours	15.37
7	Taxiways	Fencing	Dump Truck	Diesel	1037.00 LF	8 Hours pe	46.08889	hours	61.47
7	Taxiways	Fencing	Other General Equipment	Diesel	1037.00 LF	8 Hours pe	46.08889	hours	61.47
7	Taxiways	Fencing	Pickup Truck	Diesel	1037.00 LF	8 Hours pe	46.08889	hours	61.47
7	Taxiways	Fencing	Skid Steer Loader	Diesel	1037.00 LF	8 Hours pe	46.08889	hours	61.47
7	Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel	1037.00 LF	8 Hours pe	46.08889	hours	61.47
7	Taxiways	Grading	Dozer	Diesel	24405.60 SY	8 Hours pe	24.4056	hours	32.47
7	Taxiways	Grading	Grader	Diesel	24405.60 SY	8 Hours pe	24.4056	hours	32.47
7	Taxiways	Grading	Roller	Diesel	24405.60 SY	8 Hours pe	24.4056	hours	32.47
7	Taxiways	Hydroseeding	Hydroseeder	Diesel	219870.00 SF	8 Hours pe	21.987	hours	29.25
7	Taxiways	Hydroseeding	Off-Road Truck	Diesel	219870.00 SF	8 Hours pe	21.987	hours	29.25
7	Taxiways	Lighting	Dump Truck	Diesel	2474.00 LF	8 Hours pe	16.49333	hours	21.11
7	Taxiways	Lighting	Loader	Diesel	2474.00 LF	8 Hours pe	16.49333	hours	21.11
7	Taxiways	Lighting	Other General Equipment	Diesel	2474.00 LF	8 Hours pe	16.49333	hours	21.11
7	Taxiways	Lighting	Pickup Truck	Diesel	2474.00 LF	8 Hours pe	16.49333	hours	21.11
7	Taxiways	Lighting	Skid Steer Loader	Diesel	2474.00 LF	8 Hours pe	16.49333	hours	21.11
7	Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel	2474.00 LF	8 Hours pe	16.49333	hours	21.11
7	Taxiways	Markings	Flatbed Truck	Diesel	207400.00 SF	8 Hours pe	474.0571	hours	632.23
7	Taxiways	Markings	Other General Equipment	Diesel	207400.00 SF	8 Hours pe	474.0571	hours	632.23
7	Taxiways	Markings	Pickup Truck	Diesel	207400.00 SF	8 Hours pe	474.0571	hours	632.23
7	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel	5.10 Acre	4 Hours pe	20.4	hours	26.8
7	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel	5.10 Acre	8 Hours pe	40.8	hours	53.6
7	Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel	5.10 Acre	4 Hours pe	20.4	hours	26.8
7	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel	5.10 Acre	4 Hours pe	20.4	hours	26.8
7	Taxiways	Subbase Placement	Dozer	Diesel	23021.40 SY	8 Hours pe	48.46611	hours	64.64

7	Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel	7673.80 CY	8 Hours pe	341.0578	hours		454.85
7	Taxiways	Subbase Placement	Pickup Truck	Diesel	23021.40 SY	8 Hours pe	48.46611	hours		64.64
7	Taxiways	Subbase Placement	Roller	Diesel	7673.80 CY	8 Hours pe	47.22338	hours		62.98
7	Taxiways	Topsoil Placement	Dozer	Diesel	4067.60 CY	8 Hours pe	54.23467	hours		72.16
7	Taxiways	Topsoil Placement	Dump Truck	Diesel	4067.60 CY	8 Hours pe	54.23467	hours		72.16
7	Taxiways	Topsoil Placement	Pickup Truck	Diesel	4067.60 CY	8 Hours pe	54.23467	hours		72.16
8	Demolition - Concrete	Concrete Demolition	Excavator with Bucket	Diesel	14300.00 SF	8 Hours pe	19.06667	hours		
8	Demolition - Concrete	Concrete Demolition	Excavator with Hoe Ram	Diesel	14300.00 SF	8 Hours pe	19.06667	hours		
8	Demolition - Concrete	Concrete Demolition	Pickup Truck	Diesel	14300.00 SF	8 Hours pe	38.13333	hours		
8	Taxiways	Asphalt Placement	Asphalt Paver	Diesel	30702.60 SY	8 Hours pe	38.37825	hours		15.52
8	Taxiways	Asphalt Placement	Dump Truck	Diesel	30702.60 SY	8 Hours pe	138.2222	hours		55.88
8	Taxiways	Asphalt Placement	Other General Equipment	Diesel	30702.60 SY	16 Hours p	76.7565	hours		31.03
8	Taxiways	Asphalt Placement	Pickup Truck	Diesel	30702.60 SY	8 Hours pe	38.37825	hours		15.52
8	Taxiways	Asphalt Placement	Roller	Diesel	30702.60 SY	8 Hours pe	38.37825	hours		15.52
8	Taxiways	Asphalt Placement	Skid Steer Loader	Diesel	30702.60 SY	8 Hours pe	38.37825	hours		15.52
8	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	Diesel	30702.60 SY	8 Hours pe	49.12416	hours		19.86
8	Taxiways	Concrete Placement	Air Compressor	Diesel	12792.80 CY	8 Hours pe	102.3424	hours		93.59
8	Taxiways	Concrete Placement	Concrete Saws	Diesel	12792.80 CY	8 Hours pe	102.3424	hours		93.59
8	Taxiways	Concrete Placement	Concrete Truck	Diesel	12792.80 CY	8 Hours pe	426.4267	hours		389.97
8	Taxiways	Concrete Placement	Other General Equipment	Diesel	12792.80 CY	16 Hours p	204.6848	hours		187.18
8	Taxiways	Concrete Placement	Pickup Truck	Diesel	12792.80 CY	24 Hours p	307.0272	hours		280.78
8	Taxiways	Concrete Placement	Rubber Tired Loader	Diesel	12792.80 CY	8 Hours pe	102.3424	hours		93.59
8	Taxiways	Concrete Placement	Slip Form Paver	Diesel	12792.80 CY	8 Hours pe	102.3424	hours		93.59
8	Taxiways	Concrete Placement	Surfacing Equipment (Grooving)	Diesel	12792.80 CY	8 Hours pe	102.3424	hours		93.59
8	Taxiways	Drainage - 24 inch SICPP	Dozer	Diesel	1393.00 LF	8 Hours pe	44.576	hours		
8	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Diesel	1393.00 LF	8 Hours pe	44.576	hours		
8	Taxiways	Drainage - 24 inch SICPP	Excavator	Diesel	1393.00 LF	8 Hours pe	44.576	hours		
8	Taxiways	Drainage - 24 inch SICPP	Loader	Diesel	1393.00 LF	8 Hours pe	44.576	hours		
8	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	Diesel	1393.00 LF	8 Hours pe	44.576	hours		
8	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Diesel	1393.00 LF	8 Hours pe	44.576	hours		
8	Taxiways	Drainage - 24 inch SICPP	Roller	Diesel	1393.00 LF	8 Hours pe	44.576	hours		
8	Taxiways	Drainage - 6 inch Perforated Underdrain	Dump Truck	Diesel	2786.00 LF	8 Hours pe	24.76444	hours		
8	Taxiways	Drainage - 6 inch Perforated Underdrain	Loader	Diesel	2786.00 LF	8 Hours pe	24.76444	hours		
8	Taxiways	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Diesel	2786.00 LF	8 Hours pe	24.76444	hours		
8	Taxiways	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Diesel	2786.00 LF	8 Hours pe	24.76444	hours		
8	Taxiways	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Diesel	2786.00 LF	8 Hours pe	24.76444	hours		
8	Taxiways	Dust Control	Water Truck	Diesel	150.00 Day	8 Hours pe	1200	hours		
8	Taxiways	Excavation (Borrow)	Dozer	Diesel	12792.80 CY	8 Hours pe	170.5707	hours		
8	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Diesel	12792.80 CY	8 Hours pe	170.5707	hours		
8	Taxiways	Excavation (Borrow)	Pickup Truck	Diesel	12792.80 CY	8 Hours pe	170.5707	hours		
8	Taxiways	Excavation (Borrow)	Roller	Diesel	12792.80 CY	8 Hours pe	78.72492	hours		
8	Taxiways	Excavation (Cut to Fill)	Dozer	Diesel	12792.80 CY	8 Hours pe	127.928	hours		
8	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Diesel	12792.80 CY	8 Hours pe	341.1413	hours		
8	Taxiways	Excavation (Cut to Fill)	Excavator	Diesel	12792.80 CY	8 Hours pe	102.3424	hours		
8	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Diesel	12792.80 CY	8 Hours pe	102.3424	hours		
8	Taxiways	Excavation (Cut to Fill)	Roller	Diesel	12792.80 CY	8 Hours pe	102.3424	hours		
8	Taxiways	Excavation (Cut to Fill)	Scraper	Diesel	12792.80 CY	8 Hours pe	127.928	hours		
8	Taxiways	Excavation (Topsoil Stripping)	Dozer	Diesel	30702.60 SY	8 Hours pe	48.16094	hours		
8	Taxiways	Fencing	Concrete Truck	Diesel	1383.00 LF	2 Hours pe	15.36667	hours		
8	Taxiways	Fencing	Dump Truck	Diesel	1383.00 LF	8 Hours pe	61.46667	hours		
8	Taxiways	Fencing	Other General Equipment	Diesel	1383.00 LF	8 Hours pe	61.46667	hours		
8	Taxiways	Fencing	Pickup Truck	Diesel	1383.00 LF	8 Hours pe	61.46667	hours		
8	Taxiways	Fencing	Skid Steer Loader	Diesel	1383.00 LF	8 Hours pe	61.46667	hours		
8	Taxiways	Fencing	Tractors/Loader/Backhoe	Diesel	1383.00 LF	8 Hours pe	61.46667	hours		
8	Taxiways	Grading	Dozer	Diesel	32470.80 SY	8 Hours pe	32.4708	hours		
8	Taxiways	Grading	Grader	Diesel	32470.80 SY	8 Hours pe	32.4708	hours		
8	Taxiways	Grading	Roller	Diesel	32470.80 SY	8 Hours pe	32.4708	hours		
8	Taxiways	Hydroseeding	Hydroseeder	Diesel	292530.00 SF	8 Hours pe	29.253	hours		
8	Taxiways	Hydroseeding	Off-Road Truck	Diesel	292530.00 SF	8 Hours pe	29.253	hours		
8	Taxiways	Lighting	Dump Truck	Diesel	3166.00 LF	8 Hours pe	21.10667	hours		
8	Taxiways	Lighting	Loader	Diesel	3166.00 LF	8 Hours pe	21.10667	hours		
8	Taxiways	Lighting	Other General Equipment	Diesel	3166.00 LF	8 Hours pe	21.10667	hours		
8	Taxiways	Lighting	Pickup Truck	Diesel	3166.00 LF	8 Hours pe	21.10667	hours		
8	Taxiways	Lighting	Skid Steer Loader	Diesel	3166.00 LF	8 Hours pe	21.10667	hours		
8	Taxiways	Lighting	Tractors/Loader/Backhoe	Diesel	3166.00 LF	8 Hours pe	21.10667	hours		
8	Taxiways	Markings	Flatbed Truck	Diesel	276600.00 SF	8 Hours pe	632.2286	hours		
8	Taxiways	Markings	Other General Equipment	Diesel	276600.00 SF	8 Hours pe	632.2286	hours		
8	Taxiways	Markings	Pickup Truck	Diesel	276600.00 SF	8 Hours pe	632.2286	hours		
8	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	Diesel	6.70 Acre	4 Hours pe	26.8	hours		
8	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Diesel	6.70 Acre	8 Hours pe	53.6	hours		
8	Taxiways	Soil Erosion/Sediment Control	Pumps	Diesel	6.70 Acre	4 Hours pe	26.8	hours		
8	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Diesel	6.70 Acre	4 Hours pe	26.8	hours		
8	Taxiways	Subbase Placement	Dozer	Diesel	30702.60 SY	8 Hours pe	64.63705	hours		
8	Taxiways	Subbase Placement	Dump Truck (12 cy)	Diesel	10234.20 CY	8 Hours pe	454.8533	hours		
8	Taxiways	Subbase Placement	Pickup Truck	Diesel	30702.60 SY	8 Hours pe	64.63705	hours		
8	Taxiways	Subbase Placement	Roller	Diesel	10234.20 CY	8 Hours pe	62.97969	hours		
8	Taxiways	Topsoil Placement	Dozer	Diesel	5411.80 CY	8 Hours pe	72.15733	hours		
8	Taxiways	Topsoil Placement	Dump Truck	Diesel	5411.80 CY	8 Hours pe	72.15733	hours		
8	Taxiways	Topsoil Placement	Pickup Truck	Diesel	5411.80 CY	8 Hours pe	72.15733	hours		

==========

Activity: On-Road

--

Scenario ID	Project	Equipment	On-road Activity	Fuel	Roadway Type	Round Trip	Number of	Number of	Project Len	Project Wi	Projec	Build	Open	Numl	Activi	Activ	Default VM
1	Demolition - Asphalt	Dump Truck	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	191	50	--	--	--	--	--	--	2122
1	Demolition - Asphalt	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	3	43	--	--	--	--	--	--	--	--	3870
1	Demolition - Concrete	Dump Truck	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	95	100	--	--	--	--	--	--	586
1	Demolition - Concrete	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	3	43	--	--	--	--	--	--	--	--	3870
1	Taxiways	Asphalt 18 Wheeler	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	92	200	--	--	--	--	--	--	267
1	Taxiways	Cement Mixer	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	92	200	--	--	--	--	--	--	4255
1	Taxiways	Dump Truck - Asphalt	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	92	200	--	--	--	--	--	--	378
1	Taxiways	Dump Truck Subbase Material	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	92	200	--	--	--	--	--	--	2269
1	Taxiways	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	70	43	--	--	--	--	--	--	--	--	90300
2	Runway Markings	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	7	43	--	--	--	--	--	--	--	--	9030
2	Taxiways	Asphalt 18 Wheeler	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1035	100	--	--	--	--	--	--	1502
2	Taxiways	Cement Mixer	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1035	100	--	--	--	--	--	--	23934
2	Taxiways	Dump Truck - Asphalt	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1035	100	--	--	--	--	--	--	2128
2	Taxiways	Dump Truck Subbase Material	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1035	100	--	--	--	--	--	--	12765
2	Taxiways	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	70	43	--	--	--	--	--	--	--	--	90300
3	Demolition - Asphalt	Dump Truck	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	2029	50	--	--	--	--	--	--	22544
3	Demolition - Asphalt	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	22.352	129	--	--	--	--	--	--	--	--	86502
3	Demolition - Concrete	Dump Truck	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1015	100	--	--	--	--	--	--	6265
3	Demolition - Concrete	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	22.352	129	--	--	--	--	--	--	--	--	86502
3	NAVAIDS	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	6	129	--	--	--	--	--	--	--	--	23220
3	Taxiways	Asphalt 18 Wheeler	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	3409	200	--	--	--	--	--	--	9893
3	Taxiways	Cement Mixer	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	3409	200	--	--	--	--	--	--	157666
3	Taxiways	Dump Truck - Asphalt	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	3409	200	--	--	--	--	--	--	14015
3	Taxiways	Dump Truck Subbase Material	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	3409	200	--	--	--	--	--	--	84089
3	Taxiways	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	253.297	129	--	--	--	--	--	--	--	--	980259
4	Demolition - Asphalt	Dump Truck	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	437	50	--	--	--	--	--	--	4856
4	Demolition - Asphalt	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	6.061	65	--	--	--	--	--	--	--	--	11819
4	Demolition - Concrete	Dump Truck	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	218	100	--	--	--	--	--	--	1346
4	Demolition - Concrete	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	6.061	65	--	--	--	--	--	--	--	--	11819
4	Taxiways	Asphalt 18 Wheeler	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	895	200	--	--	--	--	--	--	2597
4	Taxiways	Cement Mixer	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	895	200	--	--	--	--	--	--	41394
4	Taxiways	Dump Truck - Asphalt	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	895	200	--	--	--	--	--	--	3679
4	Taxiways	Dump Truck Subbase Material	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	895	200	--	--	--	--	--	--	22077
4	Taxiways	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	70	65	--	--	--	--	--	--	--	--	136500
5	Building - 10000 sqft- 1 story	Cement Mixer	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	--	--	####	--	--	--	--	--	2313
5	Building - 10000 sqft- 1 story	Dump Truck Subbase Material	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	--	--	####	--	--	--	--	--	1233
5	Building - 10000 sqft- 1 story	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	33	215	--	--	--	--	--	--	--	--	212850
5	Building - 10000 sqft- 1 story	Tractor Trailer	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	--	--	####	--	--	--	--	0	160
6	NAVAIDS	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	9	150	--	--	--	--	--	--	--	--	40500
6	Rehabilitate Runway	Asphalt 18 Wheeler	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	5369	250	--	--	--	--	--	--	19476
6	Rehabilitate Runway	Cement Mixer	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	5369	250	--	--	--	--	--	--	310395
6	Rehabilitate Runway	Dump Truck - Asphalt	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	5369	250	--	--	--	--	--	--	27591
6	Rehabilitate Runway	Dump Truck Subbase Material	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	5369	250	--	--	--	--	--	--	165544
6	Rehabilitate Runway	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	514.283	150	--	--	--	--	--	--	--	--	2314274
6	Service Road	Asphalt 18 Wheeler	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1298	30	--	--	--	--	--	--	565
6	Service Road	Cement Mixer	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1298	30	--	--	--	--	--	--	9005
6	Service Road	Dump Truck - Asphalt	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1298	30	--	--	--	--	--	--	800
6	Service Road	Dump Truck Subbase Material	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1298	30	--	--	--	--	--	--	4803
6	Service Road	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	67	150	--	--	--	--	--	--	--	--	301500
7	Demolition - Concrete	Dump Truck	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	45	100	--	--	--	--	--	--	278
7	Demolition - Concrete	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	13.332	86	--	--	--	--	--	--	--	--	34397
7	Fencing	Cement Mixer	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1500	10	--	--	--	--	--	--	3469
7	Fencing	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	26	86	--	--	--	--	--	--	--	--	67080
7	Taxiways	Asphalt 18 Wheeler	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1037	200	--	--	--	--	--	--	3009
7	Taxiways	Cement Mixer	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1037	200	--	--	--	--	--	--	47961
7	Taxiways	Dump Truck - Asphalt	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1037	200	--	--	--	--	--	--	4263
7	Taxiways	Dump Truck Subbase Material	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1037	200	--	--	--	--	--	--	25579
7	Taxiways	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	75.57	86	--	--	--	--	--	--	--	--	194971
8	Demolition - Concrete	Dump Truck	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	143	100	--	--	--	--	--	--	883
8	Demolition - Concrete	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	17.765	108	--	--	--	--	--	--	--	--	57559
8	Taxiways	Asphalt 18 Wheeler	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1383	200	--	--	--	--	--	--	4013
8	Taxiways	Cement Mixer	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1383	200	--	--	--	--	--	--	63964
8	Taxiways	Dump Truck - Asphalt	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1383	200	--	--	--	--	--	--	5686
8	Taxiways	Dump Truck Subbase Material	Material Delivery	Diesel	Urban Unrestricted Ac	40	--	--	1383	200	--	--	--	--	--	--	34114
8	Taxiways	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Ac	30	100.694	108	--	--	--	--	--	--	--	--	326249

Attachment 1-C
CalEEMod Report

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	434.00	19,000,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Airport

Construction Phase - Runway and taxiway paving in 2023, 2024 and 2025 (Proposed Project)

Off-road Equipment - ffff

Off-road Equipment - ACEIT estimated hours

Off-road Equipment - ACEIT estimated hours

Off-road Equipment - ACEIT estimated hours

Off-road Equipment - ACEIT estimated hours

Trips and VMT - ACEIT VMT assumptions

Construction Off-road Equipment Mitigation - Assume Tier 4 equipment for mitigation

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	36.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	7,750.00	195.00
tblConstructionPhase	NumDays	550.00	195.00
tblConstructionPhase	NumDays	550.00	197.00
tblConstructionPhase	NumDays	550.00	196.00
tblLandUse	LandUseSquareFeet	0.00	19,000,000.00
tblLandUse	LotAcreage	0.00	434.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	7.00	1.20
tblOffRoadEquipment	UsageHours	8.00	6.80
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	5.60
tblOffRoadEquipment	UsageHours	8.00	1.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	UsageHours	8.00	6.20
tblOffRoadEquipment	UsageHours	8.00	3.20
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	7.00	1.60
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	93.00
tblTripsAndVMT	HaulingTripNumber	0.00	10,516.00
tblTripsAndVMT	HaulingTripNumber	0.00	13,454.00
tblTripsAndVMT	HaulingTripNumber	0.00	4,830.00
tblTripsAndVMT	VendorTripLength	6.90	40.00
tblTripsAndVMT	VendorTripLength	6.90	40.00
tblTripsAndVMT	VendorTripLength	6.90	40.00
tblTripsAndVMT	VendorTripLength	6.90	40.00
tblTripsAndVMT	VendorTripNumber	3,114.00	0.00
tblTripsAndVMT	WorkerTripLength	14.70	30.00
tblTripsAndVMT	WorkerTripLength	14.70	30.00
tblTripsAndVMT	WorkerTripLength	14.70	30.00
tblTripsAndVMT	WorkerTripLength	14.70	30.00
tblTripsAndVMT	WorkerTripNumber	7,980.00	33.00
tblTripsAndVMT	WorkerTripNumber	70.00	262.00
tblTripsAndVMT	WorkerTripNumber	123.00	581.00
tblTripsAndVMT	WorkerTripNumber	53.00	129.00

2.0 Emissions Summary

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	1.0593	8.3701	8.5917	0.0317	0.8259	0.3025	1.1284	0.2210	0.2792	0.5002	0.0000	2,869.2244	2,869.2244	0.6118	0.1028	2,915.1503
2024	1.4307	10.2305	12.5189	0.0452	1.5116	0.3661	1.8777	0.4035	0.3387	0.7422	0.0000	4,086.4143	4,086.4143	0.8103	0.1351	4,146.9401
2025	0.4559	3.2618	3.6797	0.0145	0.3659	0.1138	0.4797	0.0979	0.1050	0.2030	0.0000	1,306.9682	1,306.9682	0.2873	0.0443	1,327.3408
Maximum	**1.4307**	**10.2305**	**12.5189**	**0.0452**	**1.5116**	**0.3661**	**1.8777**	**0.4035**	**0.3387**	**0.7422**	**0.0000**	**4,086.4143**	**4,086.4143**	**0.8103**	**0.1351**	**4,146.9401**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.4343	2.3719	12.1662	0.0317	0.8259	0.0488	0.8747	0.2210	0.0480	0.2690	0.0000	2,869.2223	2,869.2223	0.6118	0.1028	2,915.1481
2024	0.6649	3.1586	17.5556	0.0452	1.5116	0.0661	1.5776	0.4035	0.0649	0.4684	0.0000	4,086.4114	4,086.4114	0.8103	0.1351	4,146.9372
2025	0.1900	1.0847	5.4904	0.0145	0.3659	0.0225	0.3884	0.0979	0.0222	0.1201	0.0000	1,306.9672	1,306.9672	0.2873	0.0443	1,327.3398
Maximum	**0.6649**	**3.1586**	**17.5556**	**0.0452**	**1.5116**	**0.0661**	**1.5776**	**0.4035**	**0.0649**	**0.4684**	**0.0000**	**4,086.4114**	**4,086.4114**	**0.8103**	**0.1351**	**4,146.9372**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**56.24**	**69.74**	**-42.04**	**0.00**	**0.00**	**82.44**	**18.50**	**0.00**	**81.31**	**40.67**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-16-2023**	**4-15-2023**	3.1050	0.9215
2	**4-16-2023**	**7-15-2023**	3.1225	0.9148
3	**7-16-2023**	**10-15-2023**	3.1602	0.9282
4	**10-16-2023**	**1-15-2024**	0.0423	0.0139
5	**1-16-2024**	**4-15-2024**	3.8449	1.2588
6	**4-16-2024**	**7-15-2024**	3.8221	1.2361
7	**7-16-2024**	**10-15-2024**	3.8686	1.2541
8	**10-16-2024**	**1-15-2025**	0.0135	0.0046
9	**1-16-2025**	**4-15-2025**	1.2177	0.4164
10	**4-16-2025**	**7-15-2025**	1.2238	0.4136
11	**7-16-2025**	**9-30-2025**	1.0355	0.3499
		Highest	3.8686	1.2588

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	77.4630	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**77.4630**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	77.4630	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**77.4630**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	2023 - South Elec Vault, Scenario 5	Building Construction	1/15/2023	10/15/2023	5	195	
2	2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Paving	1/15/2023	10/15/2023	5	195	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3	2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Paving	1/15/2024	10/15/2024	5	197	
4	2025 - Paving/Demo, Scenario 7 & 8	Paving	1/15/2025	10/15/2025	5	196	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
2023 - South Elec Vault, Scenario 5	Cranes	1	1.20	231	0.29
2023 - South Elec Vault, Scenario 5	Forklifts	1	6.80	89	0.20
2023 - South Elec Vault, Scenario 5	Off-Highway Trucks	1	3.40	402	0.38
2023 - South Elec Vault, Scenario 5	Rough Terrain Forklifts	2	5.30	100	0.40
2023 - South Elec Vault, Scenario 5	Tractors/Loaders/Backhoes	1	1.60	97	0.37
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Air Compressors	1	1.90	78	0.48
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Concrete/Industrial Saws	1	1.80	81	0.73
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Excavators	1	5.30	158	0.38
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Graders	1	0.60	187	0.41
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Off-Highway Trucks	11	8.30	402	0.38
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Other Construction Equipment	3	6.40	172	0.42
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Pavers	1	2.00	130	0.42
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Pumps	1	0.50	84	0.74
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Rollers	1	6.20	80	0.38
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Rubber Tired Dozers	2	5.50	247	0.40

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Rubber Tired Loaders	1	3.60	203	0.36
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Scrapers	1	2.30	367	0.48
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Skid Steer Loaders	1	2.00	65	0.37
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Surfacing Equipment	1	2.10	263	0.30
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Tractors/Loaders/Backhoes	1	2.70	97	0.37
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Air Compressors	1	3.80	78	0.48
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Concrete/Industrial Saws	2	4.50	81	0.73
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Cranes	1	0.10	231	0.29
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Excavators	1	6.00	158	0.38
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Graders	1	0.20	187	0.41
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Off-Highway Trucks	18	6.20	402	0.38
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Other Construction Equipment	6	6.10	172	0.42
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Pavers	4	5.60	130	0.42
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Pumps	1	0.20	84	0.74
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Rollers	1	3.20	80	0.38
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Rubber Tired Dozers	1	3.50	247	0.40
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Rubber Tired Loaders	4	5.40	203	0.36
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Scrapers	1	0.10	367	0.48
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Skid Steer Loaders	1	1.40	65	0.37
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Surfacing Equipment	4	5.40	263	0.30
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Sweepers/Scrubbers	1	0.90	64	0.46
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Tractors/Loaders/Backhoes	1	1.10	97	0.37
2025 - Paving/Demo, Scenario 7 & 8	Air Compressors	1	0.80	78	0.48
2025 - Paving/Demo, Scenario 7 & 8	Concrete/Industrial Saws	1	0.80	81	0.73

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2025 - Paving/Demo, Scenario 7 & 8	Excavators	1	1.60	158	0.38
2025 - Paving/Demo, Scenario 7 & 8	Graders	1	0.30	187	0.41
2025 - Paving/Demo, Scenario 7 & 8	Off-Highway Trucks	6	7.80	402	0.38
2025 - Paving/Demo, Scenario 7 & 8	Other Construction Equipment	2	4.80	172	0.42
2025 - Paving/Demo, Scenario 7 & 8	Pavers	1	1.00	130	0.42
2025 - Paving/Demo, Scenario 7 & 8	Pumps	1	0.20	84	0.74
2025 - Paving/Demo, Scenario 7 & 8	Rollers	1	3.00	80	0.38
2025 - Paving/Demo, Scenario 7 & 8	Rubber Tired Dozers	1	5.00	247	0.40
2025 - Paving/Demo, Scenario 7 & 8	Rubber Tired Loaders	1	1.60	203	0.36
2025 - Paving/Demo, Scenario 7 & 8	Scrapers	1	1.10	367	0.48
2025 - Paving/Demo, Scenario 7 & 8	Skid Steer Loaders	1	1.20	65	0.37
2025 - Paving/Demo, Scenario 7 & 8	Surfacing Equipment	1	1.00	263	0.30
2025 - Paving/Demo, Scenario 7 & 8	Tractors/Loaders/Backhoes	1	1.50	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
2023 - South Elec Vault, Scenario 5	6	33.00	0.00	93.00	30.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	28	262.00	0.00	10,516.00	30.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
2024- Runway Rehab, Service Road, NAVAID	49	581.00	0.00	13,454.00	30.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
2025 - Paving/Demo, Scenario 7 & 8	21	129.00	0.00	4,830.00	30.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 2023 - South Elec Vault, Scenario 5 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0511	0.4939	0.5970	1.2700e-003		0.0199	0.0199		0.0183	0.0183	0.0000	111.1121	111.1121	0.0359	0.0000	112.0105
Total	**0.0511**	**0.4939**	**0.5970**	**1.2700e-003**		**0.0199**	**0.0199**		**0.0183**	**0.0183**	**0.0000**	**111.1121**	**111.1121**	**0.0359**	**0.0000**	**112.0105**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	9.8300e-003	2.2500e-003	5.0000e-005	1.6000e-003	1.1000e-004	1.7100e-003	4.4000e-004	1.0000e-004	5.4000e-004	0.0000	5.0234	5.0234	2.2000e-004	8.0000e-004	5.2661
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0184	0.0153	0.1955	6.0000e-004	0.0720	3.5000e-004	0.0723	0.0191	3.2000e-004	0.0194	0.0000	54.9515	54.9515	1.0700e-003	1.3400e-003	55.3765
Total	**0.0186**	**0.0252**	**0.1977**	**6.5000e-004**	**0.0736**	**4.6000e-004**	**0.0740**	**0.0196**	**4.2000e-004**	**0.0200**	**0.0000**	**59.9749**	**59.9749**	**1.2900e-003**	**2.1400e-003**	**60.6426**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 2023 - South Elec Vault, Scenario 5 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0155	0.0672	0.7628	1.2700e-003		2.0700e-003	2.0700e-003		2.0700e-003	2.0700e-003	0.0000	111.1120	111.1120	0.0359	0.0000	112.0104
Total	**0.0155**	**0.0672**	**0.7628**	**1.2700e-003**		**2.0700e-003**	**2.0700e-003**		**2.0700e-003**	**2.0700e-003**	**0.0000**	**111.1120**	**111.1120**	**0.0359**	**0.0000**	**112.0104**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	9.8300e-003	2.2500e-003	5.0000e-005	1.6000e-003	1.1000e-004	1.7100e-003	4.4000e-004	1.0000e-004	5.4000e-004	0.0000	5.0234	5.0234	2.2000e-004	8.0000e-004	5.2661
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0184	0.0153	0.1955	6.0000e-004	0.0720	3.5000e-004	0.0723	0.0191	3.2000e-004	0.0194	0.0000	54.9515	54.9515	1.0700e-003	1.3400e-003	55.3765
Total	**0.0186**	**0.0252**	**0.1977**	**6.5000e-004**	**0.0736**	**4.6000e-004**	**0.0740**	**0.0196**	**4.2000e-004**	**0.0200**	**0.0000**	**59.9749**	**59.9749**	**1.2900e-003**	**2.1400e-003**	**60.6426**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 2023 - Paving/Demo, Scenarios 1, 2, 3 and 4 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.8257	6.6181	5.9910	0.0193		0.2673	0.2673		0.2464	0.2464	0.0000	1,693.8367	1,693.8367	0.5416	0.0000	1,707.3756
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.8257**	**6.6181**	**5.9910**	**0.0193**		**0.2673**	**0.2673**		**0.2464**	**0.2464**	**0.0000**	**1,693.8367**	**1,693.8367**	**0.5416**	**0.0000**	**1,707.3756**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0177	1.1110	0.2540	5.7400e-003	0.1810	0.0121	0.1931	0.0497	0.0116	0.0613	0.0000	568.0190	568.0190	0.0245	0.0901	595.4654
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1462	0.1218	1.5520	4.7600e-003	0.5714	2.7400e-003	0.5741	0.1517	2.5200e-003	0.1542	0.0000	436.2817	436.2817	8.5100e-003	0.0106	439.6562
Total	**0.1640**	**1.2329**	**1.8060**	**0.0105**	**0.7524**	**0.0149**	**0.7672**	**0.2014**	**0.0141**	**0.2155**	**0.0000**	**1,004.3007**	**1,004.3007**	**0.0330**	**0.1007**	**1,035.1216**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 2023 - Paving/Demo, Scenarios 1, 2, 3 and 4 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2363	1.0467	9.3997	0.0193		0.0314	0.0314		0.0314	0.0314	0.0000	1,693.8347	1,693.8347	0.5416	0.0000	1,707.3735
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2363**	**1.0467**	**9.3997**	**0.0193**		**0.0314**	**0.0314**		**0.0314**	**0.0314**	**0.0000**	**1,693.8347**	**1,693.8347**	**0.5416**	**0.0000**	**1,707.3735**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0177	1.1110	0.2540	5.7400e-003	0.1810	0.0121	0.1931	0.0497	0.0116	0.0613	0.0000	568.0190	568.0190	0.0245	0.0901	595.4654
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1462	0.1218	1.5520	4.7600e-003	0.5714	2.7400e-003	0.5741	0.1517	2.5200e-003	0.1542	0.0000	436.2817	436.2817	8.5100e-003	0.0106	439.6562
Total	**0.1640**	**1.2329**	**1.8060**	**0.0105**	**0.7524**	**0.0149**	**0.7672**	**0.2014**	**0.0141**	**0.2155**	**0.0000**	**1,004.3007**	**1,004.3007**	**0.0330**	**0.1007**	**1,035.1216**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 2024- Runway Rehab, Service Road, NAVAID, Scenario 6 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1031	8.5625	8.9668	0.0276		0.3449	0.3449		0.3186	0.3186	0.0000	2,423.2840	2,423.2840	0.7627	0.0000	2,442.3505
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1031**	**8.5625**	**8.9668**	**0.0276**		**0.3449**	**0.3449**		**0.3186**	**0.3186**	**0.0000**	**2,423.2840**	**2,423.2840**	**0.7627**	**0.0000**	**2,442.3505**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0224	1.4272	0.3263	7.2200e-003	0.2316	0.0153	0.2469	0.0636	0.0146	0.0782	0.0000	714.0614	714.0614	0.0304	0.1132	748.5539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3052	0.2409	3.2257	0.0104	1.2800	5.9000e-003	1.2859	0.3399	5.4300e-003	0.3453	0.0000	949.0688	949.0688	0.0172	0.0219	956.0357
Total	**0.3276**	**1.6680**	**3.5520**	**0.0176**	**1.5116**	**0.0212**	**1.5328**	**0.4035**	**0.0201**	**0.4235**	**0.0000**	**1,663.1302**	**1,663.1302**	**0.0476**	**0.1351**	**1,704.5896**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 2024- Runway Rehab, Service Road, NAVAID, Scenario 6 - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3373	1.4906	14.0036	0.0276		0.0449	0.0449		0.0449	0.0449	0.0000	2,423.2812	2,423.2812	0.7627	0.0000	2,442.3476
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3373**	**1.4906**	**14.0036**	**0.0276**		**0.0449**	**0.0449**		**0.0449**	**0.0449**	**0.0000**	**2,423.2812**	**2,423.2812**	**0.7627**	**0.0000**	**2,442.3476**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0224	1.4272	0.3263	7.2200e-003	0.2316	0.0153	0.2469	0.0636	0.0146	0.0782	0.0000	714.0614	714.0614	0.0304	0.1132	748.5539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3052	0.2409	3.2257	0.0104	1.2800	5.9000e-003	1.2859	0.3399	5.4300e-003	0.3453	0.0000	949.0688	949.0688	0.0172	0.0219	956.0357
Total	**0.3276**	**1.6680**	**3.5520**	**0.0176**	**1.5116**	**0.0212**	**1.5328**	**0.4035**	**0.0201**	**0.4235**	**0.0000**	**1,663.1302**	**1,663.1302**	**0.0476**	**0.1351**	**1,704.5896**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 2025 - Paving/Demo, Scenario 7 & 8 - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3851	2.7073	2.9038	9.7200e-003		0.1071	0.1071		0.0987	0.0987	0.0000	853.6037	853.6037	0.2733	0.0000	860.4365
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3851**	**2.7073**	**2.9038**	**9.7200e-003**		**0.1071**	**0.1071**		**0.0987**	**0.0987**	**0.0000**	**853.6037**	**853.6037**	**0.2733**	**0.0000**	**860.4365**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.9600e-003	0.5073	0.1170	2.5400e-003	0.0831	5.4600e-003	0.0886	0.0228	5.2300e-003	0.0281	0.0000	250.8621	250.8621	0.0106	0.0398	262.9779
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0629	0.0472	0.6588	2.2100e-003	0.2828	1.2400e-003	0.2840	0.0751	1.1400e-003	0.0762	0.0000	202.5023	202.5023	3.3900e-003	4.4900e-003	203.9265
Total	**0.0709**	**0.5545**	**0.7758**	**4.7500e-003**	**0.3659**	**6.7000e-003**	**0.3726**	**0.0979**	**6.3700e-003**	**0.1043**	**0.0000**	**453.3645**	**453.3645**	**0.0140**	**0.0443**	**466.9043**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 2025 - Paving/Demo, Scenario 7 & 8 - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1192	0.5302	4.7146	9.7200e-003		0.0158	0.0158		0.0158	0.0158	0.0000	853.6027	853.6027	0.2733	0.0000	860.4355
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1192**	**0.5302**	**4.7146**	**9.7200e-003**		**0.0158**	**0.0158**		**0.0158**	**0.0158**	**0.0000**	**853.6027**	**853.6027**	**0.2733**	**0.0000**	**860.4355**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.9600e-003	0.5073	0.1170	2.5400e-003	0.0831	5.4600e-003	0.0886	0.0228	5.2300e-003	0.0281	0.0000	250.8621	250.8621	0.0106	0.0398	262.9779
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0629	0.0472	0.6588	2.2100e-003	0.2828	1.2400e-003	0.2840	0.0751	1.1400e-003	0.0762	0.0000	202.5023	202.5023	3.3900e-003	4.4900e-003	203.9265
Total	**0.0709**	**0.5545**	**0.7758**	**4.7500e-003**	**0.3659**	**6.7000e-003**	**0.3726**	**0.0979**	**6.3700e-003**	**0.1043**	**0.0000**	**453.3645**	**453.3645**	**0.0140**	**0.0443**	**466.9043**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.545300	0.056532	0.173573	0.132281	0.025040	0.006914	0.012148	0.017464	0.000548	0.000245	0.024607	0.000958	0.004391

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	77.4630	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	77.4630	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	8.8065					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	68.6565					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**77.4630**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	8.8065					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	68.6565					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**77.4630**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	434.00	19,000,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Airport

Construction Phase - Runway and taxiway paving in 2023 and 2024 (Two-Year Alternative)

Off-road Equipment - ffff

Off-road Equipment - ACEIT input

Off-road Equipment - ACEIT estimated hours

Off-road Equipment - ACEIT estimated hours

Off-road Equipment - ACEIT estimated hours

Trips and VMT - ACEIT VMT assumptions

Construction Off-road Equipment Mitigation - Assume Tier 4 equipment for mitigation

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	36.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	7,750.00	195.00
tblConstructionPhase	NumDays	550.00	195.00
tblConstructionPhase	NumDays	550.00	196.00
tblConstructionPhase	NumDays	550.00	197.00
tblLandUse	LandUseSquareFeet	0.00	19,000,000.00
tblLandUse	LotAcreage	0.00	434.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	7.00	1.20
tblOffRoadEquipment	UsageHours	8.00	6.80
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	5.60

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	UsageHours	8.00	6.20
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	8.00	3.20
tblOffRoadEquipment	UsageHours	7.00	1.60
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	93.00
tblTripsAndVMT	HaulingTripNumber	0.00	10,516.00
tblTripsAndVMT	HaulingTripNumber	0.00	4,830.00
tblTripsAndVMT	HaulingTripNumber	0.00	13,454.00
tblTripsAndVMT	VendorTripLength	6.90	40.00
tblTripsAndVMT	VendorTripLength	6.90	40.00
tblTripsAndVMT	VendorTripLength	6.90	40.00
tblTripsAndVMT	VendorTripLength	6.90	40.00
tblTripsAndVMT	VendorTripNumber	3,114.00	0.00
tblTripsAndVMT	WorkerTripLength	14.70	30.00
tblTripsAndVMT	WorkerTripLength	14.70	30.00
tblTripsAndVMT	WorkerTripLength	14.70	30.00
tblTripsAndVMT	WorkerTripLength	14.70	30.00
tblTripsAndVMT	WorkerTripNumber	7,980.00	33.00
tblTripsAndVMT	WorkerTripNumber	70.00	262.00
tblTripsAndVMT	WorkerTripNumber	53.00	129.00
tblTripsAndVMT	WorkerTripNumber	123.00	581.00

2.0 Emissions Summary

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	1.5532	12.2355	12.4583	0.0464	1.1918	0.4419	1.6337	0.3189	0.4078	0.7267	0.0000	4,199.7244	4,199.7244	0.9006	0.1494	4,266.7612
2024	1.4307	10.2305	12.5189	0.0452	1.5116	0.3661	1.8777	0.4035	0.3387	0.7422	0.0000	4,086.4143	4,086.4143	0.8103	0.1351	4,146.9401
Maximum	**1.5532**	**12.2355**	**12.5189**	**0.0464**	**1.5116**	**0.4419**	**1.8777**	**0.4035**	**0.4078**	**0.7422**	**0.0000**	**4,199.7244**	**4,199.7244**	**0.9006**	**0.1494**	**4,266.7612**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.6340	3.4727	17.7655	0.0464	1.1918	0.0715	1.2634	0.3189	0.0704	0.3893	0.0000	4,199.7212	4,199.7212	0.9006	0.1494	4,266.7581
2024	0.6649	3.1586	17.5556	0.0452	1.5116	0.0661	1.5776	0.4035	0.0649	0.4684	0.0000	4,086.4114	4,086.4114	0.8103	0.1351	4,146.9372
Maximum	**0.6649**	**3.4727**	**17.7655**	**0.0464**	**1.5116**	**0.0715**	**1.5776**	**0.4035**	**0.0704**	**0.4684**	**0.0000**	**4,199.7212**	**4,199.7212**	**0.9006**	**0.1494**	**4,266.7581**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	56.47	70.48	-41.41	0.00	0.00	82.97	19.09	0.00	81.87	41.61	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-16-2023	4-15-2023	4.5331	1.3463
2	4-16-2023	7-15-2023	4.5589	1.3368
3	7-16-2023	10-15-2023	4.6138	1.3563
4	10-16-2023	1-15-2024	0.0582	0.0186
5	1-16-2024	4-15-2024	3.8449	1.2588
6	4-16-2024	7-15-2024	3.8221	1.2361
7	7-16-2024	9-30-2024	3.2341	1.0459
		Highest	4.6138	1.3563

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	77.4630	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**77.4630**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	77.4630	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**77.4630**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	2023 - South Elec Vault, Scenario 5	Building Construction	1/15/2023	10/15/2023	5	195	
2	2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Paving	1/15/2023	10/15/2023	5	195	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3	2023 - Paving/Demo, Scenario 7 & 8	Paving	1/15/2023	10/16/2023	5	196	
4	2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Paving	1/15/2024	10/15/2024	5	197	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
2023 - South Elec Vault, Scenario 5	Cranes	1	1.20	231	0.29
2023 - South Elec Vault, Scenario 5	Forklifts	1	6.80	89	0.20
2023 - South Elec Vault, Scenario 5	Off-Highway Trucks	1	3.40	402	0.38
2023 - South Elec Vault, Scenario 5	Rough Terrain Forklifts	2	5.30	100	0.40
2023 - South Elec Vault, Scenario 5	Tractors/Loaders/Backhoes	1	1.60	97	0.37
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Air Compressors	1	1.90	78	0.48
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Concrete/Industrial Saws	1	1.80	81	0.73
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Excavators	1	5.30	158	0.38
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Graders	1	0.60	187	0.41
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Off-Highway Trucks	11	8.30	402	0.38
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Other Construction Equipment	3	6.40	172	0.42
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Pavers	1	2.00	130	0.42
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Pumps	1	0.50	84	0.74
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Rollers	1	6.20	80	0.38
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Rubber Tired Dozers	2	5.50	247	0.40

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Rubber Tired Loaders	1	3.60	203	0.36
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Scrapers	1	2.30	367	0.48
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Skid Steer Loaders	1	2.00	65	0.37
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Surfacing Equipment	1	2.10	263	0.30
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	Tractors/Loaders/Backhoes	1	2.70	97	0.37
2023 - Paving/Demo, Scenario 7 & 8	Air Compressors	1	0.80	78	0.48
2023 - Paving/Demo, Scenario 7 & 8	Concrete/Industrial Saws	1	0.80	81	0.73
2023 - Paving/Demo, Scenario 7 & 8	Excavators	1	1.60	158	0.38
2023 - Paving/Demo, Scenario 7 & 8	Graders	1	0.30	187	0.41
2023 - Paving/Demo, Scenario 7 & 8	Off-Highway Trucks	6	7.80	402	0.38
2023 - Paving/Demo, Scenario 7 & 8	Other Construction Equipment	2	4.80	172	0.42
2023 - Paving/Demo, Scenario 7 & 8	Pavers	1	1.00	130	0.42
2023 - Paving/Demo, Scenario 7 & 8	Pumps	1	0.20	84	0.74
2023 - Paving/Demo, Scenario 7 & 8	Rollers	1	3.00	80	0.38
2023 - Paving/Demo, Scenario 7 & 8	Rubber Tired Dozers	1	5.00	247	0.40
2023 - Paving/Demo, Scenario 7 & 8	Rubber Tired Loaders	1	1.60	203	0.36
2023 - Paving/Demo, Scenario 7 & 8	Scrapers	1	1.10	367	0.48
2023 - Paving/Demo, Scenario 7 & 8	Skid Steer Loaders	1	1.20	65	0.37
2023 - Paving/Demo, Scenario 7 & 8	Surfacing Equipment	1	1.00	263	0.30
2023 - Paving/Demo, Scenario 7 & 8	Tractors/Loaders/Backhoes	1	1.50	97	0.37
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Air Compressors	1	3.80	78	0.48
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Concrete/Industrial Saws	2	4.50	81	0.73
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Cranes	1	0.10	231	0.29
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Excavators	1	6.00	158	0.38
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Graders	1	0.20	187	0.41
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Off-Highway Trucks	18	6.20	402	0.38

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Other Construction Equipment	6	6.10	172	0.42
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Pavers	4	5.60	130	0.42
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Pumps	1	0.20	84	0.74
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Rollers	1	3.20	80	0.38
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Rubber Tired Dozers	1	3.50	247	0.40
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Rubber Tired Loaders	4	5.40	203	0.36
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Scrapers	1	0.10	367	0.48
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Skid Steer Loaders	1	1.40	65	0.37
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Surfacing Equipment	4	5.40	263	0.30
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Sweepers/Scrubbers	1	0.90	64	0.46
2024- Runway Rehab, Service Road, NAVAID, Scenario 6	Tractors/Loaders/Backhoes	1	1.10	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
2023 - South Elec Vault, Scenario 5	6	33.00	0.00	93.00	30.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
2023 - Paving/Demo, Scenarios 1, 2, 3 and 4	28	262.00	0.00	10,516.00	30.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
2023 - Paving/Demo, Scenario 7 & 8	21	129.00	0.00	4,830.00	30.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
2024- Runway Rehab, Service Road, NAVAID	49	581.00	0.00	13,454.00	30.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 2023 - South Elec Vault, Scenario 5 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0511	0.4939	0.5970	1.2700e-003		0.0199	0.0199		0.0183	0.0183	0.0000	111.1121	111.1121	0.0359	0.0000	112.0105
Total	**0.0511**	**0.4939**	**0.5970**	**1.2700e-003**		**0.0199**	**0.0199**		**0.0183**	**0.0183**	**0.0000**	**111.1121**	**111.1121**	**0.0359**	**0.0000**	**112.0105**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	9.8300e-003	2.2500e-003	5.0000e-005	1.6000e-003	1.1000e-004	1.7100e-003	4.4000e-004	1.0000e-004	5.4000e-004	0.0000	5.0234	5.0234	2.2000e-004	8.0000e-004	5.2661
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0184	0.0153	0.1955	6.0000e-004	0.0720	3.5000e-004	0.0723	0.0191	3.2000e-004	0.0194	0.0000	54.9515	54.9515	1.0700e-003	1.3400e-003	55.3765
Total	**0.0186**	**0.0252**	**0.1977**	**6.5000e-004**	**0.0736**	**4.6000e-004**	**0.0740**	**0.0196**	**4.2000e-004**	**0.0200**	**0.0000**	**59.9749**	**59.9749**	**1.2900e-003**	**2.1400e-003**	**60.6426**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 2023 - South Elec Vault, Scenario 5 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0155	0.0672	0.7628	1.2700e-003		2.0700e-003	2.0700e-003		2.0700e-003	2.0700e-003	0.0000	111.1120	111.1120	0.0359	0.0000	112.0104
Total	**0.0155**	**0.0672**	**0.7628**	**1.2700e-003**		**2.0700e-003**	**2.0700e-003**		**2.0700e-003**	**2.0700e-003**	**0.0000**	**111.1120**	**111.1120**	**0.0359**	**0.0000**	**112.0104**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	9.8300e-003	2.2500e-003	5.0000e-005	1.6000e-003	1.1000e-004	1.7100e-003	4.4000e-004	1.0000e-004	5.4000e-004	0.0000	5.0234	5.0234	2.2000e-004	8.0000e-004	5.2661
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0184	0.0153	0.1955	6.0000e-004	0.0720	3.5000e-004	0.0723	0.0191	3.2000e-004	0.0194	0.0000	54.9515	54.9515	1.0700e-003	1.3400e-003	55.3765
Total	**0.0186**	**0.0252**	**0.1977**	**6.5000e-004**	**0.0736**	**4.6000e-004**	**0.0740**	**0.0196**	**4.2000e-004**	**0.0200**	**0.0000**	**59.9749**	**59.9749**	**1.2900e-003**	**2.1400e-003**	**60.6426**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 2023 - Paving/Demo, Scenarios 1, 2, 3 and 4 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.8257	6.6181	5.9910	0.0193		0.2673	0.2673		0.2464	0.2464	0.0000	1,693.8367	1,693.8367	0.5416	0.0000	1,707.3756
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.8257**	**6.6181**	**5.9910**	**0.0193**		**0.2673**	**0.2673**		**0.2464**	**0.2464**	**0.0000**	**1,693.8367**	**1,693.8367**	**0.5416**	**0.0000**	**1,707.3756**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0177	1.1110	0.2540	5.7400e-003	0.1810	0.0121	0.1931	0.0497	0.0116	0.0613	0.0000	568.0190	568.0190	0.0245	0.0901	595.4654
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1462	0.1218	1.5520	4.7600e-003	0.5714	2.7400e-003	0.5741	0.1517	2.5200e-003	0.1542	0.0000	436.2817	436.2817	8.5100e-003	0.0106	439.6562
Total	**0.1640**	**1.2329**	**1.8060**	**0.0105**	**0.7524**	**0.0149**	**0.7672**	**0.2014**	**0.0141**	**0.2155**	**0.0000**	**1,004.3007**	**1,004.3007**	**0.0330**	**0.1007**	**1,035.1216**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 2023 - Paving/Demo, Scenarios 1, 2, 3 and 4 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2363	1.0467	9.3997	0.0193		0.0314	0.0314		0.0314	0.0314	0.0000	1,693.8347	1,693.8347	0.5416	0.0000	1,707.3735
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2363**	**1.0467**	**9.3997**	**0.0193**		**0.0314**	**0.0314**		**0.0314**	**0.0314**	**0.0000**	**1,693.8347**	**1,693.8347**	**0.5416**	**0.0000**	**1,707.3735**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0177	1.1110	0.2540	5.7400e-003	0.1810	0.0121	0.1931	0.0497	0.0116	0.0613	0.0000	568.0190	568.0190	0.0245	0.0901	595.4654
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1462	0.1218	1.5520	4.7600e-003	0.5714	2.7400e-003	0.5741	0.1517	2.5200e-003	0.1542	0.0000	436.2817	436.2817	8.5100e-003	0.0106	439.6562
Total	**0.1640**	**1.2329**	**1.8060**	**0.0105**	**0.7524**	**0.0149**	**0.7672**	**0.2014**	**0.0141**	**0.2155**	**0.0000**	**1,004.3007**	**1,004.3007**	**0.0330**	**0.1007**	**1,035.1216**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 2023 - Paving/Demo, Scenario 7 & 8 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4134	3.2948	2.9818	9.7200e-003		0.1325	0.1325		0.1221	0.1221	0.0000	853.6967	853.6967	0.2734	0.0000	860.5316
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4134**	**3.2948**	**2.9818**	**9.7200e-003**		**0.1325**	**0.1325**		**0.1221**	**0.1221**	**0.0000**	**853.6967**	**853.6967**	**0.2734**	**0.0000**	**860.5316**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.1400e-003	0.5103	0.1167	2.6400e-003	0.0831	5.5600e-003	0.0887	0.0228	5.3200e-003	0.0282	0.0000	260.8912	260.8912	0.0113	0.0414	273.4973
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0724	0.0603	0.7681	2.3500e-003	0.2828	1.3600e-003	0.2841	0.0751	1.2500e-003	0.0763	0.0000	215.9121	215.9121	4.2100e-003	5.2500e-003	217.5821
Total	**0.0805**	**0.5706**	**0.8847**	**4.9900e-003**	**0.3659**	**6.9200e-003**	**0.3728**	**0.0979**	**6.5700e-003**	**0.1045**	**0.0000**	**476.8032**	**476.8032**	**0.0155**	**0.0466**	**491.0794**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 2023 - Paving/Demo, Scenario 7 & 8 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1192	0.5302	4.7146	9.7200e-003		0.0158	0.0158		0.0158	0.0158	0.0000	853.6957	853.6957	0.2734	0.0000	860.5306
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1192**	**0.5302**	**4.7146**	**9.7200e-003**		**0.0158**	**0.0158**		**0.0158**	**0.0158**	**0.0000**	**853.6957**	**853.6957**	**0.2734**	**0.0000**	**860.5306**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.1400e-003	0.5103	0.1167	2.6400e-003	0.0831	5.5600e-003	0.0887	0.0228	5.3200e-003	0.0282	0.0000	260.8912	260.8912	0.0113	0.0414	273.4973
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0724	0.0603	0.7681	2.3500e-003	0.2828	1.3600e-003	0.2841	0.0751	1.2500e-003	0.0763	0.0000	215.9121	215.9121	4.2100e-003	5.2500e-003	217.5821
Total	**0.0805**	**0.5706**	**0.8847**	**4.9900e-003**	**0.3659**	**6.9200e-003**	**0.3728**	**0.0979**	**6.5700e-003**	**0.1045**	**0.0000**	**476.8032**	**476.8032**	**0.0155**	**0.0466**	**491.0794**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 2024- Runway Rehab, Service Road, NAVAID, Scenario 6 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1031	8.5625	8.9668	0.0276		0.3449	0.3449		0.3186	0.3186	0.0000	2,423.2840	2,423.2840	0.7627	0.0000	2,442.3505
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1031**	**8.5625**	**8.9668**	**0.0276**		**0.3449**	**0.3449**		**0.3186**	**0.3186**	**0.0000**	**2,423.2840**	**2,423.2840**	**0.7627**	**0.0000**	**2,442.3505**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0224	1.4272	0.3263	7.2200e-003	0.2316	0.0153	0.2469	0.0636	0.0146	0.0782	0.0000	714.0614	714.0614	0.0304	0.1132	748.5539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3052	0.2409	3.2257	0.0104	1.2800	5.9000e-003	1.2859	0.3399	5.4300e-003	0.3453	0.0000	949.0688	949.0688	0.0172	0.0219	956.0357
Total	**0.3276**	**1.6680**	**3.5520**	**0.0176**	**1.5116**	**0.0212**	**1.5328**	**0.4035**	**0.0201**	**0.4235**	**0.0000**	**1,663.1302**	**1,663.1302**	**0.0476**	**0.1351**	**1,704.5896**

ONT Runway 8R-26L Rehabilitation and Additional Airfield Improvements - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 2024- Runway Rehab, Service Road, NAVAID, Scenario 6 - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3373	1.4906	14.0036	0.0276		0.0449	0.0449		0.0449	0.0449	0.0000	2,423.2812	2,423.2812	0.7627	0.0000	2,442.3476
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3373**	**1.4906**	**14.0036**	**0.0276**		**0.0449**	**0.0449**		**0.0449**	**0.0449**	**0.0000**	**2,423.2812**	**2,423.2812**	**0.7627**	**0.0000**	**2,442.3476**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0224	1.4272	0.3263	7.2200e-003	0.2316	0.0153	0.2469	0.0636	0.0146	0.0782	0.0000	714.0614	714.0614	0.0304	0.1132	748.5539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3052	0.2409	3.2257	0.0104	1.2800	5.9000e-003	1.2859	0.3399	5.4300e-003	0.3453	0.0000	949.0688	949.0688	0.0172	0.0219	956.0357
Total	**0.3276**	**1.6680**	**3.5520**	**0.0176**	**1.5116**	**0.0212**	**1.5328**	**0.4035**	**0.0201**	**0.4235**	**0.0000**	**1,663.1302**	**1,663.1302**	**0.0476**	**0.1351**	**1,704.5896**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000256	0.004606

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	77.4630	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	77.4630	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	8.8065					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	68.6565					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**77.4630**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	8.8065					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	68.6565					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**77.4630**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment 2

Operational Emissions Analysis

TABLE OF CONTENTS

Page

1 Introduction 1

2 Operations 2

2.1 Aircraft 2

2.2 Engine Maintenance Run-up 3

2.3 GSE and APU 4

2.4 Operational Emissions 4

2.5 Aircraft Taxiing / Indirect Construction Emissions 6

LIST OF TABLES

Table 1 Air Quality Model Inputs 3

Table 2 Run-up Operation Inputs 4

Table 3 Operation Emissions (tons per year) 5

Table 4 Aircraft Operation CO_2e Emissions (MT per year) 6

Table 5 Aircraft Taxiing Emissions 7

Table 6 Aircraft Taxiing CO_2e Emissions (MT per year) 8

ATTACHMENTS

Attachment 2-A: Fleet Mix

1 Introduction

This document presents the overall data, assumptions, approach, and methodology for preparing criteria pollutant and pollutant precursor, and greenhouse gas (GHG) emissions inventories for operations at Ontario International Airport (ONT). The aircraft emissions inventories were prepared for the following scenarios:

- Baseline Conditions (2019/2020 Hybrid)
- No Project Alternative (2023)
- Proposed Project (2023)
- Two-Year Program Alternative (2023)
- No Project Alternative (2024)
- Proposed Project / Two-Year Program Alternative (2024)
- No Project Alternative (2025)
- Proposed Project (2025)

The 2019/2020 Hybrid Baseline Conditions represents the existing environment in 2019 and 2020. The hybrid base year (2019/2020) fleet mix was based on the ONT Airport Noise Monitoring System (ANOMS) radar data from 2019 and 2020, and FAA's Traffic Flow Management System Count (TFMSC). Passenger air carriers, air taxi, and General Aviation (GA) operations were obtained from the 2019 ANOMS data and the all-cargo operations were obtained from the 2020 ANOMS data. This approach represents Baseline Conditions which recognizes the reduction in passenger carrier and air taxi operations, and the increase in all-cargo operations, attributable to the COVID-19 pandemic.

The future scenarios include years 2023, 2024, and 2025, encompassing the entire proposed construction period. This study analyzed three alternatives including the no project alternative (No Project), a three-year construction alternative (Proposed Project) and a two-year construction alternative (Two-Year Program Alternative). The Proposed Project assumed the following runway rehabilitation phasing:

- 2023 – maximum nine months of runway closure
    - Runway 8L-26R will be closed for four months (from mid-January to mid-May)
    - Runway 8R-26L will be closed for five months (from June to October)

- 2024 – maximum nine months of runway closure
    - Runway 8R-26L will be closed for nine months (from mid-January to mid-October)

- 2025 – maximum five months of runway closure
    - Runway 8L-26R will be closed for five months (from mid-January to mid-June)

The Two-Year Program Alternative assumed the following runway rehabilitation phasing:

- 2023 – maximum nine months of runway closure
    - Runway 8L-26R will be closed for six months (mid-Jan to mid-July)

    - Runway 8R-26L will be closed for three months (mid-July to mid-October)
- 2024 – maximum nine months of runway closure
    - Runway 8R-26L will be closed for nine months (mid-Jan to mid-October)

In 2024, the Proposed Project construction phasing is identical to the Two-Year Program Alternative construction phasing. Therefore, the 2024 air quality model outputs of the two alternatives are expected to be identical.

The air quality emissions inventories were prepared for carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), sulfur dioxide (SO_2), particulate matter less than 10 micrometers in diameter (coarse or PM_{10}), and particulate matter less than 2.5 micrometers in diameter (fine or $PM_{2.5}$).

The climate emissions inventory was prepared for carbon dioxide (CO_2). As is customary for greenhouse gas (GHG) emissions inventories, the results are reported in units of metric tons (MT) of carbon dioxide equivalents (CO_2e), by source, on an annual basis.

For the purpose of disclosing the increase or decrease in pollutant and pollutant precursor emissions with the improvements to the airport, the inventories were prepared only for the emission sources that would be affected by the improvements – aircraft (including Ground Support Equipment (GSE), Auxiliary Power Units (APU)), and construction activity (see *Attachment 1, Construction Emissions Analysis*).

2 Operations

Emissions produced from airport operations include those from aircraft, engine maintenance run-up, GSE, and APU.

2.1 Aircraft

The aircraft-related emission inventories were prepared using FAA's Aviation Environmental Design Tool (AEDT, Version 3d). With the exception of the number of operations, and for consistency, the aircraft operational data (i.e., fleet, aircraft engine assignments, and runway use) input to the AEDT were data developed in support of the analysis for Noise and Noise Compatible Land Use of this SEIR. Aircraft with at least 183 operations annually (more than 0.5 operations daily) were retained in the fleet mix for air quality analysis as they represent the majority of the operations. The retained operations were scaled up to match the total number of operations developed in the fleet mix. The average weighted departure stage lengths were applied. Default GSE and APU assignments in AEDT were applied. Because it is customary for criteria air pollutant and pollutant precursor inventories to be reported in tons on an annual basis, the number of operations used in the noise analysis were factored to reflect the actual annual (year 2019/2020) and future forecast (year 2023, 2024, and 2025) level of operations for the air quality analysis Detailed fleet mixes are included in *Attachment 2-A of this Appendix*.

Except for ground-based taxi-in/taxi-out, including apron idling and departure runway queue delay, the default aircraft operating times in AEDT by aircraft mode (e.g., approach, take-off,

climbout) were used. For the Baseline Conditions, airport-specific times-in-mode for taxi-in and taxi-out were obtained from the FAA Aviation System Performance Metrics (ASPM) database. It was determined that the Baseline Conditions airfield-wide average taxi-in time was 5 minutes and 17 seconds and the average taxi-out time was 12 minutes and 11 seconds.

Future scenario taxi-in/taxi-out times were obtained through simulations using AirTOP. AirTOP is a gate-to-gate air traffic and airport simulation and assessment software. Future scenario simulations were set up in a way that was consistent with the proposed runway closures, temporary suspension of Contra Flow during construction, and taxiway improvements in the future years. The taxi time outputs from future scenario simulations were compared with the Baseline Conditions simulation output and adjustment factors were calculated. The adjustment factors were applied to the Baseline Conditions annual average taxi times from FAA ASPM database to obtain the future scenario taxi times.

Table 1 provides the aircraft operation, engine run-up, and taxi-in/taxi-out time inputs to AEDT by year and alternative. As shown, the runway rehabilitation would increase the taxi-in times and decrease taxi-out times. This is a result of the suspension of Contra Flow, which improves departure taxi efficiency. With the proposed taxiway improvements, the 2025 taxi-in times are expected to decrease compared with the 2024 taxi-in times.

Table 1: Air Quality Model Inputs

Year	Scenario	Operation	Run-up	Taxi-in	Taxi-out
2019/2020	Baseline Conditions	106,026	95.0	5:17	12:11
2023	No Project Alternative	110,368	99.5	5:17	13:32
	Proposed Project	110,368	99.5	5:43	11:02
	Two-Year Program Alternative	110,368	99.5	5:43	11:01
2024	No Project Alternative	113,826	103.2	5:21	13:35
	Proposed Project	113,826	103.2	5:44	11:10
2025	No Project Alternative	117,625	107.2	5:20	13:36
	Proposed Project	117,625	107.2	5:36	12:15

Source: FAA ASPM and HNTB analysis, 2022.

2.2 Engine Maintenance Run-up

Aircraft maintenance engine run-ups emissions can be modeled in AEDT 3d. The Airport provided detailed engine 2019 run-up logs for use in the Baseline Conditions engine run-up emission modeling. Future scenario run-up operations were adjusted based on growth of each aircraft in the fleet mix from the Baseline Conditions to the future scenarios. **Table 2** summarizes the run-up operation inputs. Run-up inputs are the same for the same year.

Table 2: Run-up Operation Inputs

AEDT Aircraft	Engines	Baseline Conditions	2023	2024	2025
Boeing 737-700 Series	CFM56-7B24	2.2	1.8	1.9	2.0
Boeing 737-800 Series	CFM56-7B27	0.5	0.3	0.4	0.4
Boeing 757-200 Series	PW2040	9.2	9.3	9.7	10.0
Airbus A300B4-600 Series	PW4158	1.6	1.6	1.7	1.7
Airbus A320-200 Series	CFM56-5B4/2	1.0	0.4	0.4	0.4
Airbus A320-200 Series	V2527-A5	1.1	0.9	0.9	0.9
Dassault Falcon 900	TFE731-3	2.3	2.5	2.5	2.6
Cessna 750 Citation X	AE3007C	2.8	3.6	3.8	3.9
Boeing 747-400 Series Freighter	CF6-80C2B1F	1.1	1.1	1.1	1.2
Boeing 757-200 Series Freighter	RB211-535E4	9.0	9.1	9.5	9.8
Boeing MD-11 Freighter	CF6-80C2D1F	6.4	4.6	4.7	4.9
Boeing MD-11 Freighter	PW4460	12.4	7.8	8.1	8.4
Boeing 767-300 ER Freighter	CF6-80C2B6F	45.3	56.4	58.5	60.8
Grand Total		**95.0**	**99.5**	**103.2**	**107.2**

Source: ONT run-up logs and HNTB analysis, 2022

2.3 GSE and APU

GSE includes ground equipment essential for passenger and aircraft services, such as air conditioner, baggage tractor, and various service trucks. APU provides power to sufficiently large commercial aircraft. In addition to aircraft emissions, GSE and APU are also sources of CO, VOC, NO_X, SO_2, $PM_{2.5}$, and PM_{10}, among other parameters.

AEDT provides default APU and GSE assignment to commercial aircraft, as well as emission factors. The default assignment and emission factors were applied to the aircraft in the Baseline Conditions, No Project, and Proposed Project and annual emissions for criteria pollutants and GHGs were calculated. There are three freighters that do not have default AEDT GSE equipment assignments, which include Boeing 767-200 Freighter, Boeing 767-300 ER Freighter, and Boeing MD-11 Freighter. For these three aircraft types, default AEDT GSE assignments of similar freighter aircraft were applied.

2.4 Operational Emissions

Table 3 provides the Baseline Conditions, No Project, Proposed Project, and Two-Year Program Alternative operational emissions for criteria pollutants.

Table 3: Operation Emissions (tons per year)

Year	Alternative	Category	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}
2019/2020	Baseline Conditions	Aircraft	578.3	581.7	120.3	48.0	4.1	4.1
		GSE	102.7	11.4	4.0	0.1	0.6	0.7
		APU	9.5	11.3	0.7	1.4	1.3	1.3
		Total	***690.5***	***604.4***	***125.0***	***49.4***	***6.0***	***6.1***
2023	No Project	Aircraft	616.0	622.0	125.3	49.3	4.0	4.0
		GSE	94.0	9.8	3.7	0.1	0.6	0.6
		APU	9.8	12.1	0.7	1.5	1.3	1.3
		Total	***719.8***	***643.9***	***129.7***	***50.9***	***5.9***	***5.9***
	Proposed Project	Aircraft	555.9	614.4	114.2	47.1	3.8	3.8
		GSE	94.0	9.8	3.7	0.1	0.6	0.6
		APU	9.8	12.1	0.7	1.5	1.3	1.3
		Total	***659.7***	***636.3***	***118.6***	***48.6***	***5.7***	***5.7***
	Two-Year Program	Aircraft	555.4	614.3	114.1	47.1	3.8	3.8
		GSE	94.0	9.8	3.7	0.1	0.6	0.6
		APU	9.8	12.1	0.7	1.5	1.3	1.3
		Total	***659.2***	***636.2***	***118.6***	***48.6***	***5.7***	***5.7***
2024	No Project	Aircraft	638.9	643.5	129.8	51.0	4.1	4.1
		GSE	93.1	9.5	3.7	0.1	0.6	0.6
		APU	10.1	12.5	0.8	1.5	1.4	1.4
		Total	***742.1***	***665.5***	***134.3***	***52.6***	***6.1***	***6.1***
	Proposed Project/ Two-Year Program	Aircraft	577.5	636.0	118.6	48.8	4.0	4.0
		GSE	93.1	9.5	3.7	0.1	0.6	0.6
		APU	10.1	12.5	0.8	1.5	1.4	1.4
		Total	***680.7***	***657.9***	***123.0***	***50.4***	***5.9***	***5.9***
2025	No Project	Aircraft	665.7	679.3	134.8	53.3	4.3	4.3
		GSE	93.3	9.3	3.7	0.1	0.6	0.6
		APU	10.3	12.9	0.8	1.6	1.4	1.4
		Total	***769.3***	***701.5***	***139.3***	***55.0***	***6.3***	***6.3***
	Proposed Project	Aircraft	631.6	675.1	128.6	52.1	4.2	4.2
		GSE	93.3	9.3	3.7	0.1	0.6	0.6
		APU	10.3	12.9	0.8	1.6	1.4	1.4
		Total	***735.2***	***697.3***	***133.1***	***53.8***	***6.2***	***6.2***

Source: FAA ASPM and HNTB analysis, 2022.

In 2023, the No Project Alternative emissions are expected to increase from the Baseline Conditions as a result of higher operations and higher taxi-out times. The Proposed Project emissions are expected to be lower than the No Project Alternative as a result of lower taxi-out times. Although the taxi-in times are projected to increase under the Proposed Project, they would

be offset by the substantial decrease in the taxi-out times as departure taxi movements improve without Contra Flow during the runway rehabilitation. The Two-Year Program Alternative air emissions are very close to the Proposed Project emissions because of the identical fleet mix, identical run-up operations, and similar taxi times.

In 2024 and 2025, the Proposed Project emissions are expected to be lower than the No Project Alternative. Since the Proposed Project and the No Project Alternatives have identical fleet mixes and run-up operations, the main cause of the decrease in the emissions is the lower taxi-out times. When the runway is under rehabilitation, Contra Flow is not implemented, which improves the departure flight taxi efficiency that reduces taxi-out times. Although the taxi-in times are expected to increase slightly, they would be offset by the decrease in taxi-out times. In addition, the proposed taxiway improvements are expected to reduce taxi times as well.

Table 4 provides the GHG emissions for all alternatives.

Table 4: Aircraft Operation CO_2e Emissions (MT per year)

Year	Alternative	Total (CO_2e)
2019/2020	Baseline Conditions	129,183
2023	No Project Alternative	132,600
	Proposed Project	126,829
	Two-Year Program Alternative	126,782
2024	No Project Alternative	137,476
	Proposed Project / Two-Year Program Alternative	131,586
2025	No Project Alternative	143,695
	Proposed Project	140,421

Note: MT = metric ton; CO_2e = carbon dioxide equivalent

The product of each GHG emission and its Global Warming Potential (GWP) is known as "carbon dioxide equivalent" (CO_2e). GWPs used for this analysis are 1 for CO_2.

There are no CO_2 emissions from GSEs or APUs.

Source: AEDT and HNTB analysis, 2022.

2.5 Aircraft Taxiing / Indirect Construction Emissions

While Table 3 and Table 4 present the total operational emissions of the Baseline Conditions and future scenarios, it should be noted that the analysis of air quality and GHG emissions in this SEIR is focused on the indirect impacts of aircraft taxiing times from the proposed temporary runway and taxiway closures. Because aircraft operational levels would be identical whether or not a project is implemented, the emissions from APU/GSE and aircraft landings/take-offs is not impacted by the Proposed Project or Two-Year Program Alternative. **Table 5** and **Table 6** present criteria pollutant and CO_2 emissions from aircraft taxiing for all alternatives, which is used in the analysis of indirect construction emissions in air quality and GHG analysis of this SEIR.

Table 5: Aircraft Taxiing Emissions

Year	Alternative	Pollutants (tons/year)						Pollutants (lbs/day)					
		CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}	CO	NOx	VOC	SO_2	$PM_{2.5}$	PM_{10}
2019/2020	Baseline Conditions	517	63	96	18	2	2	2,832	346	527	101	9	9
2023	No Project	551	67	101	20	2	2	3,019	369	554	107	9	9
	Proposed Project	490	60	90	17	1	1	2,686	328	493	95	8	8
	Two-Year Program	490	60	90	17	1	1	2,686	328	493	95	8	8
2024	No Project	572	70	105	20	2	2	3,125	383	573	111	9	9
	Proposed Project / Two-Year Program Alternative	510	63	94	18	2	2	2,790	342	511	99	8	8
2025	No Project	597	73	109	21	2	2	3,270	402	596	116	10	10
	Proposed Project	563	69	103	20	2	2	3,083	379	562	110	9	9

Source: AEDT and HNTB analysis, 2022.

Table 6: Aircraft Taxiing CO_2e Emissions (MT per year)

Year	Alternative	CO_2e
2019/2020	Baseline Conditions	49,520
2023	No Project Alternative	52,700
	Proposed Project	46,919
	Two-Year Program Alternative	46,872
2024	No Project Alternative	54,849
	Proposed Project / Two-Year Program Alternative	48,958
2025	No Project Alternative	57,217
	Proposed Project	53,944

Note: MT = metric ton; CO_2e = carbon dioxide equivalent

The product of each GHG emission and its Global Warming Potential (GWP) is known as “carbon dioxide equivalent” (CO_2e). GWPs used for this analysis are 1 for CO_2.

There are no CO_2 emissions from GSEs or APUs.

Source: AEDT and HNTB analysis, 2022.

Attachment 2-A

Fleet Mix

Table A-1: Fleet Mixes

Aircraft	Engine	Operation Type	Stage Length	Baseline Conditions	2023	2024	2025
Airbus A320NEO Series	LEAP-1A26/26E1	A	1	524	761	786	811
Airbus A320NEO Series	LEAP-1A26/26E1	D	3	524	761	786	811
Airbus A321NEO Series	LEAP-1A35A/33/33B2/32/30	A	1	-	1,216	1,254	1,296
Airbus A321NEO Series	LEAP-1A35A/33/33B2/32/30	D	2	-	1,216	1,254	1,296
Airbus A321NEO Series	PW1133G-JM	A	1	-	403	404	404
Airbus A321NEO Series	PW1133G-JM	D	2	-	403	404	404
Airbus A300-600/622R	PW4158	A	1	2,884	2,921	3,013	3,113
Airbus A300-600/622R	PW4158	D	3	2,884	2,921	3,013	3,113
Airbus A319 series	CFM56-5B6/2P	A	1	227	244	252	261
Airbus A319 series	CFM56-5B6/2P	D	2	-	244	252	261
Airbus A320 series	V2527-A5	A	1	339	342	353	365
Airbus A320 series	V2527-A5	D	2	-	342	353	365
Airbus A320 series	CFM56-5B4/2	A	1	725	541	559	578
Airbus A320 series	CFM56-5B4/2	D	2	-	541	559	578
Airbus A320 series	V2527-A5 SelectOne Package	A	1	472	389	401	415
Airbus A320 series	V2527-A5 SelectOne Package	D	2	-	389	401	415
Beechcraft 1900D	PT6A-67B	A	1	258	260	269	278
Beechcraft 1900D	PT6A-67B	D	1	258	260	269	278
Beechcraft Super King Air 350/300B	PT6A-60AG	A	1	-	234	234	233
Beechcraft Super King Air 350/300B	PT6A-60AG	D	1	-	234	234	233
Boeing 737 MAX 8	LEAP-1B27	A	1	-	2,158	2,226	2,301
Boeing 737 MAX 8	LEAP-1B27	D	3	-	2,158	2,226	2,301
Boeing 737 MAX 8	LEAP-1B28B2C	A	1	-	2,212	2,281	2,357
Boeing 737 MAX 8	LEAP-1B28B2C	D	3	-	2,212	2,281	2,357
Boeing 737 MAX 9	LEAP-1B28/28B2/28B1/28B3	A	1	-	215	222	230
Boeing 737 MAX 9	LEAP-1B28/28B2/28B1/28B3	D	1	-	215	222	230
Boeing 737-700	CFM56-7B20	A	1	7,742	6,477	6,681	6,904

Aircraft	Engine	Operation Type	Stage Length	Baseline Conditions	2023	2024	2025
Boeing 737-700	CFM56-7B20	D	1	7,742	6,477	6,681	6,904
Boeing 737-700	CFM56-7B22	A	1	731	610	629	651
Boeing 737-700	CFM56-7B22	D	1	731	610	629	651
Boeing 737-700	CFM56-7B24	A	1	2,954	2,467	2,544	2,629
Boeing 737-700	CFM56-7B24	D	1	2,954	2,467	2,544	2,629
Boeing 737-700	CFM56-7B24/3	A	1	791	661	682	704
Boeing 737-700	CFM56-7B24/3	D	1	791	661	682	704
Boeing 737-800	CFM56-7B24	A	1	1,220	482	497	515
Boeing 737-800	CFM56-7B24	D	2	1,220	482	497	515
Boeing 737-800	CFM56-7B27	A	1	2,583	1,404	1,448	1,497
Boeing 737-800	CFM56-7B27	D	2	2,583	1,404	1,448	1,497
Boeing 737-800	CFM56-7B27E/B1	A	1	1,935	1,954	2,015	2,084
Boeing 737-800	CFM56-7B27E/B1	D	2	1,935	1,954	2,015	2,084
Boeing 737-900	CFM56-7B27E/B1	A	1	1,178	551	567	587
Boeing 737-900	CFM56-7B27E/B1	D	2	1,178	551	567	587
Boeing 747-400	CF6-80C2B1F	A	1	372	377	390	403
Boeing 747-400	CF6-80C2B1F	D	4	372	377	390	403
Boeing 747-800	GEnx-2B67	A	1	463	468	483	500
Boeing 747-800	GEnx-2B67	D	4	463	468	483	500
Boeing 757-200	RB211-535E4	A	1	1,205	1,220	1,258	1,301
Boeing 757-200	RB211-535E4	D	3	1,205	1,220	1,258	1,301
Boeing 757-200	PW2040	A	1	1,060	1,072	1,107	1,144
Boeing 757-200	PW2040	D	3	1,060	1,072	1,107	1,144
Boeing 767-200	CF6-80A	A	1	687	696	718	742
Boeing 767-200	CF6-80A	D	4	687	696	718	742
Boeing 767-200	CF6-80A2	A	1	419	425	437	452
Boeing 767-200	CF6-80A2	D	4	419	425	437	452
Boeing 767-300	CF6-80C2B6F	A	1	5,951	7,635	7,875	8,138

Aircraft	Engine	Operation Type	Stage Length	Baseline Conditions	2023	2024	2025
Boeing 767-300	CF6-80C2B6F	D	3	5,951	7,635	7,875	8,139
Boeing 767-300	CF6-80C2B7F	A	1	217	221	228	236
Boeing 767-300	CF6-80C2B7F	D	3	217	221	228	236
Boeing 767-300	PW4062	A	1	537	544	561	580
Boeing 767-300	PW4062	D	3	537	544	561	580
Boeing 777F	GE90-110B1	A	1	-	465	480	495
Boeing 777F	GE90-110B1	D	3	-	465	480	495
Beechcraft Airliner Model 99	PT6A-28	A	1	1,168	1,183	1,220	1,261
Beechcraft Airliner Model 99	PT6A-28	D	1	1,168	1,183	1,220	1,261
Cessna 172 Single Engine SEPF	IO-360-B	A	1	1,061	1,245	1,242	1,240
Cessna 172 Single Engine SEPF	IO-360-B	D	1	1,061	1,245	1,242	1,240
Cessna 206 Stationair	TIO-540-J2B2	A	1	220	241	240	240
Cessna 206 Stationair	TIO-540-J2B2	D	2	220	241	240	240
Cessna 208 Caravan I	PT6A-114A	A	1	2,865	2,910	2,999	3,097
Cessna 208 Caravan I	PT6A-114A	D	1	2,865	2,910	2,999	3,097
Cessna CitationJet CJ3, 525B	JT15D-1 series	A	1	253	592	591	592
Cessna CitationJet CJ3, 525B	JT15D-1 series	D	1	253	592	591	592
Cessna CitationJet CJ4, 525C	UNKNOWN	A	1	-	231	231	231
Cessna CitationJet CJ4, 525C	UNKNOWN	D	1	-	231	231	231
Cessna 560XL Citation Excel	PW530	A	1	331	481	481	480
Cessna 560XL Citation Excel	PW530	D	1	331	481	481	480
Cessna 750 series/Citation X	AE3007C	A	1	248	349	349	348
Cessna 750 series/Citation X	AE3007C	D	2	248	349	349	348
Bombardier Challenger 300	AE3007A1	A	1	349	546	545	547
Bombardier Challenger 300	AE3007A1	D	2	349	546	545	547
Canadair Bombardier CL600/610 Challenger Twin Jet	CF34-3B/-3B1	A	1	325	316	315	315
Canadair Bombardier CL600/610 Challenger Twin Jet	CF34-3B/-3B1	D	1	325	316	315	315

Aircraft	Engine	Operation Type	Stage Length	Baseline Conditions	2023	2024	2025
Bombardier CRJ 200 Regional Jet	CF34-3A1	A	1	1,470	902	929	958
Bombardier CRJ 200 Regional Jet	CF34-3A1	D	1	1,470	902	929	958
Bombardier CRJ 900 Regional Jet	CF34-8C5	A	1	1,158	1,017	1,049	1,084
Bombardier CRJ 900 Regional Jet	CF34-8C5	D	1	1,158	1,017	1,049	1,084
Embraer EMB-120 Brasilia	PW118	A	1	282	286	294	304
Embraer EMB-120 Brasilia	PW118	D	1	282	286	294	304
Embraer ERJ-145	AE3007A1/1	A	1	-	435	432	430
Embraer ERJ-145	AE3007A1/1	D	1	-	435	432	430
Embraer ERJ-175	CF34-8E5	A	1	655	574	590	609
Embraer ERJ-175	CF34-8E5	D	2	655	574	590	609
Embraer ERJ-175	CF34-8E5	A	1	800	701	722	745
Embraer ERJ-175	CF34-8E5	D	2	800	701	722	745
Dassault Falcon 900	TFE731-3	A	1	219	243	243	242
Dassault Falcon 900	TFE731-3	D	2	219	243	243	242
Dassault Falcon 50	TFE731-3	A	1	289	311	311	310
Dassault Falcon 50	TFE731-3	D	2	289	311	311	310
McDonnell Douglas MD-11 (Mixed)	CF6-80C2D1F	A	1	938	623	643	664
McDonnell Douglas MD-11 (Mixed)	CF6-80C2D1F	D	3	938	623	643	664
McDonnell Douglas MD-11 (Mixed)	PW4460	A	1	709	437	451	467
McDonnell Douglas MD-11 (Mixed)	PW4460	D	3	709	437	451	467
McDonnell Douglas MD-11 (Mixed)	CF6-80C2D1F	A	1	462	350	361	374
McDonnell Douglas MD-11 (Mixed)	CF6-80C2D1F	D	3	462	350	361	374
McDonnell Douglas MD-11 (Mixed)	PW4062	A	1	859	551	568	587
McDonnell Douglas MD-11 (Mixed)	PW4062	D	3	859	551	568	587
Piper PA-31 Navajo	TIO-540-J2B2	A	1	295	300	308	319
Piper PA-31 Navajo	TIO-540-J2B2	D	1	295	300	308	319
Pilatus PC-12	PT6A-67B	A	1	-	220	220	220
Pilatus PC-12	PT6A-67B	D	1	-	220	220	220

Aircraft	Engine	Operation Type	Stage Length	Baseline Conditions	2023	2024	2025
Raytheon 390 Premier	JT15D-1 series	A	1	297	303	303	302
Raytheon 390 Premier	JT15D-1 series	D	1	297	303	303	302
Cirrus SR22	TIO-540-J2B2	A	1	-	212	212	212
Cirrus SR22	TIO-540-J2B2	D	1	-	212	212	212
Airbus A319 series	CFM56-5B6/2P	D	1	227	-	-	-
Airbus A319 series	V2522-A5	A	1	279	-	-	-
Airbus A319 series	V2522-A5	D	1	279	-	-	-
Airbus A320 series	V2527-A5	D	3	339	-	-	-
Airbus A320 series	CFM56-5B4/2	D	3	725	-	-	-
Airbus A320 series	CFM56-5B4/3	A	1	263	-	-	-
Airbus A320 series	CFM56-5B4/3	D	3	263	-	-	-
Airbus A320 series	V2527-A5 SelectOne Package	D	3	472	-	-	-
Airbus A321 series	V2530-A5	A	1	237	-	-	-
Airbus A321 series	V2530-A5	D	2	237	-	-	-
Airbus A350-900	Trent XWB-84	A	1	317	-	-	-
Airbus A350-900	Trent XWB-84	D	8	317	-	-	-
Boeing 737-800	CFM56-7B24/3	A	1	517	-	-	-
Boeing 737-800	CFM56-7B24/3	D	2	517	-	-	-
Boeing 737-900	CFM56-7B26/3	A	1	233	-	-	-
Boeing 737-900	CFM56-7B26/3	D	2	233	-	-	-
McDonnell Douglas DC-10	CF6-6D	A	1	440	-	-	-
McDonnell Douglas DC-10	CF6-6D	D	2	440	-	-	-
Boeing 737-800	CFM56-7B26	A	1	-	-	210	217
Boeing 737-800	CFM56-7B26	D	2	-	-	210	217
Boeing 777-300ER	GE90-115B	A	1	-	-	-	213
Boeing 777-300ER	GE90-115B	D	8	-	-	-	213
Total				106,026	110,368	113,826	117,625

Source: HNTB analysis 2022.

Appendix E

Biological

APPENDIX E:
Biological Resources

The following reports are included as part of this appendix to support the alternatives discussion:

- Attachment 1: U.S. Fish and Wildlife Service Depredation Permit
- Attachment 2: HELIX Consulting, Ontario International Airport Rehabilitation of Runway 8R-26L and Associated Improvements Biological Technical Report, April 2022

Attachment 1

USFWS Depredation Permit

DEPREDATION AT AIRPORTS

Permit Number: MBPER0037939

Version Number: 0

Effective: 2022-03-25 **Expires:** 2023-02-28

Issuing Office:

Department of the Interior

U.S. FISH AND WILDLIFE SERVICE

MB Sacramento Permit Office
2800 Cottage Way - Room W-2606
Sacramento, California 95825
permitsR8MB@fws.gov
Tel: 916-978-6183

Digitally signed by

Permits Biologist

Permittee:

Ontario International Airport Authority
1923 E. Avion St.
Ontario, CA 91761
U.S.A.

Authority: Statutes and Regulations: 16 U.S.C 703-712 50 CFR Part 13, 50 CFR 21.41

Location where authorized activity may be conducted:

Ontario International Airport operations area and property.

Reporting requirements:

ANNUAL REPORT DUE: 1/31 You must submit an annual report to your Regional Migratory Bird Permit Office each year, even if you had no activity. Form can be found at: https://fwsepermits.servicenowservices.com/fws Under "Explore Permits" select your permit type. Annual Report Form is under Permit Details.

Authorizations and Conditions:

Last Full Review: **2022** Next Full Review: **2027**

Annual ePermits Renewal Request: Request a permit renewal in ePermits each year. Submit a full application, including Section E, in the year that a full application review is due (once every five years), and upload your annual report. In the interim years, update your contact information (including Principal Officer) and upload your annual report in ePermits.

Migratory Bird Permit Office Contact: permitsR8MB@fws.gov or amy_walsh@fws.gov

DEPREDATION AT AIRPORTS

Permit Number: MBPER0037939

Version Number: 0

Effective: 2022-03-25 **Expires:** 2023-02-28

A. To resolve or prevent threats to human safety and/or aircraft safety at airports or airfields, you are authorized to take, temporarily possess, and transport the migratory birds specified below. You are required to continually apply non-lethal methods in conjunction with lethal control to minimize the lethal take of migratory birds. All take must be done as part of an integrated wildlife damage management program that implements nonlethal management techniques. You may not use this authority for situations in which migratory birds are merely causing a nuisance or nesting in an inconvenient location.

This authority excludes bald eagles, golden eagles, and threatened or endangered species (http://www.fws.gov/endangered). Harassment and/or removal of endangered/threatened species and/or bald eagles and golden eagles require additional permits from Migratory Bird Permit Office and/or Ecological Services Office.

(1) The following may be trapped and relocated or lethally taken: *For Birds of Conservation Concern and raptors – we recommend attempting trapping and relocation prior to implementing lethal control unless there is an immediate threat to human safety.* A list of BCC species can be found at: https://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

For information on the presence of bird species at your airport, we recommend using IPAC: https://ecos.fws.gov/ipac/

Combined Authorized Take Total: 200 birds

BCC-Listed Species:

No More than 5: California Gull, Western Gull

*California Fully Protected Species - The U.S. Fish and Wildlife Service recommends coordination with the California Department of Fish and Wildlife prior to relocation and/or lethal removal.

(2) The following may be trapped and relocated:

Monitored Species:

5 of Each: Swainson's Hawk*
4 of Each: Ferruginous Hawk
2 of Each: Loggerhead Shrike

BCC-Listed Species:

No More than 5: Burrowing Owl**

**Please coordinate with our office prior to trapping and relocation.

(3) Nest Take (including egg destruction/addling). You are authorized to collect viable eggs and give them to a federally permitted migratory bird rehabilitator or place them in a foster nest before destroying an active nest. If egg collection is not feasible, you are authorized to destroy.

(4) Emergency Take. You are authorized in emergency situations only to take, trap, or relocate any migratory birds, nests, and eggs, including species that are not listed in Condition A (except bald eagles, golden eagles, endangered or threatened species) when the migratory birds, nests, or eggs are posing a direct threat to human safety. You are authorized to exceed the take authorized in 2 – 3 above in emergency

situations. You must notify your Migratory Bird Permit Office (contact information above Condition A) within 48 hours and include the following information:

(i) Emergency situation description, including date and time;
(ii) Species and number of bird(s) taken;
(iii) Method of take.

A response from the office is not required. You will be contacted if further coordination is appropriate.

(5) Do not report the following activities under your Airport Depredation permit. If activities are conducted under a Depredation Order, Conservation Order, or other regulatory authorization or permit you should conduct activities in accordance with those authorizations and reporting requirements. Canada goose nests should be taken and reported under the Resident Canada Goose registration system (https://epermits.fws.gov/eRCGR/).

B. **Methods**. You may use the following methods of take. The use of any of the below methods is at your discretion for each situation.

(1) Firearms. Shotguns must be no larger than 10-gauge and must be fired from the shoulder. You must use nontoxic shot listed in 50 CFR 20.21(j). Rifles or air rifles may be used when determined most appropriate to resolve the injurious situation. Nontoxic rounds and pellets must be used when humane and feasible. If lead shot is used, bird remains must be disposed of in a manner that prevents introducing lead in the environment. Paint ball guns may be used to haze birds but are not an authorized firearm for take. You may not use blinds, pits, or other means of concealment, decoys, duck calls, or other devices to lure or entice migratory birds into gun range. Firearm use must be in accordance with local laws and ordinances.

(2) Live Traps. All trapping must be under humane and healthful conditions (50 CFR 13.41).

Trapping Requirements: Only persons who have experience trapping birds, may trap birds under this permit. Others may assist in trapping but may not trap without supervision by an experienced trapper.

It is your responsibility to have a plan and adequate resources in place for trapping and relocating birds prior to trapping. Adequate resources include transport carriers and food appropriate for each species; rehabilitators and/or transporters qualified to care for, transport, and release birds; and appropriately sized enclosures for birds that remain in captivity for more than two days. *You are responsible for the costs of transport, care, conditioning, and release of birds trapped under this permit.*

Any bird killed or injured during trapping must be reported within 72 hours to the issuing office at permitsR8MB@fws.gov and reported on your Annual Report.

Trap Types & Provisions

Any appropriate and humane trap may be used. Traps should be placed in the shade, if possible. Enclosure-type traps must contain an adequate supply of food and water.

Pole traps (padded-jaw and Verbail-design) may be used to capture raptors when other reasonable and appropriate methods have been employed and fail to alleviate the problem. We recommend using Verbail or Verbail-style pole traps as a more humane alternative to padded jaw-design pole traps. Padded jaw-design pole traps should only be used as a last resort.

Pole traps used between sunrise and sunset must be checked at least every 2 hours. Pole traps used between sunset and sunrise must be checked at least once during the night, not including set-up and take-down. Checks may be in person, by camera, or by other remote-sensing technology such as trap transponders. During inclement weather (e.g., extreme precipitation or temperatures), pole traps must be continuously monitored or closed. The Service recommends the tether on pole traps be long enough for raptors to land on the ground and stand on their feet.

Pole Trap Reporting Requirements

1. Injury or death due to pole trapping must be reported your Migratory Bird Permit Office within 72 hours (contact information above Condition A)

2. Non-target capture in a pole trap must be reported your Migratory Bird Permit Office within 72 hours (contact information above Condition A)

3. Annual Report: report each raptor captured with a pole trap, including target and non-target species, trap type (padded-jaw or Verbail set), the date taken, if injured or killed during trapping, and the final disposition (released, transferred including permit number of recipient, euthanized) of the bird (see MBPM-4, 2005).

Trap Checks

Traps must be checked at least every 2 hours during the day and at least once at night (not including set up and take down). Under extenuating circumstances, you may extend the trap-check frequency to every 4 hours for Swedish Goshawk traps if the temperature is ≤70°F and the trap is in the sun (≤80°F is authorized if the trap is in the shade). Traps must be closed down during inclement weather (e.g. precipitation or extreme temperatures) unless they are monitored continuously. Trap motion-detection transmitters and scanning receivers may be used in lieu of checking traps in person.

On an experimental basis, you may set Swedish Goshawk traps at night and check them first thing in the morning, rather than once at night. You must send photos of all species caught in the Swedish Goshawk trap to Jennifer_C_Brown@fws.gov, except for Great Horned Owl, Barn Owl, and Red-tailed Hawk (an experiment was already successfully run for these species). The photos should clearly show the face, the primaries, and the tail feathers so that the condition of the bird may be assessed, and the humane treatment of the birds can be determined by the Migratory Bird Permit Office and our National Raptor Coordinator.

Birds must be released within 72 hours of capture. Birds should be weighed before going into captivity for any length of time. Pre-approval must be obtained from the U.S. Fish and Wildlife Service, Migratory Bird Program in order to hold healthy birds longer than 72 hours, and additional requirements will be provided. An example of adequate justification for holding healthy birds longer than the specified limit includes needing additional time to arrange relocation transport. Birds held longer than 72 hours must be reported on your Annual Report with length of time held and justification. All birds should be banded prior to release if possible. Birds captured must be relocated a distance sufficient to minimize potential for return to the capture site. Birds should be released at a time of day appropriate to that species and in an area of suitable, unoccupied habitat.

You may act as a subpermittee and house, transport, and release birds trapped by other facilities with permits for avian trapping and relocation. Likewise, other facilities with permits for avian trapping and relocation can act as subpermittees under your permit and house, transport, and release birds captured under your permit. Birds remain the responsibility of the permittee where they were captured until released.

Facilities that plan to hold healthy birds longer than two days must place birds in adequately sized enclosures for the species. Enclosure requirements for each species may be found in Tables 3, 4, and 5 included in the International Wildlife Rehabilitation Council's and National Wildlife Rehabilitators Association's 2000 Minimum Standards for Wildlife Rehabilitation, 3rd Edition (Minimum Standards). This document is available online at:

http://c.ymcdn.com/sites/www.nwrawildlife.org/resource/resmgr/Min_Standards/MinimumStandards3rdEdition.pdf. The "Restricted Activity," "Limited Activity" and "Unlimited Activity" columns in Table 5 of the Minimum Standards provides appropriate caging dimensions for raptor species held in short-term captivity. Table 3 of the Minimum Standards provides appropriate caging dimensions for Loggerhead Shrikes held in short-term captivity. No wire may be used on raptor or passerine cages. Only individuals of the same species may share an enclosure, except accipiters, which should be housed separately.

Transfer to Permitted Falconers or Educational Facilities

When release to the wild is not feasible, such as when a previously captured bird returns to the capture site within the same year it was released, a bird may be transferred as non-releasable to an individual or entity authorized to receive live birds, such as for educational use or to a licensed falconer. Approval from your Migratory Bird Permit Office is required PRIOR to transferring birds. Birds transferred to licensed falconers or educational facilities must be reported on your Annual Report. The Annual Report must list the final disposition of transferred birds as "given to falconer" with the State Falconry Permit number, or "given to permitted educational institution" with the name of the institution. Transferred birds count toward the lethal take authorized under Condition A, as they are removed from the wild population. Contact your Migratory Bird Permit Office prior to placement to request authorization (contact information above Condition A).

(3) Nest Take. Viable eggs may be oiled, addled, or destroyed. Eggs must by oiled using only 100% corn oil, a substance exempt from regulation by the Environmental Protection Agency. Eggs may be addled in any humane manner (see 6 below). Nests, including viable eggs, may be destroyed by any humane method, provided they are completely destroyed and eggs and/or nests are not retained after destruction.

Report take as number of active nests (not number of eggs). Do not report inactive nests taken (nests with no viable eggs or chicks present). No federal authorization is required for the take of inactive migratory bird nests.

(4) Registered animal drugs (excluding nicarbazin), pesticides, and repellents. Must be humane and used in accordance with label instructions. Additional state and/or tribal authorization may be required for use.

(5) Falconry Abatement. Migratory birds may be killed by abatement falconry birds. Birds killed by falconry abatement count toward the lethal take authorized under Condition A. Additional state and/or tribal authorization may be required.

(6) Any live birds trapped or otherwise in-hand must be in humane and healthful conditions (50 CFR 13.41). Birds euthanized must follow the American Veterinary Medical Association Guidelines on Euthanasia (https://www.avma.org/resources-tools/avma-policies/avma-guidelines-euthanasia-animals).

C. **Sick, injured, or orphaned migratory birds.** You may possess and immediately transport any birds found sick, injured, or orphaned to a federally permitted rehabilitator or licensed veterinarian for care. You do not need to report these birds (50 CFR 21.31(a)). An individual bird that is severely injured due to an airstrike or other incident may be euthanized immediately. Healthy birds may not be admitted to rehabilitation facilities as per regulation 50 CFR 21.31. However, rehabilitation facilities may act as a subpermittee to care for healthy birds provided possession remains under the depredation permit. The permittee is ultimately responsible for healthy birds possessed under this depredation permit, even while under the care of entities which have their own federal permits.

Injured birds should be placed either in a secure cardboard box with ventilation holes or in a pet carrier having newspaper/imitation turf/baby blanket (non-loop material) lining with the carrier covered by a cloth and must be transferred immediately to a federally permitted migratory bird rehabilitator or licensed veterinarian for care at the permittee's expense.

D. **Salvage**. You are authorized to salvage and temporarily possess migratory birds found dead. Salvaged birds must be disposed of as described in Condition E below within 6 months of salvage. Before you salvage any bird killed by suspected illegal activity, you must first contact the U.S. Fish and Wildlife Service Office of Law Enforcement (OLE) for authorization to salvage that bird. See FWS OLE contact information below.

Any dead bald eagle or golden eagle salvaged must be reported within 48 hours to your local U.S. Fish and Wildlife Service Office of Law Enforcement (contact information below) and to your migratory bird permit issuing office (contact information above Condition A). After clearance from OLE, contact the National Eagle Repository at (303) 287-2110 for shipment directions of these specimens.

E. **Disposition of dead migratory birds.** Migratory birds, nests, or eggs taken under this permit must be disposed of by one of the following:

(1) Donated to an individual or entity authorized by permit or regulation to receive donated birds (i.e. scientific, educational, or tribal use);
(2) Completely destroyed in accordance with local laws and ordinances;
(3) Retained for diagnostic or personnel training purposes;
(4) Retained and used as effigies; or
(4) If the species is a migratory game bird and suitable for consumption, donated to a public charity.

F. **Reporting.**

Immediate Notification. You must immediately notify your Migratory Bird Permit Office at the contact information above Condition A about:

(1) Emergency Take (Condition A(4))
(2) Salvage of eagles (Condition D)
(3) Report any bird killed or injured during trapping operation (Condition B(2))

Annual Report. You must submit an annual report (Form 3-202-9). You must report take by species (e.g. ring-billed gull, Canada goose) and method (e.g. kill, nest take, trap-release, trap-relocate, DRC-1339).

A summary of additional Annual Report requirements described above is included here for reference:

(1) Report any bird killed or injured during trapping operations (in addition to reporting within 72 hours).
(2) Report any bird held longer than 72 hours, including length of time held and justification.
(3) Report band numbers and auxiliary markers (if used) of trapped and relocated birds.
(4) Raptors transferred to licensed falconers or accredited AZA facilities with final disposition listed as "given to falconer" with the State Falconry Permit number, or "given to permitted educational institution" with the name of the institution.
(5) Provide the approximate distance between capture sites and release sites for each species. Also provide the number of each species that return to the site and a list of band numbers/auxiliary markers that were identified on returning individuals, if available. Provide the date, location, and band information on returning individuals, if known.
(6) Report any bird intentionally taken as a result of a severe injury caused by an airstrike or other incident.

G. **Subpermittees.** A subpermittee is an individual to whom you have provided written authorization to conduct some or all of the permitted activities in your absence. As the permittee, you are legally responsible for ensuring that your subpermittees are adequately trained and adhere to the terms of your permit. Subpermittees must be able to identify birds by species prior to take. The following subpermittees are authorized: **Designated employees of USDA/APHIS/Wildlife Services.**

In addition, any other person who is (1) employed by or under contract to you for the activities specified in this permit, or (2) otherwise designated a subpermittee by you in writing, may exercise the authority of this permit.

You and any subpermittees must carry a legible paper or electronic copy of this permit and display it upon request whenever you are exercising its authority. Subpermittees must be at least 18 years of age. You are responsible for maintaining current records of who you have designated as a subpermittee, including copies of any designation letters provided to individuals not named above.

H. You and any subpermittees must comply with the below Standard Conditions.

These standard conditions are a continuation of your permit conditions *and must remain with your permit*. These standard conditions are nationwide and may not be modified for individual permits.

1. All of the provisions and conditions of the governing regulations at 50 CFR part 13 and 50 CFR part 21.41 are conditions of your permit. Failure to comply with the conditions of your permit could be cause for suspension of the permit. If you have questions regarding these conditions, refer to the regulations or, if necessary, contact your migratory bird permit issuing office. For copies of the regulations and forms, or to obtain contact information for your issuing office, visit: http://www.fws.gov/migratorybirds/mbpermits.html.

2. General conditions set out in Subpart B of 50 CFR 13, and specific conditions contained in Federal regulations cited above, are hereby made a part of this permit. All activities authorized herein must be carried out in accord with and for the purposes described in the application submitted. Continued validity, or renewal of this permit is subject to complete and timely compliance with all applicable conditions, including the filing of all required information and reports.

3. The validity of this permit is also conditioned upon strict observance of all applicable foreign, state, local tribal, or other federal law.

4. Valid for use by permittee named above.

5. Explosive Pest Control Devices (EPCDs) are regulated by the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF). If you plan to use EPCDs, you require a Federal explosives permit, unless you are exempt under 27 CFR 555.141. Information and contacts may be found at www.atf.gov/explosives/howto/become-an-fel.htm.

6. If you encounter a migratory bird with a Federal band issued by the U.S. Geological Survey Bird Banding Laboratory, Laurel, MD, report the band number to http://www.reportband.gov.

7. You are responsible for obtaining appropriate, prior, written landowner permission for activity (take or release) of any migratory birds, nests, or eggs on lands where you are not the landowner or custodian.

8. You must maintain records as required in 50 CFR 13.46 and 50 CFR 21.41. All records relating to the

permitted activities must be kept at the location indicated in writing by you to the migratory bird permit issuing office.

9. Acceptance of this permit authorizes the U.S. Fish and Wildlife Service to inspect any wildlife held, and to audit or copy any permits, books, or records required to be kept by the permit and governing regulations.

10. You may not conduct the activities authorized by this permit if doing so would violate the laws of the

applicable State, county, municipal or tribal government or any other applicable law.

For suspected illegal activity, immediately contact USFWS Law Enforcement 1-844-FWS-TIPS (397-8477)

Attachment 2

Biological Technical Report

April 2022

HELIX Environmental Planning

Ontario International Airport Rehabilitation of Runway 8R-26L and Associated Improvements

Biological Technical Report

April 2022 | 00343.00013.001

Prepared for:

HNTB Corporation
2900 South Quincy Street, Suite 600
Arlington, VA 22206

Prepared by:

HELIX Environmental Planning, Inc.
16485 Laguna Canyon Road, Suite 150
Irvine, CA 92618

This page intentionally left blank

TABLE OF CONTENTS

Section **Page**

EXECUTIVE SUMMARY ES-1

1.0 INTRODUCTION 1

1.1 Purpose of the Report 1
1.2 Project Location 1
1.3 Project Description 1

2.0 METHODS 1

2.1 Nomenclature 1
2.2 Literature Review 2
2.3 Field Surveys 2
2.3.1 General Biological Survey 2
2.3.2 Jurisdictional Assessment 3

3.0 RESULTS 4

3.1 Environmental Setting 4
3.2 Vegetation Communities 4
3.2.1 Developed 5
3.2.2 Disturbed 5
3.2.3 Ornamental 5
3.3 Plants 5
3.4 Animals 6
3.5 Sensitive Biological Resources 6
3.5.1 Rare Plant Species 6
3.5.2 Sensitive Animal Species 6
3.5.3 Sensitive Vegetation Communities/Habitats 7
3.5.4 Jurisdictional Waters and Wetlands 7
3.5.5 Habitat and Wildlife Corridor Evaluation 9

4.0 REGIONAL AND REGULATORY CONTEXT 10

4.1 Federal Regulations 10
4.1.1 Federal Endangered Species Act 10
4.1.2 Federal Clean Water Act 10
4.1.3 Migratory Bird Treaty Act 11
4.1.4 Critical Habitat 11
4.2 State Regulations 11
4.2.1 California Environmental Quality Act 11
4.2.2 California Endangered Species Act 11
4.2.3 California Fish and Game Code 12
4.3 Local Regulations 12
4.3.1 Parkway Tree Protection 12

TABLE OF CONTENTS (cont.)

Section **Page**

5.0 PROJECT EFFECTS 12
- 5.1 Sensitive Species 13
  - 5.1.1 Rare Plant Species 13
  - 5.1.2 Sensitive Animal Species 13
- 5.2 Sensitive Vegetation Communities 13
  - 5.2.1 California Department of Fish and Wildlife Sensitive Vegetation Communities/Habitats 13
  - 5.2.2 California Department of Fish and Wildlife Riparian Habitat and Streambed 14
- 5.3 U.S. Army Corps of Engineers/Regional Water Quality Control Board Jurisdiction 14
- 5.4 Wildlife Movement and Migratory Species 15
  - 5.4.1 Wildlife Movement 15
  - 5.4.2 Migratory Species 15
- 5.5 Local Policies and Ordinances 15
- 5.6 Adopted Plans 15

6.0 MITIGATION MEASURES 16

7.0 CERTIFICATION/QUALIFICATION 18

8.0 REFERENCES 19

LIST OF APPENDICES

A Plant Species Observed
B Animal Species Observed or Detected
C Representative Site Photographs
D Jurisdictional Delineation Report
E Rare Plant Species Potential to Occur
F Sensitive Animal Species Potential to Occur
G 2019/2020 Non-Breeding Burrowing Owl Survey Report

TABLE OF CONTENTS (cont.)

LIST OF FIGURES

No.	Title	Follows Page
1	Regional Location	2
2	USGS Topography	2
3	Aerial Photograph	2
4	Site Plan	2
5	Soils	4
6	Vegetation and Sensitive Resources	4
7	2018-2020 Nearby BUOW Survey Results	6
8	Jurisdictional Features	8
9	Impacts to Vegetation	14

LIST OF TABLES

No.	Title	Page
1	Vegetation Communities	5
2	Existing Jurisdictional Features	8
3	Impacts to Vegetation Communities	14

ACRONYMS AND ABBREVIATIONS

AMSL	above mean sea level
BUOW	Burrowing Owl
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFG	California Fish and Game
City	City of Ontario
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
DSFLF	Delhi Sands Flower-loving Fly
EPA	Environmental Protection Agency
FESA	Federal Endangered Species Act
HELIX	HELIX Environmental Planning, Inc.
I	Interstate
MBTA	Migratory Bird Treaty Act
MCV	A Manual of California Vegetation
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High Water Mark
OIAA	Ontario International Airport Authority
Project	Taxiway Improvements and South Electrical Vault Relocation
RPW	Relatively Permanent Water Body
RWQCB	Regional Water Quality Control Board
S	State
SFP	State Fully Protected
SAR HCP	Upper Santa Ana River Habitat Conservation Plan
SSC	Species of Special Concern

ACRONYMS AND ABBREVIATIONS (cont.)

TNW	Traditional Navigable Waters
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

This page intentionally left blank

EXECUTIVE SUMMARY

HELIX Environmental Planning, Inc. (HELIX) completed this biological technical report for the Taxiway Improvements and South Electrical Vault Relocation Project (project), proposed by HNTB Corporation in the City of Ontario (City), San Bernadino County, California. HNTB Corporation is proposing rehabilitation and reconstruction of a runway, taxiway connector improvements, airfield improvements, construction of a batch plant, and the relocation of several project features on an approximately 424-acre study area. The study area is generally located south of Interstate (I-) 10 and west of I-15 in the City of Ontario.

The study area is in a highly developed landscape surrounded by residential and industrial uses. The topography within the study area is generally flat. Three drainage features were observed on the study area, which includes three concrete-lined channels (Cucamonga Creek Channel, Deer Creek Channel, and Western Cucamonga Creek Channel). The study area consists of ornamental, non-native vegetation/disturbed habitat, and urban/developed areas. The study area supports no native upland or riparian vegetation communities. HELIX conducted a general biological survey (including vegetation mapping and a general habitat assessment) and a jurisdictional assessment in January 2021.

A total of three vegetation communities were mapped on the study area. Native communities were not observed on-site, and no vegetation community is considered sensitive. No sensitive plant species were determined to have the potential to occur on the study area. One sensitive animal species was determined to have a low potential to occur on the study area: western mastiff bat [*Eumops perotis californicus*]). One species, burrowing owl (BUOW; *Athene cunicularia*), is presumed present, based on the species being observed on the study area in 2019 and 2020 (HELIX 2020). Burrowing owl are listed as state species of special concern. The study area supports a total of 2.54 acres of U.S. Army Corps of Engineers (USACE)/Regional Water Quality Control Board (RWQCB) non-wetland waters of the U.S. and California Department of Fish and Wildlife (CDFW) jurisdictional streambed. No impacts will occur to protected trees that meet the City's definition of a parkway tree. The study area is not considered a regional wildlife corridor.

Potential significant impacts were identified for burrowing owl, Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*), and nesting bird species. Permanent impacts are proposed to approximately 423.28 acres of developed and disturbed/non-native vegetation. The project would not impact any USACE, RWQCB, or CDFW jurisdictional wetlands, or non-wetland waters. The project would not remove any protected trees. The proposed project would not impact wildlife corridors or conflict with regional conservation plans.

Measures related to the following topics are proposed herein to fully mitigate the potential impacts of the project: burrowing owl, Delhi Sands flower-loving fly, and nesting birds. Successful implementation of these measures would mitigate potential impacts to below a level of significance.

This page intentionally left blank

1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

This report provides the City of Ontario (City), Ontario International Airport Authority (OIAA; California Environmental Quality Act [CEQA] lead agency), resource agencies, and the public with current biological data required to review the potential impacts of the proposed Taxiway Improvements and South Electrical Vault Relocation Project (project) located in the City of Ontario, San Bernardino County, California. The purpose of this report is to document the existing biological conditions on and in the immediate vicinity of the project and provide an analysis of potential impacts to sensitive biological resources with respect to local, state, and federal policy. This report provides the biological resource information necessary for project review under CEQA.

1.2 PROJECT LOCATION

The approximately 424-acre study area is in the City of Ontario, San Bernardino County, California. It is generally located south of Interstate (I-) 10 and west of I-15 (Figure 1, *Regional Location*). The study area is located within Section 25 of Township 1 South, Range 7 West of the Guasti, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2, *USGS Topography*). Specifically, the study area is located to the northwest of the intersection of South Haven Avenue and Jurupa Street; to the southwest of the intersection of East Airport Drive and South Haven Avenue; to the southeast of the intersection of South Grove Avenue and East Airport Drive; and to the northeast of the intersection of South Grove Avenue and East Mission Boulevard (Figure 3, *Aerial Photograph*).

1.3 PROJECT DESCRIPTION

The proposed project focuses on the rehabilitation and reconstruction of Runway 8R-26L, taxiway connector improvements and other associated airfield improvements, the relocation of several objects outside of the Runway Safety Area and/or Runway Object Free Area, and the relocation of the south electrical vault. The proposed project will also include a batch plant south of the airport, south of East Avion Street (Figure 4, *Site Plan*).

2.0 METHODS

Project evaluation included a review of project plans; a literature review of biological resources occurring on the study area and the surrounding vicinity; a general biological survey, including vegetation mapping and a general habitat assessment; and a jurisdictional assessment. The methods used to evaluate the biological resources present on the study area are discussed in this section.

2.1 NOMENCLATURE

Nomenclature for this report follows Baldwin et al. (2012) for plants. Plant communities were classified in accordance with Holland (1986) and Oberbauer (2008), with additional vegetation community information taken from Manual of California Vegetation, Second Edition (MCV; Sawyer et al. 2009). Animal nomenclature follows Emmel and Emmel (1973) for butterflies, Center for North American Herpetology (Taggart 2016) for reptiles and amphibians, American Ornithological Society (2021) for

birds, and Baker et al. (2003) for mammals. Rare plant and sensitive animal statuses are from the Inventory of Rare and Endangered Plants of California (California Native Plant Society [CNPS] 2021b) and the California Natural Diversity Database (CNDDB; California Department of Fish and Wildlife [CDFW] 2021a). Rare plant species' habitats and flowering periods are from the Jepson Manual (Baldwin et al. 2012), the Inventory of Rare and Endangered Plants of California (CNPS 2021b), and the California Natural Diversity Database (CDFW 2021a). Soil classifications were obtained from the Web Soil Survey (Natural Resources Conservation Service [NRCS] 2021).

2.2 LITERATURE REVIEW

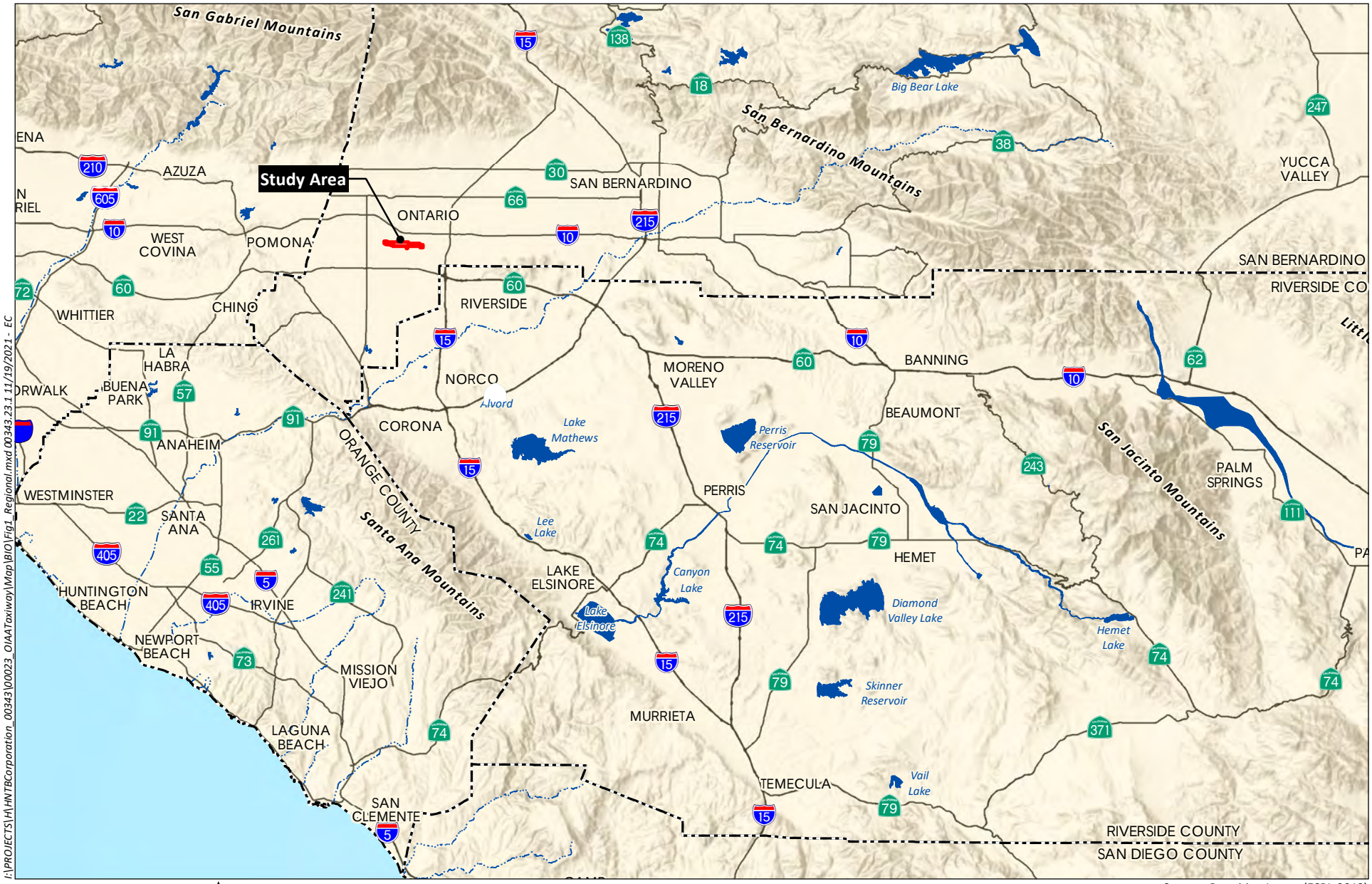
Prior to conducting the site visit, HELIX Environmental Planning, Inc. (HELIX) reviewed regional planning documents, Google Earth aerials (2021), Web Soil Survey (NRCS 2021), and sensitive species database records, including the Inventory of Rare and Endangered Plants of California (CNPS 2020b), CNDDB (CDFW 2021a), and critical habitat maps for endangered and threatened species (U.S. Fish and Wildlife Service [USFWS] 2021a). A one-quadrangle database search was conducted on CNDDB and CNPS, which consisted of the Guasti quadrangle.

2.3 FIELD SURVEYS

Field surveys were conducted to document the existing condition of the study area and surrounding lands. A general biological survey and habitat assessment were conducted on the study area to map existing vegetation communities and to determine habitat suitability for sensitive plant and animal species. A list of plant and animal species observed and/or detected during the field surveys are provided as Appendix A, *Plant Species Observed*, and Appendix B, *Animal Species Observed or Detected*. Noted animal species were identified by direct observation, vocalizations, or the observance of scat, tracks, or other signs. However, the list of animal species identified is not necessarily a comprehensive account of all species that use the study area as species that are nocturnal, secretive, or seasonally restricted may not have been observed. A habitat assessment for Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*; DSFLF) and a habitat assessment for burrowing owl (BUOW; *Athene cunicularia*) were conducted. A jurisdictional assessment was also conducted to determine the existing jurisdictional limits regulated by the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and CDFW.

2.3.1 General Biological Survey

HELIX Biologist and Regulatory Specialist Ezekiel Cooley conducted a general biological survey of the study area on January 12, 2021. Vegetation communities were classified and mapped in accordance with Holland (1986) and Oberbauer (2008). Vegetation was mapped on a 125-foot (1 inch = 125 feet) aerial photograph of the site. Vegetation communities were mapped by HELIX to one-hundredth of an acre (0.01 acre). The entire site was surveyed on foot with the aid of binoculars. Representative photographs of the site were taken, with select photographs included in this report as Appendix C, *Representative Site Photographs*. Plant and animal species observed or otherwise detected were recorded in a field notebook. Animal identifications were made in the field by direct, visual observation or indirectly by detection of calls, burrows, tracks, or scat. Plant identifications were made in the field or in the lab through comparison with voucher specimens or photographs. The DSFL habitat assessment consisted of performing a pedestrian survey within all areas that supported Delhi Fine Sand soils and all adjacent soils to determine if the soils provide suitable habitat for DSFL. A BUOW habitat assessment was conducted by a qualified biologist to determine whether the project site supports suitable BUOW



I:\PROJECTS\H\HNTBCorporation_00343\00023_OIAATaxiway\Map\BIO\Fig1_Regional.mxd 00343.23.1 11/19/2021 - EC

HELIX Environmental Planning

Regional Location

Figure 1

Study Area

0 2,000 Feet

Source: ONTARIO & GUASTI 7.5' Quad (USGS)

I:\PROJECTS\HUNTBCorporation_00343\00023_OIAATowlvoy\Map\BIO\Fig2_USGS.mxd 00343.23.1 3/7/2022 - EC

HELIX Environmental Planning

USGS Topography

Figure 2

Study Area

S. VINEYARD AVE
E. HOLT BLVD
E. AIRPORT DR
S. GROVE AVE
ALERE
MISSION BLVD
S. TOWER DR
JURUPA ST
S. ARCHIBALD AVE

I:\PROJECTS\HUNTBCorporation_00343\00023_OIAATaxiway\Map\BIO\Fig3_Aerial.mxd 00343.23.1.3/8/2022 - EC

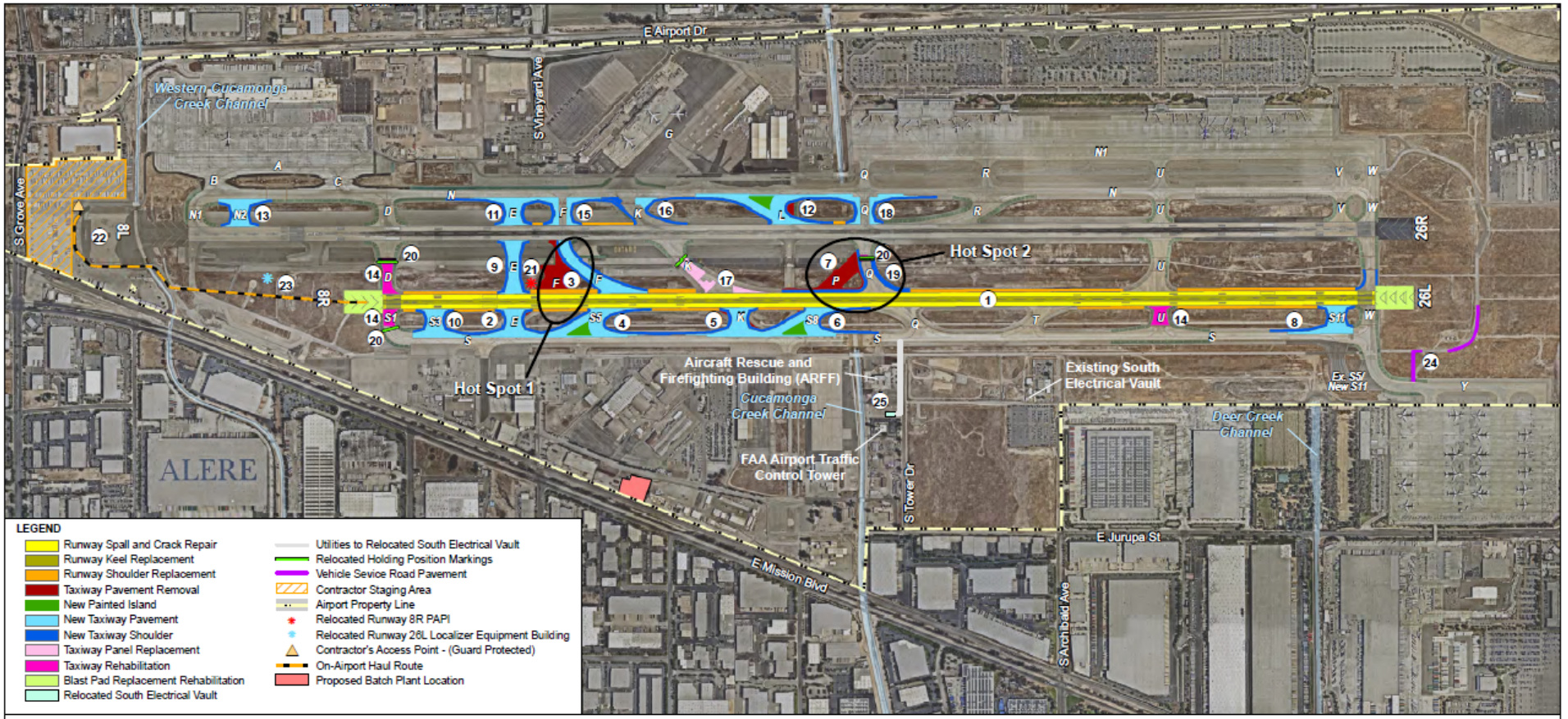
0 1,000 Feet

Source: Aerial (San Bernardino County, 2020)

HELIX Environmental Planning

Aerial Photography

Figure 3



PROPOSED PROJECT ELEMENTS

(1) REHABILITATE RUNWAY 8R-26L
(2) MODIFY EXISTING CONNECTOR TAXIWAY F AND REDESIGNATE AS TAXIWAY E
(3) REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F
(4) CONSTRUCT EXIT TAXIWAY S5
(5) RECONSTRUCT EXISTING EXIT TAXIWAY K
(6) RECONSTRUCT EXISTING EXIT TAXIWAY P TO A HIGH-SPEED EXIT AND REDESIGNATE AS TAXIWAY S8
(7) REMOVE EXISTING TAXIWAY P BETWEEN RUNWAYS 8L-26R AND 8R-26L
(8) CONSTRUCT BYPASS TAXIWAY S11
(9) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8R-26L AND 8L-26R
(10) CONSTRUCT BYPASS TAXIWAY S3
(11) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8L-26R AND TAXIWAY N
(12) RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED EXIT TAXIWAY
(13) CONSTRUCT BYPASS TAXIWAY N2
(14) RESURFACE TAXIWAY D, TAXIWAY S1 AND TAXIWAY U PAVEMENT
(15) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(16) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(17) REPLACE/REHABILITATE PANELS ON TAXIWAY K BETWEEN RUNWAYS
(18) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(19) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAYS
(20) RELOCATE HOLDING POSITION MARKINGS*
(21) RELOCATE RUNWAY 8R PAPI
(22) RELOCATE PERIMETER FENCE AND REMOVE OBJECTS WITHIN ROFA
(23) RELOCATE RUNWAY 26L (8R END) LOCALIZER EQUIPMENT BUILDING
(24) MODIFY EXISTING VEHICLE SERVICE ROAD
(25) RELOCATE SOUTH ELECTRICAL VAULT * DEPICTED IN MULTIPLE LOCATIONS

ONT ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 250 500 1,000 Feet

N

HNTB

Proposed Project

Sources: OIAA, Nearmap, HNTB Analysis

Site Plan

Figure 4

habitat, including disturbed, low-growing vegetation within grassland and shrublands (less than 30 percent canopy cover), gently rolling or level terrain, areas with abundant small mammal burrows, especially California ground squirrel (*Otospermophilus beecheyi*) burrows, fence posts, rocks, or other low perching locations, and artificial structures, such as earthen berms, debris piles, and cement culverts.

2.3.2 Jurisdictional Assessment

Prior to beginning fieldwork, aerial photographs (1 inch = 75 feet), topographic maps (1 inch = 75 feet), USGS quadrangle maps, and National Wetlands Inventory maps (USFWS 2021b), were reviewed to assist in determining the location of potential jurisdictional waters on the study area. Mr. Cooley conducted the jurisdictional assessment fieldwork on January 12, 2021 (HELIX 2021). The assessment was conducted to identify and jurisdictional waters potentially subject to USACE jurisdiction pursuant to Section 404 of the Clean Water Act (CWA), RWQCB jurisdiction pursuant to Section 401 of the CWA, and streambed habitats potentially subject to CDFW jurisdiction pursuant to Sections 1600 *et seq.* of the California Fish and Game (CFG) Code. Data collection was targeted in areas deemed to have the potential to support jurisdictional resources, such as the presence of an ordinary high water mark (OHWM), the presence of a bed/bank and streambed associated vegetation, and/or other surface indications of streambed hydrology. The findings of the jurisdictional assessment are included as Appendix D, *Jurisdictional Delineation Memo*.

2.3.2.1 U.S. Army Corps of Engineers

The USACE waters of the U.S. were determined using current USACE guidelines (Environmental Laboratory 1987, USACE 2008a). Areas were determined to be waters of the U.S. if there was evidence of regular surface flow (e.g., bed and bank). Jurisdictional limits for these areas were measured according to the presence of a discernible OHWM, which is defined in 33 Code of Federal Regulations Section 329.11 as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas." The USACE has issued further guidance on the OHWM (Riley 2005; USACE 2008b), which also was considered in this jurisdictional assessment.

The jurisdictional delineation was conducted in accordance with court decisions (i.e., Rapanos v. United States, Carabell v. United States, and Solid Waste Agency of Northern Cook County v. USACE), as outlined and applied by the USACE (USACE 2007; USACE 2015; Grumbles and Woodley 2007); and the USACE and U.S. Environmental Protection Agency (USACE and EPA; 2007). These publications explain that the EPA and USACE will assert jurisdiction over traditional navigable waters (TNW) and tributaries to TNWs that are a relatively permanent water body (RPW), which has year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation is used to determine if the non-RPW is jurisdictional. As an alternative to the significant nexus evaluation process, a preliminary jurisdictional delineation may be submitted to the USACE. The preliminary jurisdictional delineation treats all waters and wetlands on a site as if they are jurisdictional waters of the U.S. (USACE 2008a). A significant nexus evaluation or preliminary jurisdictional delineation are typically only required for projects that propose impacts to potentially jurisdictional features and, therefore, require a Section 404 permit from the USACE.

2.3.2.2 Regional Water Quality Control Board

The RWQCB asserts regulatory jurisdiction over activities affecting wetland and non-wetland waters of the State pursuant to Section 401 of the CWA and the State Porter-Cologne Water Quality Control Act. Potential RWQCB jurisdiction found within the study area follows the boundaries of potential USACE jurisdiction for waters of the U.S. There are no areas supporting isolated waters of the State subject to exclusive RWQCB jurisdiction pursuant to the State Porter-Cologne Water Quality Control Act.

2.3.2.3 California Department of Fish and Wildlife

The CDFW jurisdictional boundaries were determined based on the presence of riparian vegetation or regular surface flow, if present. Streambeds within CDFW jurisdiction were delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses with surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). This definition for CDFW jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., oak woodland and alluvial fan sage scrub). Jurisdictional limits for CDFW streambeds were defined by the top of bank. Vegetated CDFW habitats were mapped at the limits of streambed-associated vegetation, if present.

3.0 RESULTS

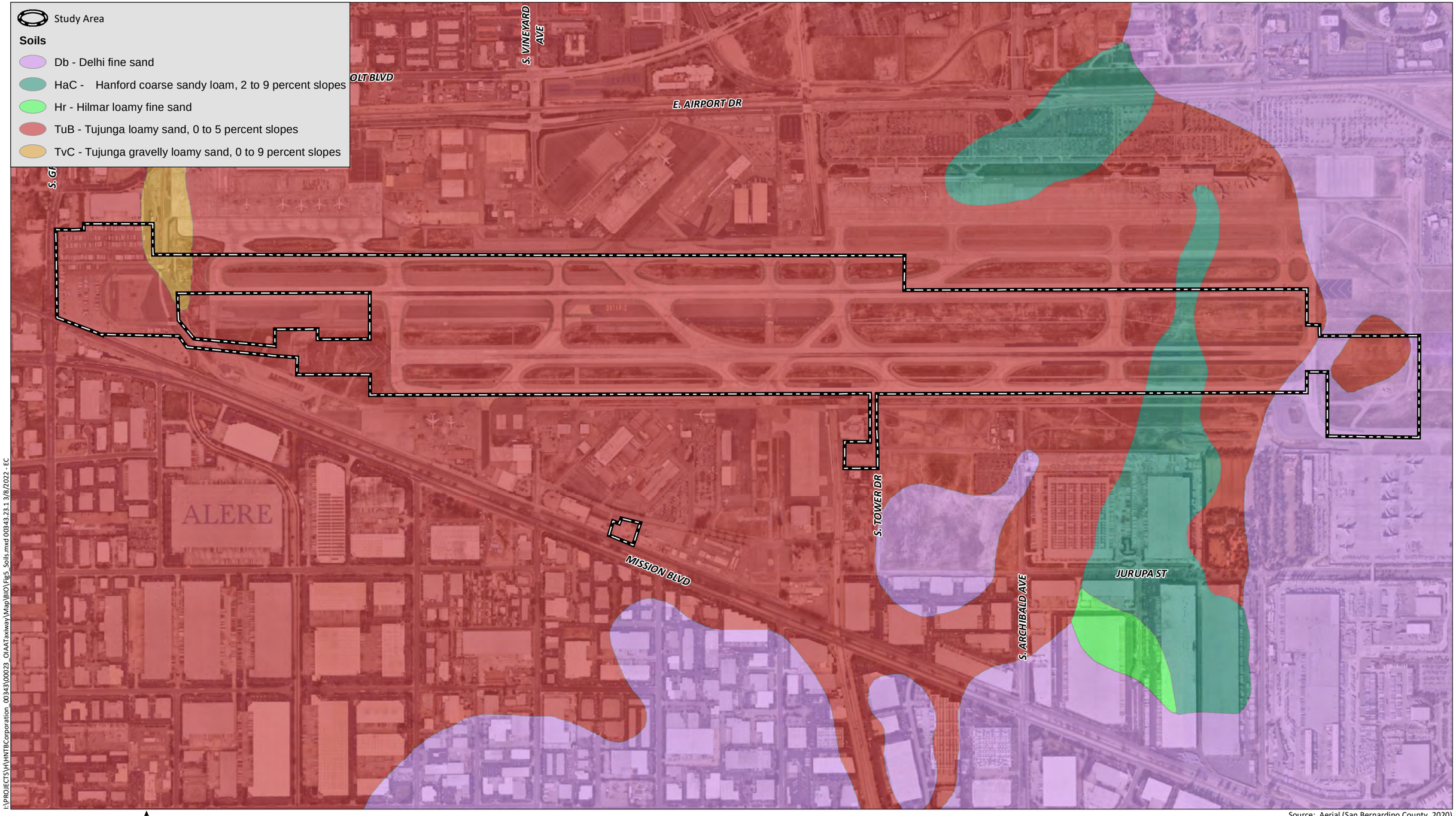
3.1 ENVIRONMENTAL SETTING

The study area is in the City of Ontario. Topographically, the site consists of a large, relatively flat, open area in a highly developed landscape. Three concrete channels run north to south, through the east, center, and western portions of the site. The drainage features observed within the study area (Deer Creek, Cucamonga Creek Channel, and West Cucamonga Creek Channel) coalesce into Cucamonga Creek, and eventually drain into the Santa Ana River to the south. Elevations on the study area range from 900 feet (247 meters) above mean sea level (AMSL) within the northeastern portion to 935 feet (284 meters) AMSL along the southwestern portion. The remainder of the study area consists of developed, disturbed, and ornamental habitat. Six soil types are mapped on the study area and shown on Figure 5, *Soils*, including Delhi fine sand (Db), Hanford coarse sandy loam (HaC, 2 to 9 percent slopes), Hilmar loamy fine sand (Hr), Tujunga loamy sand (TuB, 0 to 5 percent slopes), and Tujunga gravelly loamy sand (TvC, 0 to 9 percent slopes) (NRCS 2021).

Immediate land uses surrounding the study area primarily include industrial and commercial uses (Figure 3). The airport is located approximately 0.25 mile south of the I-10 freeway.

3.2 VEGETATION COMMUNITIES

The study area supports three vegetation communities, which are shown on Figure 6, *Vegetation and Sensitive Resources*, and listed in Table 1, *Vegetation Communities*. Plant communities are classified in accordance with Holland (1986) and Oberbauer (2008). Community names consistent with A Manual of California Vegetation, Second Edition (MCV; Sawyer et al. 2009) are also provided. Sensitive habitats pursuant to CDFW's Natural Communities List (CDFW 2021b) were not observed on-site.



Source: Aerial (San Bernardino County, 2020)

I:\PROJECTS\HNTBCorporation_00343\00023_OIAATaxiway\Map\BIO\Fig5_Soils.mxd 00343.23.1 3/8/2022 - EC

HELIX Environmental Planning

Soils

Figure 5



I:\PROJECTS\VAL\HNTBCorporation_00343\00023_OIAATaxiway\Map\BIO\Fig6_Veg.mxd 00343.23.1 3/8/2022 - EC

Source: Aerial (San Bernardino County, 2020)

HELIX Environmental Planning

Vegetation and Sensitive Resources

Figure 6

Table 1
VEGETATION COMMUNITIES

Habitat Type (Holland/Oberbauer)	Habitat Type (MCV)[1]	Acres
Developed	N/A	290.33
Disturbed/Non-native Vegetation	N/A	132.95
Ornamental	N/A	0.63
	TOTAL	**423.91**

[1] Manual of California Vegetation

3.2.1 Developed

Developed land consists of areas where permanent structures and/or pavement have been placed, which prevents the growth of vegetation, or where landscaping is clearly tended and maintained. Within the study area, developed land consists of runways, paved roads, buildings, and other impervious surfaces, and covers approximately 290.33 acres.

3.2.2 Disturbed

Disturbed habitat includes land cleared of vegetation (e.g., dirt roads) or actively maintained, or heavily disturbed areas that are mostly unvegetated but may support scattered non-native plant species, such as ornamentals or ruderal exotic species that take advantage of disturbance. Disturbed habitat is similar to the vegetation community non-native vegetation, except disturbed habitat generally supports little to no vegetative cover.

Disturbed habitat was observed throughout the study area and was dominated by ripgut brome (*Bromus diandrus*), Mediterranean grass (*Schismus barbata*), and foxtail brome (*Bromus madritensis*), as well as several non-native forbs, and totals approximately 132.95 acres. This area is frequently mowed by the airport.

3.2.3 Ornamental

The ornamental vegetation community is typically associated with land that has been heavily influenced by human activities, including areas adjacent to roads, manufactured slopes, and abandoned lots. This non-native community is dominated by ornamental and non-native species that take advantage of previously cleared or abandoned landscaping, or land with past or present animal usage that prevents it from providing viable habitat for native vegetation.

Ornamental vegetation was observed along the western portion of the study area adjacent to South Grove Avenue, and totals 0.63 acre. The area was dominated by jacaranda (*Jacaranda* sp.) and myoporum (*Myoporum* sp.).

3.3 PLANTS

HELIX identified a total of 12 plant species within the study area during surveys to date, of which 11 (92 percent) are non-native species (Appendix A).

3.4 ANIMALS

A total of 12 animal species were identified on the study area during biological surveys, including 11 bird species and one reptile species (Appendix B). Common mammal species expected to use the study area include species, such as California ground squirrel (*Otospermophilus beecheyi*).

3.5 SENSITIVE BIOLOGICAL RESOURCES

3.5.1 Rare Plant Species

Rare plant species are uncommon or limited in that they: (1) are only found in a particular region; (2) are a local representative of a species or association of species not otherwise found in the region; or (3) are in severe decline within their ranges or within the region. Rare plant species include those species listed by CNPS with a California Rare Plant Rank (CRPR) of 1, 2, or 3 or federally and state listed endangered and threatened species. Species with a CRPR of 4 may be considered rare if a population is locally uncommon, at the periphery of the species' range, sustained heavy losses, shows unusual morphology, or occurs on unusual substrates (CNPS 2021a).

Eight rare plant species were recorded within the Guasti database search conducted on CNDDB (CDFW 2021a) and CNPS (2021b). These species are included in Appendix E, *Rare Plant Species Potential to Occur.* None of the eight species have the potential to occur on the study area based on the lack of suitable habitat and high level of disturbance within the study area.

3.5.2 Sensitive Animal Species

Sensitive wildlife species are those listed or candidate-listed as federally threatened or endangered by USFWS; and/or state listed or candidate-listed as threatened or endangered or considered Species of Special Concern (SSC) by CDFW.

The study area is located outside of any USFWS-designated critical habitat. The critical habitat closest to the study area is for coastal California gnatcatcher (*Polioptila californica californica*) and occurs over five miles to the southeast of the study area. Sixteen sensitive animal species were recorded within the Gausti quadrangle database search conducted on CNDDB (CDFW 2021). These species are included in Appendix F, *Sensitive Animal Species Potential to Occur.* An evaluation of each sensitive animal species' potential to occur on the study area is also provided in Appendix F and discussed in further detail below.

Present

BUOW is listed as a state SSC. This species is associated with grasslands, open scrublands, agricultural fields, and other areas where there are small mammal burrows and prey available. BUOWs have been observed on and adjacent to the study area during non-breeding season focused surveys performed in 2019/2020 within the study area (HELIX 2020; Appendix G).

Study Area

BUOW Observations

- Active Burrow
- BUOW Sign
- Occupied Burrow
- Suitable Burrow
- 2019/2020 Non-Breeding Season BUOW Observations

S. VINEYARD AVE
HOLT BLVD
E. AIRPORT DR
S. GROVE AVE
ONTARIO
ALERE
MISSION BLVD
S. TOWER DR
JURUPA ST
S. ARCHIBALD AVE

I:\PROJECTS\HVHNTBCorporation_00343\00023_OIAATaxiway\Map\BIO\Fig7_BUOW.mxd 00343.23.1 3/29/2022 - EC

0 1,000 Feet

Source: Aerial (San Bernardino County, 2020)

HELIX Environmental Planning

2018-2020 Nearby BUOW Survey Results

Figure 7

Potential to Occur

Of the 16 sensitive animal species recorded within the vicinity of the study area, two species were considered to have the potential to occur. One species was determined to have a low potential to occur on the study area based on the presence of low-quality habitat and lack of recent observations within the immediate vicinity of the study area: western mastiff bat (*Eumops perotis californicus*), which is a state SSC.

One additional species, DSFLF, has a moderate potential to occur based on a habitat assessment performed in December 2021, combined with negative survey results for the species, conducted in 2019 and 2020 adjacent to the study area (Osborne 2020). Focused surveys for DSFLF are recommended based on the results of a habitat assessment conducted in 2021.

No Potential to Occur

Twelve species (southern California legless lizard [*Anniella stebbinsi*], California glossy snake [*Arizona elegans occidentalis*], coast horned lizard [*Phrynosoma blainvillii*], tricolored blackbird [*Agelaius tricolor*], California black rail [*Laterallus jamaicensis coturniculus*], coastal California gnatcatcher [*Polioptila californica*], northwestern San Diego pocket mouse [*Chaetodipus fallax fallax*], San Bernardino kangaroo rat [*Dipodomys merriami parvus*], Stephens' kangaroo rat [*Dipodomys stephensi*], western yellow bat [*Lasiurus xanthinus*], San Diego desert woodrat [*Neotoma lepida intermedia*], and Los Angeles pocket mouse [*Perognathus longimembris brevinasus*]) have no potential to occur on the study area due to lack of suitable habitat.

Crotch's bumble bee (*Bombus crotchii*), a state endangered candidate, is not expected to occur due to lack of suitable habitat and nectar sources, although transient individuals moving through the region may occasionally occur within the study area.

3.5.3 Sensitive Vegetation Communities/Habitats

Sensitive vegetation communities/habitats are considered either rare within the region, or sensitive by CDFW (2021b). Communities are given a Global and State (S) ranking on a scale of 1 to 5. Communities afforded a rank of 5 are most common, while communities with a rank of 1 are considered highly periled. CDFW considers sensitive communities as those with a rank between S1 and S3.

No sensitive plant communities were observed or mapped within the study area.

3.5.4 Jurisdictional Waters and Wetlands

Three drainages, Cucamonga Creek Channel, Deer Creek Channel, and Western Cucamonga Creek Channel were observed on the study area (Figure 8, *Jurisdictional Features*; Table 2, *Existing Jurisdictional Features*). A brief description of each drainage is provided below.

Table 2
EXISTING JURISDICTIONAL FEATURES

Feature	Linear Feet	Acres
Cucamonga Creek Channel	1,536	1.44
Deer Creek Channel	1,136	0.32
Western Cucamonga Creek Channel	1,114	0.78
TOTAL	**3,786**	**2.54**

3.5.4.1 Cucamonga Creek Channel

Cucamonga Creek Channel is a concrete rectangular channel that runs north to south through the center of the study area and is considered a USACE public works facility. Based on the USGS Guasti quadrangle map, the headwaters of Cucamonga Creek originate approximately seven miles to the north of the study area at the base of Cucamonga Peak in the San Gabriel Mountains, where it occurs as a natural soft-bottomed creek. Cucamonga Creek generally flows south through Cucamonga Canyon and becomes channelized once it exits the San Gabriel Mountains. Cucamonga Creek Channel flows enter the study area near the northern boundary, south of Airport Drive. The channel continues for approximately 0.4 mile through the center of the site, flowing underneath the airport taxiway and resurfacing to the south of the taxiway. The channel exits the study area near the southern boundary of the site, just north of Avion Street. After exiting the study area, Cucamonga Creek Channel flows south for 11 miles and becomes soft-bottomed, just prior to meeting the Santa Ana River at the Prado Flood Control Basin in Riverside County. The Santa Ana River ultimately drains into the Pacific Ocean approximately 35 miles to the southwest of the study area. Soils within Cucamonga Creek Channel on the study area are mapped as Tujunga loamy sand (0 to 5 percent slopes; NRCS 2021; Figure 5). However, native soils are no longer present in Cucamonga Creek Channel due to the concrete channelization of the creek.

3.5.4.2 Deer Creek Channel

Deer Creek Channel is a concrete, rectangular channel that runs north to south along the eastern study area boundary. Based on the USGS Guasti quadrangle map, the headwaters of Deer Creek originate approximately seven miles to the northeast of the study area at the base of Cucamonga Peak in the San Gabriel Mountains, where it occurs as a natural soft-bottomed creek. Deer Creek generally flows south through Deer Canyon and becomes channelized once it exits the San Gabriel Mountains. The channel likely collects sheet flow from impervious surfaces in the surrounding area and storm drains that empty into the channel. The majority of flows within Deer Creek Channel empty into Cucamonga Creek Channel near Turner Basin, approximately one mile north of the study area. Some water is diverted into the channel within the historic flow path of Deer Creek, which flows south from Turner Basin as a mostly natural streambed until it reaches Airport Drive. Deer Creek flows underneath the airport and enters and exits the study area as an underground channel. Deer Creek continues south as an underground channel and surfaces as a concrete trapezoidal channel just north of State Route 60, approximately 1.6 miles to the south of the study area. The channel continues southwest as Lower Deer Creek Channel for approximately 2.1 miles, ultimately draining into Cucamonga Creek Channel. Soils within Deer Creek Channel on the study area are mapped as Tujunga loamy sand (0 to 5 percent slopes; NRCS 2021; Figure 5). However, native soils are no longer present in Deer Creek Channel due to the concrete channelization of the creek.

Study Area

ictional Concrete Channels

Deer Creek Channel

Cucamonga Creek Channel

West Cucamonga Creek Channel

E. HOLT BLVD

S. VINEYARD AVE

E. AIRPORT DR

S. GROVE AVE

ONTARIO

ALERE

MISSION BLVD

S. TOWER DR

S. ARCHIBALD AVE

JURUPA ST

I:\PROJECTS\HNTBCorporation_00343\00023_OIAATaxiwayVMap\BIO\Fig8_JD.mxd 00343.23.1 3/29/2022 - EC

0 1,000 Feet

Source: Aerial (San Bernardino County, 2020)

HELIX Environmental Planning

Jurisdictional Features

Figure 8

3.5.4.3 Western Cucamonga Creek Channel

Western Cucamonga Channel is a concrete, rectangular channel that runs north to south along the western study area boundary. Western Cucamonga Creek Channel originates from percolating basins located where Cucamonga Creek exits Cucamonga Canyon, approximately six miles to the northwest of the study area. The channel likely collects sheet flow from impervious surfaces in the surrounding area as well as water collected in the 8th Street storm drains. Western Cucamonga Creek Channel flows mostly underground until it reaches the 8th Street Basins. The channel continues south from the basins as an above-ground rectangular concrete channel. The channel passes through the Princeton Basin and continues five miles south until it reaches the northwestern boundary of the study area. The channel flows along the western boundary and exits near the southwest corner. After exiting the site, the channel continues south through the Ely Basins and connects with Cucamonga Creek Channel, approximately seven miles south of the study area. Soils within Western Cucamonga Creek Channel within the study area are primarily mapped as Tujunga loamy sand (0 to 5 percent slopes; NRCS 2021; Figure 5). However, native soils are no longer present in Western Cucamonga Creek Channel due to the concrete channelization of the creek.

3.5.5 Habitat and Wildlife Corridor Evaluation

Wildlife corridors connect otherwise isolated pieces of habitat and allow movement or dispersal of plants and animals. Corridors can be local or regional in scale; their functions may vary temporally and spatially based on conditions and species presence. Local wildlife corridors allow animals access to resources such as food, water, and shelter within the framework of their daily routine. Animals use these corridors, which are often hillsides or tributary drainages, to move between different habitats. Regional corridors provide these functions over a larger scale and link two or more large habitat areas, allowing the dispersal of organisms and the consequent mixing of genes between populations.

Regionally, the study area is situated within a highly developed landscape. The study area is surrounded by residential housing and industrial uses, such as warehouses and roadways. There are no large swaths of native habitat adjacent to the Ontario International Airport. The site itself is dominated by developed and disturbed habitat, which provides very limited resources to locally common wildlife. The airport is entirely fenced for human health and safety. Despite offering a somewhat open area within a developed landscape, access to the site may be limited to birds, small mammals, or reptiles able to access the study area despite the fencing. Trees occur within the study area, which may provide habitat for nesting birds or a stopover during migration.

As previously described, corridors can be local or regional in scale. The study area is not considered a regional corridor since it does not directly connect two or more large blocks of habitat that would otherwise be fragmented or isolated from one another. Development of the project would not impede wildlife access to other undeveloped land in the region since the study area is located within an area of existing development. The nearest wildlife movement corridor to the study area identified by the South Coast Missing Linkages Project is the San Gabriel – San Bernardino Connection, located approximately seven miles to the north of the study area (South Coast Wildlands 2008).

The study area is not considered a regional wildlife movement corridor as the study area does not support habitat suitable for local wildlife movement. Bird species may fly over the surrounding development to nest and/or forage within the study area. As discussed above, the study area supports

marginal habitat and has very limited opportunities for local wildlife to forage. It does not function as a wildlife corridor since it does not directly connect to two or more blocks of large habitat.

4.0 REGIONAL AND REGULATORY CONTEXT

Biological resources located within the study area are subject to regulatory review by federal, state, and local agencies. Biological resources-related laws and regulations that apply to the project include the Federal Endangered Species Act (FESA), Migratory Bird Treaty Act (MBTA), CWA, California Endangered Species Act (CESA), and CFG Code.

4.1 FEDERAL REGULATIONS

4.1.1 Federal Endangered Species Act

Administered by the USFWS, the FESA provides the legal framework for the listing and protection of species and their habitats, identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered a "take" under the FESA. Section 9(a) of the FESA defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct." "Harm" and "harass" are further defined in federal regulations and case law to include actions that adversely impair or disrupt a listed species' behavioral patterns.

Sections 4(d), 7, and 10(a) of the FESA regulate actions that could jeopardize endangered or threatened species. Section 7 describes a process of federal interagency consultation for use when federal actions may adversely affect listed species. A biological assessment is required for any major construction activity if it may affect a listed species. In this case, take can be authorized via a letter of biological opinion issued by the USFWS for non-marine related listed species issues. A Section 7 consultation is required when there is a nexus between federally listed species' use of the site and impacts to USACE jurisdictional areas. Section 10(a) allows the issuance of permits for "incidental" take of endangered or threatened species. The term "incidental" applies if the taking of a listed species is incidental to, and not the purpose of, an otherwise lawful activity.

4.1.2 Federal Clean Water Act

Federal wetland regulation (non-marine issues) is guided by the Rivers and Harbors Act of 1899 and the CWA. The Rivers and Harbors Act deals primarily with discharges into navigable waters, while the purpose of the CWA is to restore and maintain the chemical, physical, and biological integrity of all waters of the U.S. Permitting for projects filling waters of the U.S., including wetlands and vernal pools, is overseen by USACE under Section 404 of the CWA. Projects may be permitted on an individual basis or may be covered under one of several approved Nationwide Permits. Individual Permits are assessed individually based on the type of action, amount of fill, etc. Individual Permits typically require substantial time (often longer than six months) to review and approve, while Nationwide Permits are pre-approved if a project meets the appropriate conditions. A CWA Section 401 Water Quality Certification, which is administered by the State Water Resources Control Board, must be issued prior to any 404 Permit.

4.1.3 Migratory Bird Treaty Act

All migratory bird species that are native to the United States or its territories are protected under the federal MBTA, as amended under the Migratory Bird Treaty Reform Act of 2004 (FR Doc. 05-5127). The MBTA is generally protective of migratory birds but does not actually stipulate the type of protection required. In common practice, the MBTA is used to place restrictions on the disturbance of active bird nests during the nesting season, which is generally defined as February 15 to August 31 for songbirds. In addition, the USFWS commonly places restrictions on the disturbances allowed near active raptor nests, which the nesting season is generally defined as January 15 to August 31.

4.1.4 Critical Habitat

As described by the FESA, critical habitat is the geographic area occupied by a threatened or endangered species essential to species conservation that may require special management considerations or protection. Critical habitat also may include specific areas not occupied by the species but determined to be essential for species conservation.

The study area is located outside of any USFWS-designated critical habitat. The nearest critical habitat is for the coastal California gnatcatcher and occurs over five miles to the southeast of the study area.

4.2 STATE REGULATIONS

4.2.1 California Environmental Quality Act

Primary environmental legislation in California is found in CEQA and its implementing guidelines (State CEQA Guidelines), which require that projects with potential adverse effects (i.e., impacts) on the environment undergo environmental review. Adverse environmental impacts are typically mitigated because of the environmental review process in accordance with existing laws and regulations.

4.2.2 California Endangered Species Act

The CESA is similar to the FESA in that it contains a process for the listing of species and regulating potential impacts to listed species. Section 2081 of the CESA authorizes the CDFW to enter into a memorandum of agreement for take of listed species for scientific, educational, or management purposes. For example, the golden eagle (*Aquila chrysaetos*) and white-tailed kite (*Elanus leucurus*) are considered State Fully Protected (SFP) species. An SFP species may not be taken or possessed at any time, and no state licenses or permits may be issued for their take except for collecting the species necessary for scientific research and relocation of the bird species for the protection of livestock (Fish and Game Code Sections 3511, 4700, 5050, and 5515).

The Native Plant Protection Act (NPPA) enacted a process by which plants are listed as rare or endangered. The NPPA regulates the collection, transport, and commerce of plants that are listed. The CESA followed the NPPA and covers both plants and animals that are determined to be endangered or threatened with extinction. Plants listed as rare under NPPA were designated threatened under the CESA.

Rare plant species are those listed or candidate-listed as federally threatened or endangered by the USFWS; State listed as threatened or endangered or considered rare by the CDFW; and/or are CNPS

CRPR List 1A, 1B, 2A, 2B, or 3 species, as recognized in the CNPS's Inventory of Rare and Endangered Vascular Plants of California.

4.2.3 California Fish and Game Code

4.2.3.1 Protection of Raptor Species

Raptors (birds of prey) and owls and their active nests are protected by CFG Code Section 3503.5, which states that it is unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird unless authorized by the CDFW.

4.2.3.2 Streambed Alteration Agreement

The CFG Code (Section 1600 et seq.) requires an agreement with the CDFW for projects affecting riparian and wetland habitats through the issuance of a Streambed Alteration Agreement.

4.3 LOCAL REGULATIONS

4.3.1 Parkway Tree Protection

Title 10, Chapter 2 of the City of Ontario's Municipal Code protects parkway trees, which are defined as trees located on any public street right-of-way between the right-of-way boundary line and the curbline, and also the area enclosed within the curblines of a median divider. Although trees occur within the study area, none are proposed for removal as part of the project. If the project proposes impacts to City parkway trees, authorization from the City and replacement of removed trees may be required.

5.0 PROJECT EFFECTS

This section describes potential direct and indirect impacts associated with the proposed project. Direct impacts immediately alter the affected biological resources such that those resources are eliminated temporarily or permanently. Indirect impacts consist of secondary effects of a project, including noise, decreased water quality (e.g., through sedimentation, urban contaminants, or fuel release), fugitive dust, colonization of non-native plant species, animal behavioral changes, and night lighting. The magnitude of an indirect impact can be the same as a direct impact; however, the effect usually takes a longer time to become apparent.

The significance of impacts to biological resources present, or those with the potential to occur, was determined based upon the sensitivity of the resource and the extent of the anticipated impacts. For certain highly sensitive resources (e.g., a federally listed species), any impact would be significant. Conversely, other resources that are of low sensitivity (e.g., species with a large, locally stable population in the region but declining elsewhere) could sustain some impact with a less than significant effect.

5.1 SENSITIVE SPECIES

5.1.1 Rare Plant Species

No Impacts

No rare plant surveys were performed since no rare plant species have a potential to occur on the project site. Additionally, none have been previously documented within the study area based on CNDDB and CNPS database review. Due to the high-level of disturbance within the study area, habitat suitable to support rare plant species was not present and none were observed during a recent survey conducted by Ezekiel Cooley on January 12, 2021. Therefore, the project is not expected to impact any rare plant species.

5.1.2 Sensitive Animal Species

Less than Significant Impacts with Mitigation Incorporated

Of the 16 sensitive animal species recorded within the vicinity of the study area, 14 species were determined to have no potential to occur due to lack of suitable habitat, and/or these areas are located outside of the species' known geographical range (Appendix F). One species (BUOW) is considered present based on positive focused non-breeding season surveys. To prevent direct and indirect impacts to BUOW, Mitigation Measure BIO-1 will be implemented as part of the project. Of the remaining two species, one species has a low potential to occur, and one species has a moderate potential to occur. These species are discussed in greater detail below.

Low Potential Species

One species, western mastiff bat was determined to have a low potential to occur on the study area based on the presence of low-quality habitat, and lack of recent observations within the project vicinity. Western mastiff bat is a state SSC. The study area lacks suitable rock slabs and cliff faces for this species to roost, although open areas within the study area may potentially provide suitable foraging habitat. Since the study area supports limited habitat for this species, the project would not result in a significant impact to this species as suitable foraging habitat is located to the east and south of the study area.

Moderate Potential Species

One species, DSFLF, was determined to have a moderate potential to occur within the study area based on a habitat assessment conducted in December 2021 (Osborne, *personal communication*). To prevent direct and indirect impacts to DSFLF, Mitigation Measure BIO-3 will be implemented as part of the project.

5.2 SENSITIVE VEGETATION COMMUNITIES

5.2.1 California Department of Fish and Wildlife Sensitive Vegetation Communities/Habitats

No Impacts

The study area supports developed, disturbed, and ornamental habitat. None of these vegetation communities or habitats are considered sensitive by CDFW. Impacts to these communities are not considered sensitive and do not require mitigation. Therefore, no impacts to sensitive communities will occur as a result of the project (Figure 9, *Impacts to Vegetation*; Table 3, *Impacts to Vegetation Communities*).

Table 3
IMPACTS TO VEGETATION COMMUNITIES

Habitat Type	Existing (acres)	Permanent Impacts (acres)
Developed	290.33	290.33
Disturbed	132.95	132.95
Ornamental	0.63	0.00
Total	**423.91**	**423.28**

5.2.2 California Department of Fish and Wildlife Riparian Habitat and Streambed

No Impacts

Based on the results of the jurisdictional delineation, Cucamonga Creek Channel, Deer Creek Channel, and West Cucamonga Creek Channel are considered non-wetland waters under CDFW jurisdiction (Figure 8). These jurisdictional features are underground through the extent of the study area.

The project will not result in any impacts to the Cucamonga Creek Channel, Deer Creek Channel, or West Cucamonga Creek Channel. The project will require the removal and installation of storm drain inlets. The removal and installation of storm drain inlets will be performed in such a way that no incidental fall back to the storm drain system will occur. Since the storm drain inlet removal and installation activities will not result in direct or indirect impacts to downstream jurisdictional waters, the project would not impact CDFW jurisdictional waters. In the absence of impacts to jurisdictional waters, the project would not require regulatory permits from CDFW.

5.3 U.S. ARMY CORPS OF ENGINEERS/REGIONAL WATER QUALITY CONTROL BOARD JURISDICTION

No Impacts

Based on the results of the jurisdictional delineation, Cucamonga Creek Channel, Deer Creek Channel, and West Cucamonga Creek Channel are considered non-wetland waters under USACE/RWQCB jurisdiction (Figure 8). These jurisdictional features are underground through the extent of the study area.

The project will not result in any impacts to the Cucamonga Creek Channel, Deer Creek Channel, or West Cucamonga Creek Channel. The project will require the removal and installation of storm drain inlets. The removal and installation of storm drain inlets will be performed in such a way that no incidental fall back to the storm drain system will occur. Since the storm drain inlet removal and installation activities will not result in direct or indirect impacts to downstream jurisdictional waters, the project would not



Source: Aerial (San Bernardino County, 2020)

HELIX Environmental Planning

Impacts to Vegetation

Figure 9

impact USACE or RWQCB jurisdictional waters. In the absence of impacts to jurisdictional waters, the project would not require regulatory permits from USACE or RWQCB.

5.4 WILDLIFE MOVEMENT AND MIGRATORY SPECIES

5.4.1 Wildlife Movement

No Impacts

The study area is not part of a regional corridor and does not serve as a nursery site. The study area is not identified as part of a local or regional corridor or linkage by the South Coast Missing Linkages (South Coast Wildlands 2008). The study area currently has no direct connectivity to two or more large blocks of habitat and is constrained by existing development. The study area does not support native vegetation and provides very limited habitat for local wildlife and migratory birds passing through the study area. Some reptiles and small mammals may occasionally access the study area. Birds may fly over existing development to access the study area for foraging and/or nesting. Therefore, the study area may provide very limited habitat for local wildlife but does not serve as a regional wildlife corridor. Although the implementation of the project may result in some temporary disturbance to local wildlife movement on-site, no regional movement corridors would be impacted.

5.4.2 Migratory Species

Less than Significant Impacts with Mitigation Incorporated

The study area has the potential to support songbird and raptor nests due to the presence of vegetation and trees in the study area. Project activities could disturb or destroy active migratory bird nests, including eggs and young. Disturbance to or destruction of migratory bird eggs, young, or adults is in violation of the MBTA and is considered a potentially significant impact. The nesting season is generally defined as February 15 through August 31 for songbirds and January 15 to August 31 for raptors. An avoidance and minimization measure is provided as BIO-2 in Section 6.0 below, which would ensure the project is in compliance with MBTA regulations.

5.5 LOCAL POLICIES AND ORDINANCES

No Impact

The project will not impact any local policies or ordinances; therefore, no mitigation is required.

5.6 ADOPTED PLANS

The project area is not located within any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. The project area is located within the proposed Upper Santa Ana River Habitat Conservation Plan (SAR HCP), which was released for public review in May 2021; the review period ended in July 2021 and has not been approved as of the preparation of this report. Therefore, development within the project area is not in conflict with any adopted habitat conservation plans.

Should the Upper SAR HCP be approved, future development within the study area would be required to comply with the plan implemented at the time of their entitlement, pursuant to Countywide Plan Policy

NR-5.7. The project would comply with state and federal regulations regarding protected species of animals and vegetation through the development review, entitlement, and environmental clearance processes. Implementation of Policy NR-5.7 would include compliance with Habitat Conservation Plans and/or Natural Community Conservation Plan. Therefore, impacts would be less than significant.

No Impact

The study area is not located within any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. As such, the implementation of the project would not conflict with any adopted habitat conservation plans.

6.0 MITIGATION MEASURES

The following provides recommended measures intended to minimize or avoid impacts to biological resources:

BIO-1 **Burrowing Owl**: Prior to the commencement of construction activities (i.e., demolition, earthwork, clearing, and grubbing), focused surveys shall be conducted by a qualified biologist during the breeding season, as defined by the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012).

Take avoidance surveys for BUOW shall be conducted within the study area. The take avoidance surveys shall be conducted within 14 days and repeated 24 hours prior to construction activities (i.e., demolition, earthwork, clearing, and grubbing) to determine the presence of BUOW. If take avoidance surveys are negative and BUOW is confirmed absent, then ground-disturbing activities shall be allowed to commence, and no further mitigation would be required.

If BUOW is observed during focused surveys and/or take avoidance surveys within any portion of the study area, active burrows shall be avoided by the project in accordance with the CDFW's Staff Report (CDFG 2012). The CDFW shall be immediately informed of any BUOW observations. A BUOW Protection and Relocation Plan (plan) shall be prepared by a qualified biologist, which must be sent for approval by the CDFW prior to initiating ground disturbance. The plan shall detail avoidance measures that shall be implemented during construction and passive or active relocation methodology. Relocation shall only occur outside of the nesting season (September 1 through January 31).

BIO-2 **Nesting Birds:** To the extent possible, construction activities (i.e., earthwork, clearing, and grubbing) shall occur outside of the general bird nesting season for migratory birds, which is February 15 through August 31 for songbirds and January 15 to August 31 for raptors.

If construction activities (i.e., earthwork, clearing, and grubbing) must occur during the general bird nesting season for migratory birds and raptors (January 15 and August 31), a qualified biologist shall be retained to perform a pre-construction survey of potential nesting habitat to confirm the absence of active nests belonging to migratory birds and raptors afforded protection under the MBTA and CFG Code. The pre-construction survey

shall be performed no more than seven days prior to the commencement of construction activities. The qualified biologist shall document the results of the pre-construction survey. If construction is inactive for more than seven days during the breeding season, an additional survey shall be conducted.

If the qualified biologist determines that no active migratory bird or raptor nests occur, the activities shall be allowed to proceed without any further requirements. If the qualified biologist determines that an active migratory bird or raptor nest is present, no impacts within 300 feet (500 feet for raptors) of the active nest shall occur until the young have fledged the nest and the nest is confirmed to no longer be active, as determined by the qualified biologist. The biological monitor may modify the buffer or propose other recommendations in order to avoid indirect impacts to nesting birds.

BIO-3 **Delhi Sands Flower-loving Fly:** Focused surveys shall be conducted for DSFLF pursuant to current USFWS protocols by a qualified biologist with a DSFLF USFWS recovery permit. If the surveys are negative, no further assessments, focused surveys, or mitigation shall be required, and construction activities shall be allowed to proceed without any further requirements.

If focused surveys are positive, mitigation measures would be required and subject to review and approval by USFWS either through Section 7 of the ESA (if there is a federal action) or under Section 10(A)(1)(B) of the ESA (in the absence of a federal action). Measures may include, but are not necessarily limited to, the following:

- Avoidance of construction activities within DSFLF occupied habitat during the adult flight season, which occurs between July 1 and September 20.
- Installation of construction and post-construction fencing and signage around any avoided occupied habitat.
- Attendance of project personnel to a training program presented by a qualified biologist prior to construction activities.
- Monitoring by a qualified biologist during construction.
- Dust control adjacent to any avoided areas during construction.
- Mitigation for permanent loss of occupied DSFLF habitat.

7.0 CERTIFICATION/QUALIFICATION

The following individuals contributed to the fieldwork and/or preparation of this report:

Ezekiel Cooley	B.S., Natural Resources with an emphasis in Wildlife, Central Michigan University, 2004
Matthew Dimson	B.S., Environmental Science & Policy, California State University Long Beach, 2017
Amir Morales	B.S., Hydrological Sciences, Minor Geographic Information Systems, University of California Santa Barbara, 2001
Laura Moreton	M.S., Biodiversity Survey, University of Sussex, 2007 B.S., Biology, San Diego State University, 2006 A.S., Biology, Southwestern Community College, 2004
Lauren Singleton	M.S., Biology with an emphasis in Ecology and Entomology, California State University Long Beach, 2014 B.S., Biology with an emphasis in Ecology, Minor Chemistry, California State University Long Beach, 2010
Daniel Torres	B.S., Ecology and Natural Resources, Rutgers University, 2013

8.0 REFERENCES

American Ornithological Society. 2021. AOS checklist of North and Middle America birds. July 1, 2021. Retrieved from: http://checklist.aou.org/taxa/.

Baker, R.J., L.C. Bradley, R.D. Bradley, J.W. Dragoo, M.D. Engstrom, R.S. Hoffmann, C.A. Jones, F. Reid, D.W. Rice, and C. Jones. 2003. Revised checklist of North American mammals north of Mexico. Occasional Papers of the Museum, Texas Tech University 223.

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. The Jepson manual: Vascular plants of California. 2nd ed. University of California Press, Berkeley.

California Department of Fish and Game (CDFG) 2012. Staff Report on Burrowing Owl Mitigation. State of California Natural Resources Agency. March 7.

California Department of Fish and Wildlife. 2021a. California Natural Diversity Database and Rarefind. California Department of Fish and Wildlife: Sacramento, California. Retrieved from: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed November 2, 2021.

2021b. California Natural Community List. The Vegetation Classification and Mapping Program. Wildlife & Habitat Data Analysis Branch. August 2021. Retrieved from: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline. Accessed November 2, 2021.

California Native Plant Society. 2021a. CNPS Rare Plant Ranks. Retrieved from: https://www.cnps.org/rare-plants/cnps-rare-plant-ranks. Accessed on November 2, 2021.

2021b. Inventory of Rare and Endangered Plants of California. California Native Plant Society. Retrieved from: http://www.rareplants.cnps.org/. Accessed November 2, 2021.

Emmel, T.C. and J.F. Emmel. 1973. The butterflies of Southern California. Natural History Museum of Los Angeles County, Science Series 26: 1-148.

Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Technical report Y-87-1. Vicksburg (MS): U.S. Army Engineer Waterways Experiment Station. 100 p. with Appendices.

Google Earth. 2021. Aerial Imagery of the Shady View Study Area, 34.055998°, -117.598092°. Aerial Imagery from August 2021. Retrieved from: http://www.google.com/earth/index.html. Accessed November 2, 2021.

Grumbles, B.H. and J.P. Woodley, Jr. 2007. Memorandum: Clean Water Act jurisdiction following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States. June 5. 12 p.

HELIX Environmental Planning, Inc. 2021. Jurisdictional Delineation Letter Report for the Proposed Taxiway Improvements and Relocation of Localizer Equipment Building at Ontario International Airport. February 16.

2020. 2019/2020 Non-breeding Burrowing Owl Survey Report for Potential Development of Ontario International Airport's Parcel Study. February 11.

Holland R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame-Heritage Program, State of California, Department of Fish and Game, Sacramento, 156 pp.

Natural Resources Conservation Service. 2021. Web Soil Survey. United States Department of Agriculture (USDA). Retrieved from: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.Aspx. Accessed November 2, 2021.

Oberbauer, T. 2008. Terrestrial vegetation communities in San Diego County based on Holland's Descriptions, San Diego Association of Governments, San Diego, CA.

Osborne, Kendall H. 2021. Personal communication (email). December 20.

Riley, D.T. 2005. Ordinary High Water Mark. RGL No. 05-05. 4 p.

South Coast Wildlands. 2008. South Coast missing linkages: A wildland network for the South Coast ecoregion. Retrieved from: http://www.scwildlands.org/reports/SCMLRegionalReport.pdf. March.

Sawyer, J.O., T. Keeler-Wolf, and J. Evens. 2009. A manual of California vegetation. 2nd Ed. Sacramento: California Native Plant Society.

Taggart, T.W. 2016. The Center for North American Herpetology: The Academic Portal to North American Herpetology. Retrieved from: http://www.cnah.org/.

U.S. Army Corps of Engineers (USACE). 2015. Federal Register: Clean Water Rule: Definition of "Waters of the United States." 80 FR 37053; 37053-37127

2008a. Regional supplement to the Corps of Engineers wetland delineation manual: Arid west region (Version 2.0). Ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERCD/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

2008b. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Unites States. Technical Report TR-08-12, Ed. R.W. Lichvar, S.M. McColley. Hanover, New Hampshire: Cold Regions Research and Engineering Laboratory.

2007. Questions and Answers for Rapanos and Carabell Decisions. June 5. 21 pp.

--- and EPA. 2007. Jurisdictional Determination Form Instructional Guidebook. May 30. 60 pp.

U.S. Fish and Wildlife Service (USFWS). 2021a. Critical habitat mapping. GIS files provided by USFWS. Retrieved from: https://ecos.fws.gov/ecp/report/table/critical-habitat.html. Accessed November 1, 2021.

2021b. National Wetlands Inventory. Retrieved from: https://www.fws.gov/wetlands/data/google-earth.html. Accessed November 1, 2021.

Appendix A

Plant Species Observed

Appendix A
PLANT SPECIES OBSERVED

Family	Scientific Name	Common Name
ANGIOSPERMS - EUDICOTS		
Arecaceae	*Phoenix canariensis**	Canary island date palm
Bignoniaceae	*Jacaranda mimosifolia**	blue jacaranda
Brassicaceae	*Hirschfeldia incana**	short-pod mustard
Chenopodiaceae	*Salsola tragus**	tumbleweed
Geraniaceae	*Erodium cicutarium**	red stemmed filaree
Scrophulariaceae	*Myoporum* sp.*	myoporum
ANGIOSPERMS - MONOCOTS		
Poaceae	*Bromus diandrus**	common ripgut grass
	Bromus madritensis ssp. *rubens**	red brome
	*Schismus barbatus**	Mediterranean grass

* Non-native species

Appendix B

Animal Species Observed or Detected

Appendix B
ANIMAL SPECIES OBSERVED OR DETECTED

Order	Family	Scientific Name	Common Name
VERTEBRATES			
Reptiles			
Squamata	Phrynosomatidae	*Sceloporus occidentalis*	western fence lizard
Birds			
Accipitriformes	Accipitridae	*Buteo jamaicensis*	red-tailed hawk
	Cathartidae	*Cathartes aura*	turkey vulture
Charadriiformes	Charadriidae	*Charadrius vociferus*	killdeer
Columbiformes	Columbidae	*Columba livia*	rock pigeon
		Zenaida macroura	mourning dove
Passeriformes	Aegithalidae	*Psaltriparus minimus*	bushtit
	Corvidae	*Corvus brachyrhynchos*	American crow
	Passerellidae	*Melospiza melodia*	song sparrow
	Sturnidae	*Sturnus vulgaris**	European starling
	Tyrannidae	*Tyrannus verticalis*	western kingbird
Strigiformes	Strigidae	*Athene cunicularia*†	burrowing owl

* Non-native species

† Observed outside the study area

Appendix C

Representative Site Photographs



Photo 1: Typical non-native/disturbed habitat on the project site.



Photo 2: Typical developed habitat on the project site.

G:\\HeEnpVM\vol2\PROJECTS\HI\HNTBCorporation_00343\HNT-13 OIAA As-needed\Task_Orders\HNT-13.01_ Taxiway Improvements and South Electrical Vault Relocation\Photos\Representative Photos\2021-11-23



Photo 3: One of several storm drains on the project site leading to a concrete lined channel running under the airport property.

G:\\HeEnpVM\vol2\PROJECTS\H\HNTBCorporation_00343\HNT-13 OIAA As-needed\Task_Orders\HNT-13.01_ Taxiway Improvements and South Electrical Vault Relocation\Photos\Representative Photos\2021-11-23

Appendix D

Jurisdictional Delineation Report

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 tel
619.462.0552 fax
www.helixepi.com

February 16, 2021 HNT-13.01

Kim Hughes
HNTB Corporation
2900 South Quincy St. Suite 600
Arlington, VA 22206

Subject: Jurisdictional Delineation Letter Report for the Proposed Taxiway Improvements and Relocation of Localizer Equipment Building at Ontario International Airport

Dear Ms. Hughes:

HELIX Environmental Planning, Inc. (HELIX) conducted a preliminary jurisdictional assessment to identify any jurisdictional resources within Proposed Taxiway Improvements and Relocation of Localizer Equipment Building (project) located at Ontario International Airport (ONT). A review of the jurisdictional resources within and adjacent to the project, is provided below.

This letter presents the results of a jurisdictional delineation conducted by HELIX Environmental Planning, Inc. (HELIX) for the proposed Taxiway Improvements and Relocation of Localizer Equipment Building (project) located at Ontario International Airport (ONT). The delineation was conducted to identify and map existing areas within the project area that are "waters of the U.S." under U.S. Army Corps of Engineers (USACE) jurisdiction pursuant to Section 404 of the Clean Water Act (CWA); waters of the State under Regional Water Quality Control Board (RWQCB) jurisdiction pursuant to Section 401 of the CWA; and streambed habitats under California Department of Fish and Wildlife (CDFW) jurisdiction pursuant to Section 1600 of the California Fish and Game Code. This report presents HELIX's best efforts to quantify jurisdiction within the project site using the current regulations, written policies, and guidance from USACE, RWQCB, and CDFW (collectively, the "regulatory agencies").

PROJECT LOCATION

The approximately 231-acre project site is in the City of Ontario, San Bernardino County, California. generally located south of the Interstate (I-) 10 and west of I-15 (Figure 1, *Regional Location*). The project site is located within Section 25 of Township 1 South, Range 7 West of the Guasti, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2, *Vicinity Map*). Specifically, the project site is located to the northwest of the intersection of S Haven Avenue and Jurupa Street; to the southwest of the intersection of E Airport Drive and S Haven Avenue; to the southwest of the intersection of S Grove Avenue and E Airport Drive; and to the northeast of the intersection of S Grove Avenue and E Mission Boulevard (Figure 3, *Aerial Photograph*).

PROJECT DESCRIPTION

The proposed project consists of the construction, modification, and removal of taxiways and runways; relocation of taxiways; construction of taxiway bypass; relocation of perimeter fencing; relocation of localizer equipment building; and modification of an existing service road (Figure 4, *Site Plan*).

METHODS

Prior to beginning fieldwork, aerial photographs (1 inch = 150 feet), topographic maps (1 inch = 150 feet), USGS quadrangle maps, and National Wetland Inventory maps (U.S. Fish and Wildlife Service 2019) were reviewed. HELIX Regulatory Specialist Ezekiel Cooley conducted the jurisdictional delineation field work on January 12, 2021. Delineation methods used to determine each agency's jurisdictional limits are discussed below.

U.S. Army Corps of Engineers

The USACE waters of the U.S. are determined using current USACE guidelines (Environmental Laboratory 1987, U.S. Army Corps of Engineers [USACE] 2008a). Areas are determined to be waters of the U.S. if there is evidence of regular surface flow (e.g., bed and bank). Jurisdictional limits for these areas are measured according to the presence of a discernible OHWM, which is defined in 33 Code of Federal Regulations (CFR) Section 329.11 as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas." The USACE has issued further guidance on the OHWM (Riley 2005; USACE 2008b), which also was considered in this jurisdictional assessment.

The jurisdictional delineation was conducted in accordance with court decisions (i.e., Rapanos v. United States, Carabell v. United States, and Solid Waste Agency of Northern Cook County v. USACE), as outlined and applied by the USACE (USACE 2007; Grumbles and Woodley 2007); and USACE and U.S. Environmental Protection Agency (EPA; 2007). These publications explain that the EPA and USACE will assert jurisdiction over traditional navigable waters (TNW) and tributaries to TNWs that are a relatively permanent water body (RPW), which has year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation is used to determine if the non-RPW is jurisdictional. As an alternative to the significant nexus evaluation process, a preliminary jurisdictional delineation may be submitted to the USACE. The preliminary jurisdictional delineation treats all waters and wetlands on a site as if they are jurisdictional waters of the U.S. (USACE 2008a). A significant nexus evaluation or preliminary jurisdictional delineation are typically only required for projects that propose impacts to potentially jurisdictional features and, therefore, require a Section 404 permit from the USACE.

Regional Water Quality Control Board

The RWQCB asserts regulatory jurisdiction over activities affecting wetland and non-wetland waters of the State pursuant to Section 401 of the CWA and the State Porter-Cologne Water Quality Control Act. Potential RWQCB jurisdiction would follow the boundaries of USACE jurisdiction for waters of the U.S.

California Department of Fish and Wildlife

The CDFW jurisdictional boundaries are determined based on the presence of riparian vegetation or regular surface flow, if present. Streambeds within CDFW jurisdiction are delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses with surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). This definition for CDFW jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., oak woodland and alluvial fan sage scrub). Jurisdictional limits for CDFW streambeds are defined by the top of bank. Vegetated CDFW habitats are mapped at the limits of streambed-associated vegetation, if present.

RESULTS

The project site supports three drainages that flow beneath the work area through covered concrete channels. The drainages include Deer Creek Channel in the eastern portion of the project site, Cucamonga Creek Channel in the center of the project site, and West Cucamonga Creek Channel in the western portion of the project site. Additionally, the project site includes multiple storm drain inlets that convey flows into the three concrete channels.

Based on the results of the jurisdictional delineation, Cucamonga Creek Channel, Deer Creek Channel, and Western Cucamonga Creek Channel are considered USACE/RWQCB non-wetland waters of the U.S. and CDFW jurisdiction (Figure 5, *Jurisdictional Features*). These jurisdictional features are underground through the extent of the project site.

Cucamonga Creek Channel

Cucamonga Creek Channel is a concrete rectangular channel that runs north to south through the center of the project site and is considered a USACE public works facility. Based on the USGS Guasti quadrangle map, the headwaters of Cucamonga Creek originate approximately seven miles to the north of the project site at the base of Cucamonga Peak in San Gabriel Mountains where it occurs as a natural soft-bottomed creek. Cucamonga Creek generally flows south through Cucamonga Canyon and becomes channelized once it exits the San Gabriel Mountains. Cucamonga Creek Channel flows enter the project site near the northern boundary to the south of Airport Drive. The channel continues for approximately 0.4 mile through the center of the site, flowing underneath the airport taxiway and resurfacing to the south of the taxiway. The channel exits the project site near the southern boundary, just north of the Avion Street. After exiting the project site, Cucamonga Creek Channel flows south for 11 miles to the south of the project site and becomes soft-bottomed just prior to meeting the Santa Ana River at the Prado Flood Control Basin in Riverside County. The Santa Ana River ultimately drains into the Pacific Ocean approximately 35 miles to the southwest of the project site. Soils within Cucamonga Creek Channel on the project site are mapped as Tujunga loamy sand (0 to 5 percent slopes; NRCS 2021; Figure 6, *Soils*). However, native soils are no longer present in Cucamonga Creek Channel due to the full concrete channelization of the creek.

Deer Creek Channel

Deer Creek Channel is a concrete rectangular channel that runs north to south along the eastern project site boundary. Based on the USGS Guasti quadrangle map, the headwaters of Deer Creek originate approximately seven miles to the northeast of the project site at the base of Cucamonga Peak in San Gabriel Mountains where it occurs as a natural soft-bottomed creek. Deer Creek generally flows south through Deer Canyon and becomes channelized once it exits the San Gabriel Mountains. The channel likely collects sheet flow from impervious surfaces in the surrounding area and storm drains that empty into the channel. The majority of flows within Deer Creek Channel empty into Cucamonga Creek Channel near Turner Basin, approximately one mile to the north of project site. Some water is diverted into the channel within the historic flow path of Deer Creek, which flows south from Turner Basin as a mostly natural streambed until it reaches Airport Drive. Deer Creek flows underneath the airport and enters and exits the project site as an underground channel. Deer Creek continues south as an underground channel and surfaces as a concrete trapezoidal channel just north of State Route 60, approximately 1.6 miles to the south of the project site. The channel continues southwest as Lower Deer Creek Channel for approximately 2.1 miles, ultimately draining into Cucamonga Creek Channel. Soils within Deer Creek Channel on the project site are mapped as Tujunga loamy sand (0 to 5 percent slopes; NRCS 2021; Figure 6). However, native soils are no longer present in Deer Creek Channel due to the concrete channelization of the creek.

Western Cucamonga Creek Channel

Western Cucamonga Channel is a concrete rectangular channel that runs north to south along the western project site boundary. Western Cucamonga Creek Channel originates from the percolating basins as Cucamonga Creek exits Cucamonga Canyon, approximately six miles to the northwest of the project site. The channel likely collects sheet flow from impervious surfaces in the surrounding area as well as water collected in the 8th Street storm drains. Western Cucamonga Creek Channel flows mostly underground until it reaches 8th Street Basins. The channel continues south from the basin as an above-ground rectangular concrete channel. The channel passes through the Princeton Basin, and continues five miles south until it reaches the northwestern boundary of the project site. . The channel flows along the western boundary and exits near the southwest corner. After exiting the site, the channel continues south through the Ely Basins and connecting with Cucamonga Creek Channel approximately seven miles south of the project site. Soils within Western Cucamonga Creek Channel within the project site are primarily mapped as Tujunga loamy sand (0 to 5 percent slopes; NRCS 2021; Figure 6). However, native soils are no longer present in Western Cucamonga Creek Channel due to the concrete channelization of the creek.

IMPACTS

The project will require removal and installation of storm drain inlets. The removal and installation of storm drain inlets will be performed in such a way that no incidental fall back to the storm drain system will occur. Since the storm drain inlet activities will not result in direct or indirect impacts to downstream jurisdictional waters, the project would not impact USACE, RWQCB, or CDFW jurisdictional waters. In the absence of impacts to jurisdictional waters, the project would not require regulatory permits from the regulatory agencies.

AVOIDANCE AND MINIMIZATION MEASURES

The project will result in the removal and replacement of several storm drain inlets, which will not require work within USACE, RWQCB, or CDFW jurisdictional waters. No discharge of fill will occur within USACE and/or RWQCB jurisdictional waters and no streambed alterations will occur within CDFW jurisdictional resources, as a result of the proposed project.

The following minimization measures shall be implemented during construction to avoid indirect impacts to downstream jurisdictional waters:

1. General Stormwater Construction Permit compliance.

2. Municipal Storm Drain Permit (MS4) compliance.

3. Source control and treatment control BMPs shall be implemented to minimize the potential contaminants that are generated during and after construction. Source control BMPs and Treatment control BMPs will follow the ONT Storm Water Pollution Prevention Plan (SWPPP) and standard construction BMPs.

4. Employees shall strictly limit their activities, vehicles, equipment, and construction material to the proposed project footprint, staging areas, and designated routes of travel.

CONCLUSION

Based on HELIX's assessment, the project will not result in direct or indirect impacts to jurisdictional resources regulated by the USACE, RWQCB, or CDFW, provided that the jurisdictional avoidance and minimization measures outlined above are adequately implemented during construction of the project. Given the absence of jurisdictional impacts, HELIX does not anticipate that regulatory permits will be required to implement the project.

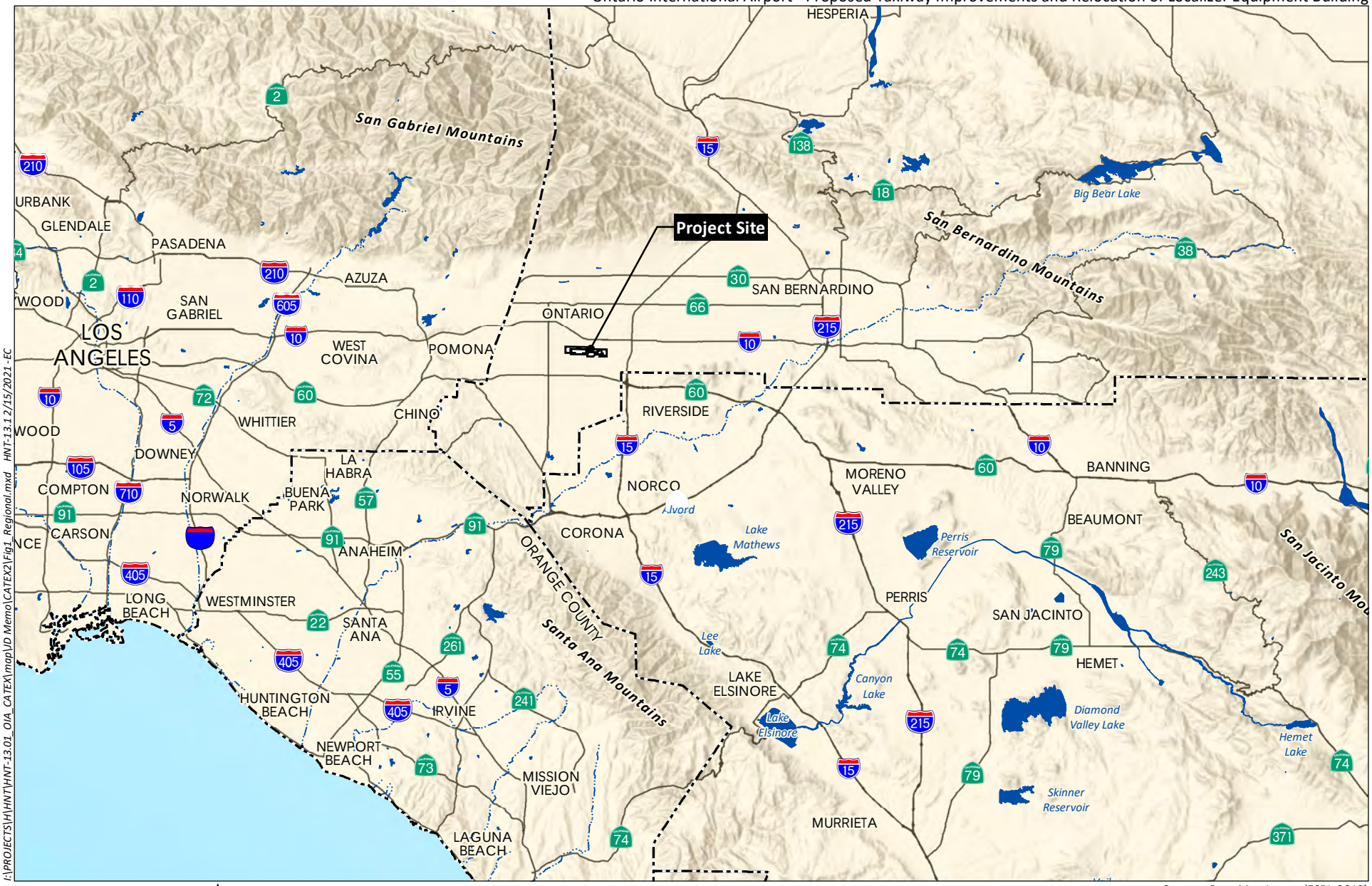
If you have any questions regarding the information presented in this letter report, please contact me at EzekielC@helixepi.com or (949) 234-8770.

Sincerely,

Ezekiel Cooley
Senior Biology Project Manager/Regulatory Specialist

Attachments:

Figure 1: Regional Location
Figure 2: Vicinity Map
Figure 3: Aerial Photograph
Figure 4: Site Plan
Figure 5: Jurisdictional Features
Figure 6: Soils



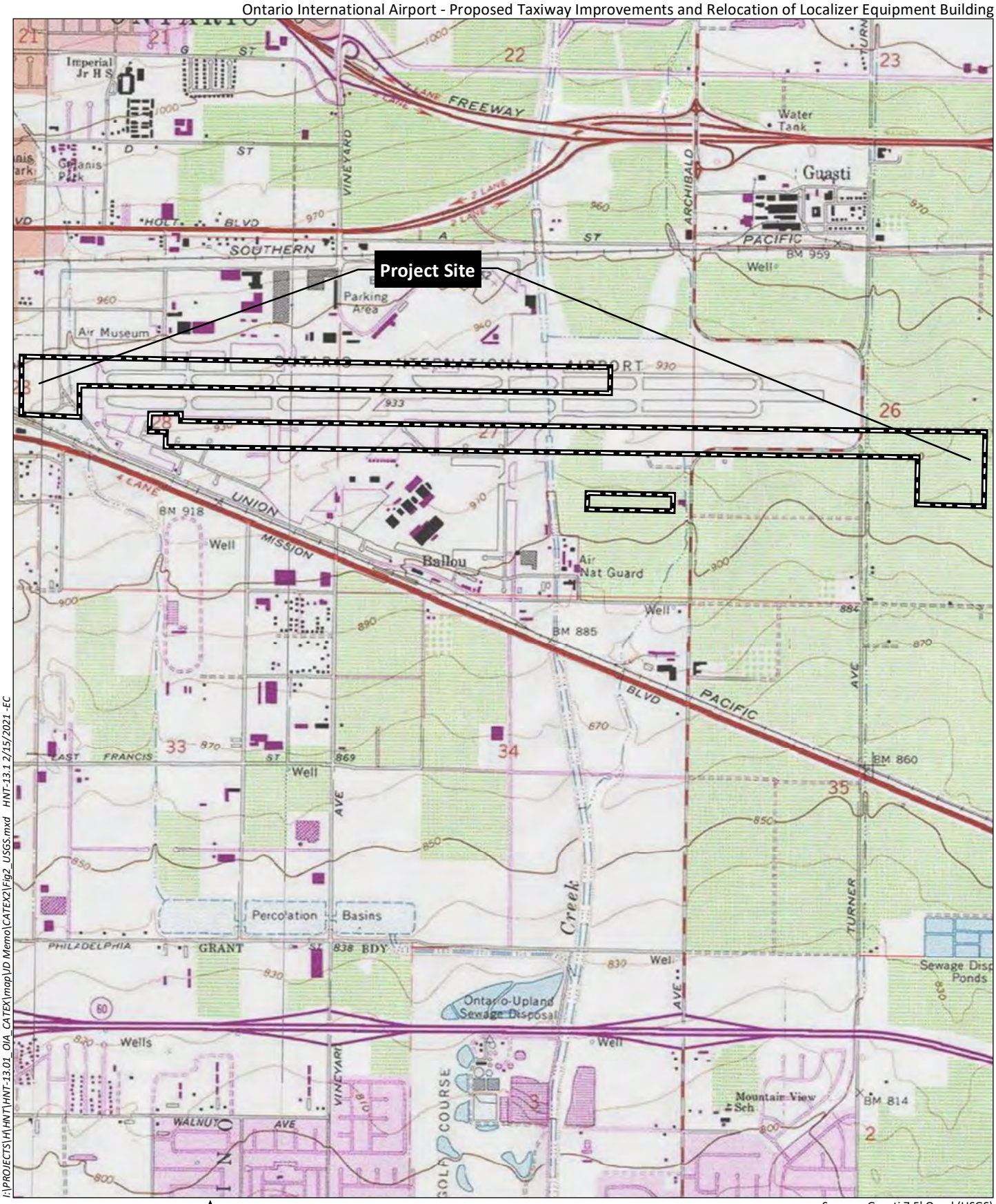
I:\PROJECTS\H\HNT\HNT-13.01_OIA_CATEX\map\DD Memo\CATEX2\Fig1_Regional.mxd HNT-13.1 2/15/2021 -EC

Source: Base Map Layers (ESRI, 2013)

HELIX Environmental Planning

Regional Location

Figure 1



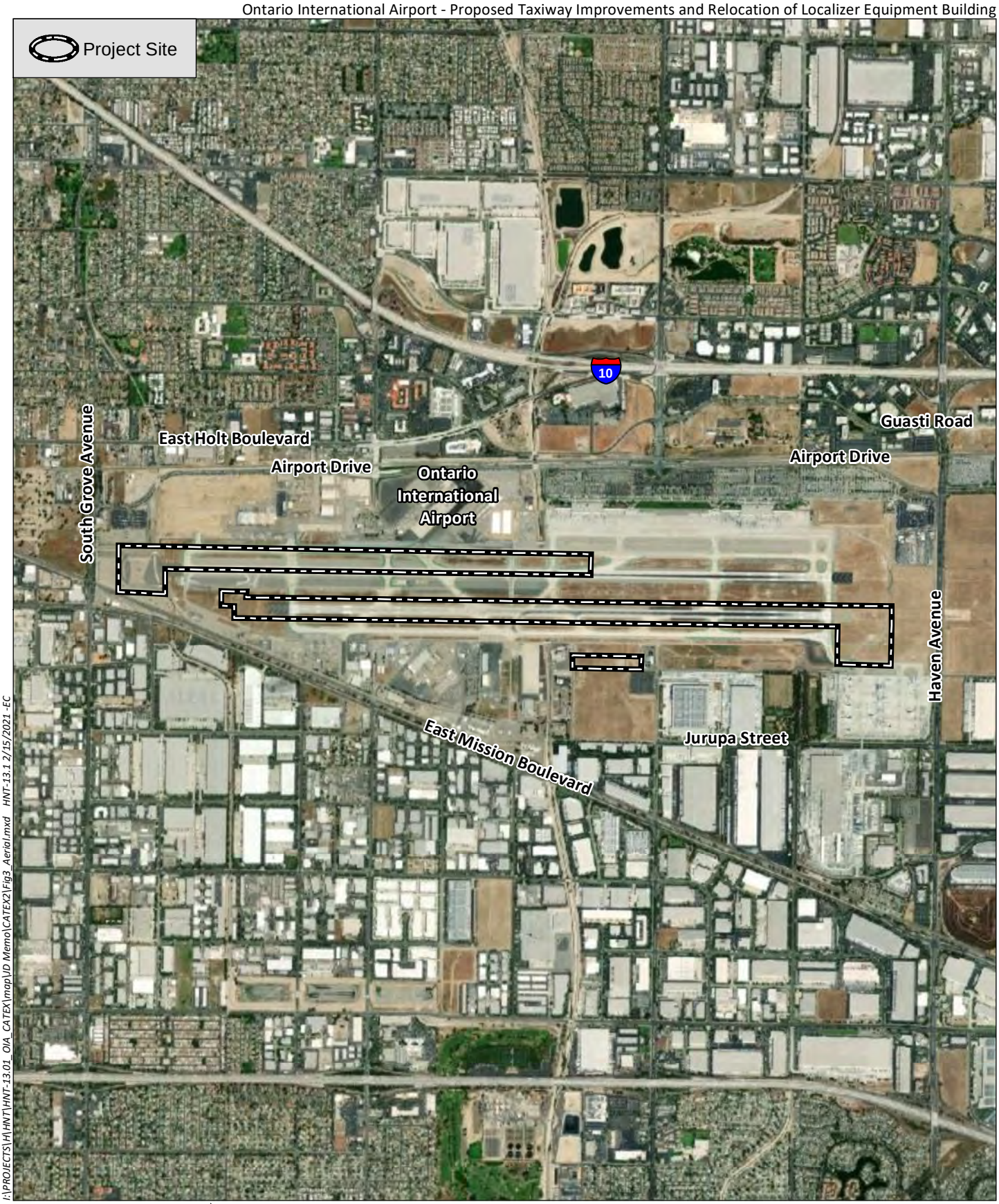
I:\PROJECTS\H\HNT\HNT-13.01_OIA_CATEX\map\JD Memo\CATEX2\Fig2_USGS.mxd HNT-13.1 2/15/2021 -EC

0 2,000 Feet

Source: Guasti 7.5' Quad (USGS)

Vicinity Map

Figure 2



I:\PROJECTS\H\HNT\HNT-13.01_OIA_CATEX\map\JD Memo\CATEX2\Fig3_Aerial.mxd HNT-13.1 2/15/2021 -EC

0 2,500 Feet

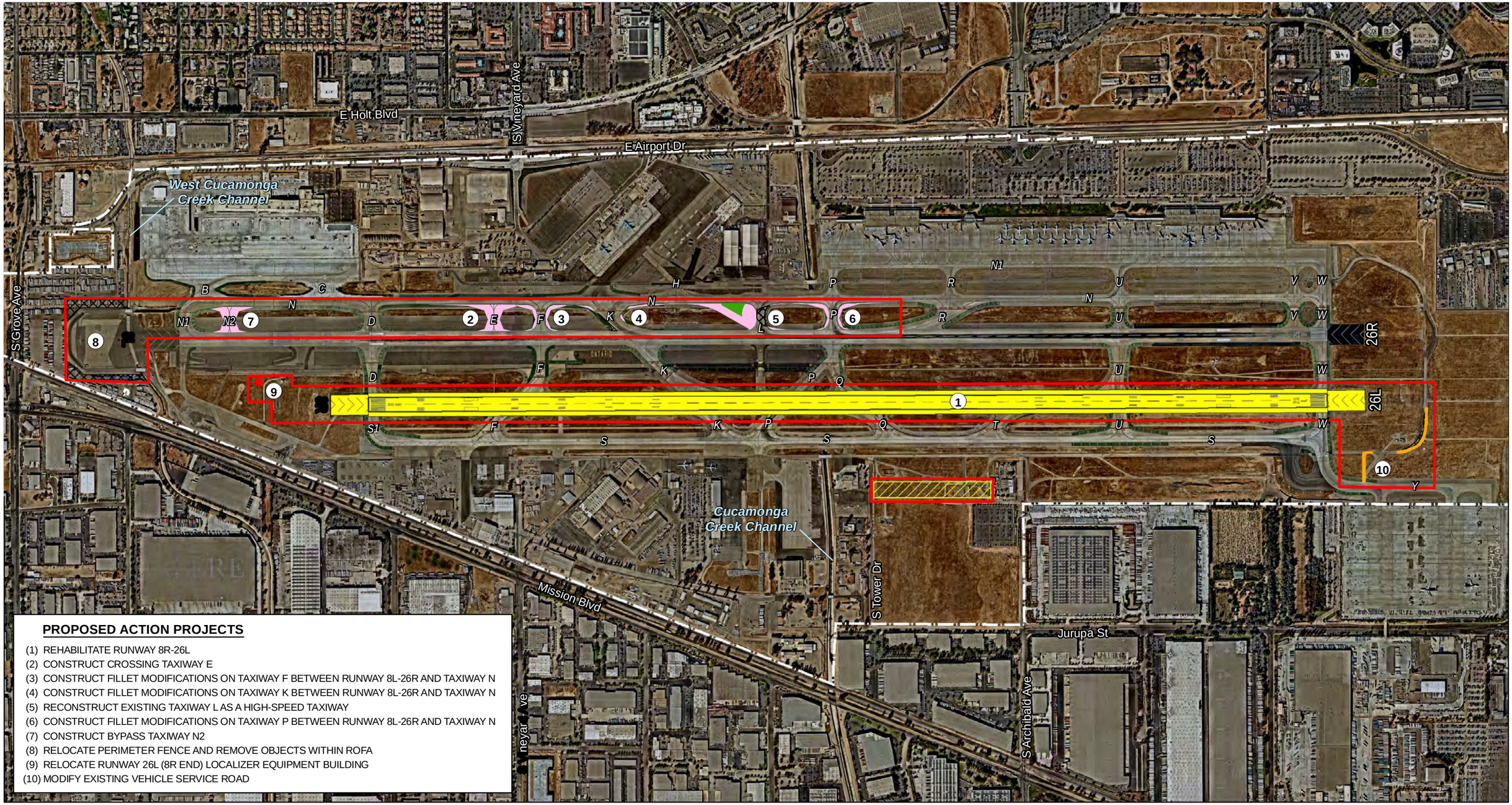
Source: Base Map Layers (Maxar, 2020)

HELIX Environmental Planning

Aerial Photograph

Figure 3

Categorical Exclusion for Runway 8R-26L Rehabilitation and Additional Airfield Improvements at Ontario International Airport



PROPOSED ACTION PROJECTS

(1) REHABILITATE RUNWAY 8R-26L
(2) CONSTRUCT CROSSING TAXIWAY E
(3) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(4) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(5) RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED TAXIWAY
(6) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY P BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(7) CONSTRUCT BYPASS TAXIWAY N2
(8) RELOCATE PERIMETER FENCE AND REMOVE OBJECTS WITHIN ROFA
(9) RELOCATE RUNWAY 26L (8R END) LOCALIZER EQUIPMENT BUILDING
(10) MODIFY EXISTING VEHICLE SERVICE ROAD

Legend

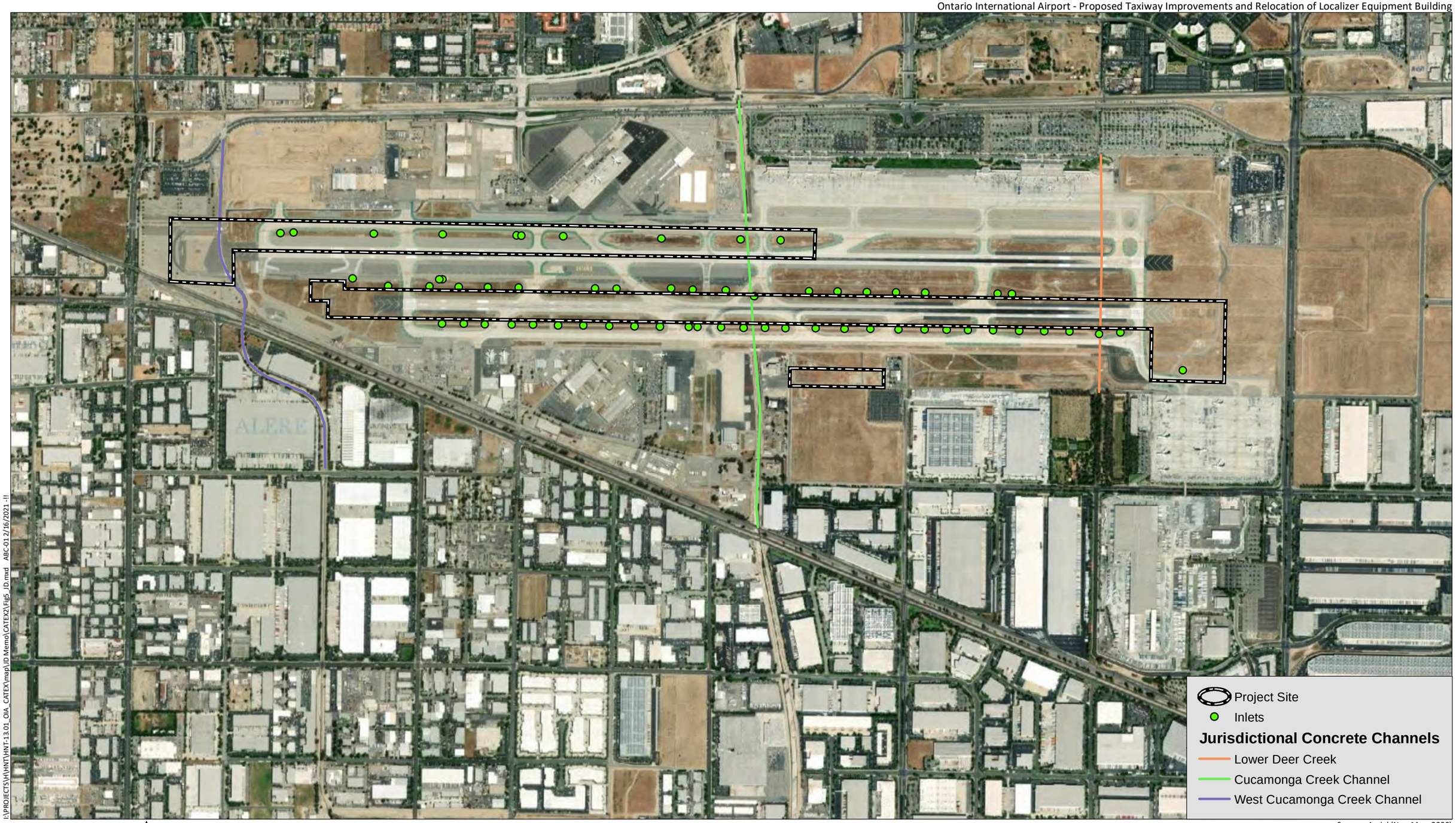
- Area of Potential Effects
- Runway 8R-26L Pavement Rehabilitation
- Proposed Taxiway Pavement
- Proposed Pavement Removal
- Proposed Painted Island
- Proposed Vehicle Service Road Pavement
- Contractor Staging Area
- Airport Property Line
- Relocated Runway 26L Localizer Equipment Building

Figure 2
Area of Potential Effects

N

0 250 500 1,000 Feet

Sources: OIAA, Nearmap, HNTB Analysis



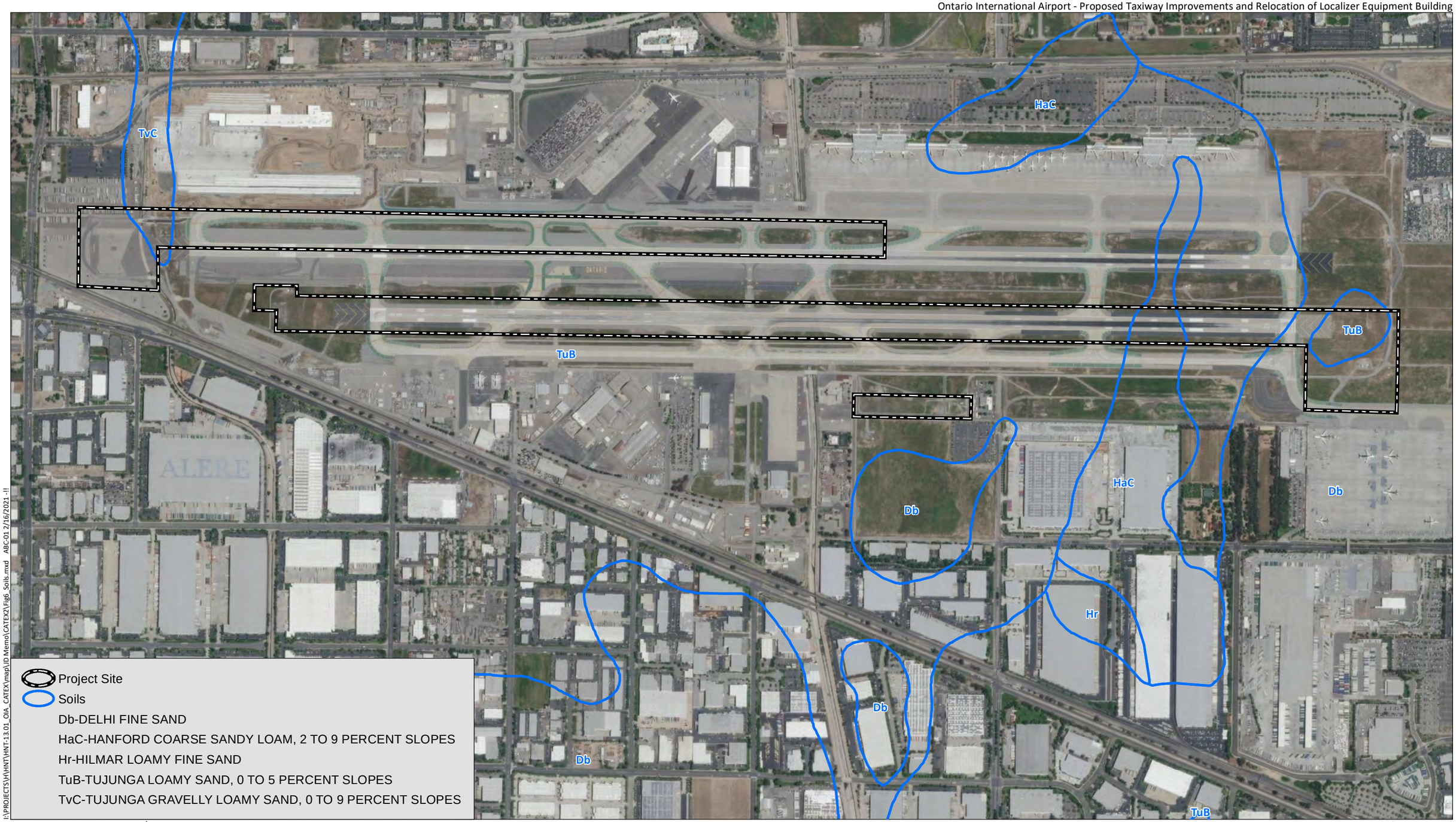
Source: Aerial (NearMap, 2020)

I:\PROJECTS\HNT\HNT-13.01_OIA_CATEX\map\JD Memo\CATEX2\Fig5_JD.mxd ABC-01 2/16/2021 -II

HELIX Environmental Planning

Jurisdictional Features

Figure 5



Project Site
Soils
Db-DELHI FINE SAND
HaC-HANFORD COARSE SANDY LOAM, 2 TO 9 PERCENT SLOPES
Hr-HILMAR LOAMY FINE SAND
TuB-TUJUNGA LOAMY SAND, 0 TO 5 PERCENT SLOPES
TvC-TUJUNGA GRAVELLY LOAMY SAND, 0 TO 9 PERCENT SLOPES

0 1,000 Feet

Source: Aerial (NearMap, 2020)

I:\PROJECTS\HVHNT\HNT-13.01_OIA_CATEX\map\UD Memo\CATEX2\Fig6_Soils.mxd ABC-01 2/16/2021 -I!

HELIX Environmental Planning

Soils

Figure 6

Appendix E

Rare Plant Species Potential to Occur

Appendix E
RARE PLANT SPECIES POTENTIAL TO OCCUR[1]

Species Name	Common Name	Status[2]	Habitat, Ecology, and Life History	Potential to Occur[3]
Chorizanthe parryi var. *parryi*	Parry's spineflower	--/-- CRPR 1B.1	Annual herb. Occurs in sandy soil on flats and foothills in mixed grassland, coastal sage scrub, and chaparral communities. Elevation range 275-1220 m. Flowering period May-Jun.	**None.** The study area lacks suitable sandy soil and mixed grassland, coastal sage scrub, and chaparral communities. This species has been reported approximately five miles northeast of the study area.
Cladium californicum	California saw-grass	--/-- CRPR 2B.2	Perennial rhizomatous herb. Occurs in freshwater and alkaline wetlands, meadows, and seeps. Elevation range -10-2150 m. Flowering period Jun-Sep.	**None.** The study area lacks wetlands, meadows, and seeps. Although this species has been reported within five miles of the study area, the report is historic (greater than 50 years old).
Horkelia cuneata var. *puberula*	Mesa horkelia	--/-- CRPR 1B.1	Perennial herb. Occurs in sandy or gravelly areas within chaparral, coastal sage scrub, and coastal mesas. Elevation range 70-870. Flowering period Mar-Jul.	**None.** The study area lacks suitable chaparral, coastal sage scrub, and coastal mesas to support this species. Although this species has been reported within five miles of the study area, the report is historic (greater than 50 years old).
Muhlenbergia utilis	Aparejo grass	--/-- CRPR 2B.2	Perennial rhizomatous herb. Occurs in coastal scrub, chaparral, lower montane coniferous forest, meadows and seeps. Usually found near streams or seeps. Elevation range 100-2000 m. Flowering period Mar-Oct.	**None.** The study area lacks suitable habitat as well as any streams or seeps to support this species. Although this species has been reported within five miles of the study area, the report is historic (greater than 50 years old).

Appendix E
RARE PLANT SPECIES POTENTIAL TO OCCUR[1]

Species Name	Common Name	Status[2]	Habitat, Ecology, and Life History	Potential to Occur[3]
Navarretia prostrata	Prostrate vernal pool navarretia	--/-- CRPR 1B.2	Annual herb. Occurs in alkaline floodplain, meadows, seeps, and vernal pools within coastal scrub and valley and foothill grassland. Elevation range below 700 m. Flowering period Apr-Jul.	**None.** The study area lacks suitable alkaline floodplain, meadows, seeps, and vernal pools to support this species. Although this species has been reported within five miles of the study area, the report is historic (greater than 50 years old).
Phacelia stellaris	Brand's star phacelia	--/-- CRPR 1B.1	Annual herb. Grows in open areas in coastal scrub and coastal dune habitat. Elevation range 3-370 m. Flowering period Mar-Jun.	**None.** The study area does not support coastal scrub or coastal dune habitat. This species has been reported approximately four miles to the northeast of the study area.
Pseudognaphalium leucocephalum	White rabbit-tobacco	--/-- CRPR 2B.2	Biennial or short-lived perennial herb. Occurs in sandy and gravelly benches, dry stream and canyon bottoms within woodland, coastal scrub, and chaparral. Elevation range below 500 m. Flowering period Jul-Oct.	**None.** The study area lacks sandy and gravelly benches, dry stream and canyon bottoms that occur in suitable habitat support this species. Although this species has been reported within five miles of the study area, the report is historic (greater than 50 years old).

Appendix E
RARE PLANT SPECIES POTENTIAL TO OCCUR[1]

Species Name	Common Name	Status[2]	Habitat, Ecology, and Life History	Potential to Occur[3]
Symphyotrichum defoliatum	San Bernardino aster	--/-- CRPR 1B.2	Perennial herb. Occurs in vernally mesic soils within cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, grasslands, streams, springs, and disturbed ditches. Elevation range 0-2050 m. Flowering period Jul-Nov.	**None.** The study area lacks suitable vernally mesic soils to support this species. The nearest reported occurrence of this species is approximately five miles southeast of the study area in what is now a residential development.

Source: HELIX (2021)

[1] Sensitive species reported within the Prado Dam and Corona North quadrangles based on a database search conducted on CNDDB and CNPS.

[2] Listing is as follows: F = Federal; S = State of California; E = Endangered; T = Threatened.
CRPR = California Rare Plant Rank: 1A – presumed extinct; 1B – rare, threatened, or endangered in California and elsewhere; 2A – rare, threatened, or endangered in California and elsewhere; 2B – rare, threatened, or endangered in California but more common elsewhere. Extension codes: .1 – seriously endangered; .2 – moderately endangered; .3 – not very endangered.

[3] Potential to Occur is assessed as follows: **None**: Habitat suitable for species survival does not occur on the study area, the study area is not within geographic range of the species, and/or the study area is not within the elevation range of the species; **Low**: Suitable habitat is present on the study area but of low quality and/or small extent. The species has not been recorded recently on or near the study area. Although the species was not observed during surveys for the current project, the species cannot be excluded with certainty; **Moderate**: Suitable habitat is present on the study area and the species was recorded recently near the study area; however, the habitat is of moderate quality and/or small extent. Although the species was not observed during surveys for the current project, the species cannot be excluded with certainty; **High**: Suitable habitat of sufficient extent is present on the study area and the species has been recorded recently on or near the study area, but was not observed during surveys for the current project. However, focused/protocol surveys are not required or have not been completed; Presumed **Present**: The species was observed during focused surveys for the current project and is assumed to occupy the study area; **Presumed Absent**: Suitable habitat is present on the study area but focused surveys for the species were negative.

Appendix F

Sensitive Animal Species Potential to Occur

Appendix F
SENSITIVE ANIMAL SPECIES POTENTIAL TO OCCUR[1]

Species Name	Common Name	Status[2]	Habitat, Ecology, and Life History	Potential to Occur[3]
Invertebrates				
Bombus crotchii	Crotch's bumble bee	--/SCE	Coastal California east to the Sierra-Cascade crest and south into Mexico and is associated with grassland and scrub habitats near the coast. Species' food genera include *Antirrhinum* spp., *Clarkia* spp., *Dendromecon* spp., *Eriogonum* spp., *Eschscholzia* spp., *Lupinus* spp., *Medicago* spp., *Phacelia* spp., and *Salvia* spp. Nests are underground and commonly consist of abandoned rodent nests.	**Not Expected.** Suitable habitat does not occur on the project site.
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	FE/--	Found only within the Delhi Sands formation in San Bernardino and Riverside Counties. Requires wholly or partly consolidated dunes with sparse vegetation.	**Moderate.** Suitable habitat occurs on site, however focused surveys in habitat adjacent to the project site 2019 and 2020 were negative.
Reptiles				
Anniella stebbinsi	Southern California legless lizard	--/SSC	Occurs in moist warm loose soil with plant cover. May be found in coastal sand dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks.	**None.** Although this species has been reported within five miles of the study area, the study area lacks suitable loose soils or stream terraces to support this species. The closest reported occurrence is approximately one mile to the south of the study area but has since been developed.

Appendix F
SENSITIVE ANIMAL SPECIES POTENTIAL TO OCCUR[1]

Species Name	Common Name	Status[2]	Habitat, Ecology, and Life History	Potential to Occur[3]
Arizona elegans occidentalis	California glossy snake	--/SSC	Most common in desert habitats, but also occurs in chaparral, sagebrush, valley-foothill hardwood, pine-juniper, and annual grassland. Associated with sandy open areas with sparse shrub cover but can also occur in rocky habitats.	**None.** The study area lacks suitable chaparral and pine-juniper to support this species. Although this species has been reported within five miles of the study area, the report is historic (greater than 50 years old).
Phrynosoma blainvillii	coast horned lizard	--/SSC	Coastal sage scrub and open areas in chaparral, oak woodlands, and coniferous forests with sufficient basking sites, adequate scrub cover, and areas of loose soil; require native ants, especially harvester ants (*Pogonomyrmex* spp.), and are generally excluded from areas invaded by Argentine ants (*Linepithema humile*).	**None.** The study area lacks chaparral and coniferous forests to support this species**.** The closest occurrence of this species was reported approximately five miles to the northeast of the study area in what is now a commercial development.
Birds				
Agelaius tricolor	tricolored blackbird	SCE/SSC	Breeds in dense stands of cattails (*Typha* sp.) or bulrushes (*Schoenoplectus* sp./*Scirpus* sp.) located within large freshwater marshes. Forages in adjacent open habitats, such as agricultural fields, pastures, or grasslands.	**None**. The study area lacks suitable freshwater marsh or bulrush and cattail stands required by this species. The closest occurrence of this species was approximately two miles to the southeast of the study area in a basin.
Athene cunicularia	burrowing owl	--/SSC	Typical habitat is grasslands, open scrublands, agricultural fields, and other areas where there are ground squirrel burrows or other areas in which to burrow.	**Presumed present.** This species is currently located on the study area. Focused surveys in 2019 and 2020 both yielded positive findings.

Appendix F
SENSITIVE ANIMAL SPECIES POTENTIAL TO OCCUR[1]

Species Name	Common Name	Status[2]	Habitat, Ecology, and Life History	Potential to Occur[3]
Laterallus jamaicensis coturniculus	California black rail	ST/SFP	Occurs most commonly in tidal emergent wetlands dominated by pickleweed, or in brackish marshes supporting bulrushes in association with pickleweed. Usually found within the immediate vicinity of tidal sloughs.	**None**. Although this species has been reported within five miles of the study area, the report is historic. This species is presumed to be extirpated from southern California. Reported occurrences are historic (greater than 50 years old).
Polioptila californica	coastal California gnatcatcher	FT/SSC	Occurs in coastal sage scrub and very open chaparral.	**None.** The study area does not have coastal sage scrub or open chapparal to support this species. Although this species has been reported within five miles of the study area, that area has been developed for residential housing.
Mammals				
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	--/SSC	Herbaceous openings within coastal sage scrub, chaparral, grasslands, and desert scrub. Often associated with sandy, rocky, or gravelly substrates.	**None.** Although this species has been reported within five miles of the study area, the area lacks coastal sage scrub and associated substrates. This species is presumed to be extirpated from San Bernardino County.
Dipodomys merriami parvus	San Bernardino kangaroo rat	FE/SSC	Generally associated with alluvial fan sage scrub, but also occurs in sage scrub, chaparral, and grassland in proximity to alluvial fan sage scrub habitats.	**None.** Although this species has been reported within five miles of the study area, the study area lacks alluvial fan sage scrub and associated habitats. This species is presumed to be extirpated from San Bernardino County.

Appendix F
SENSITIVE ANIMAL SPECIES POTENTIAL TO OCCUR[1]

Species Name	Common Name	Status[2]	Habitat, Ecology, and Life History	Potential to Occur[3]
Dipodomys stephensi	Stephens' kangaroo rat	FE/ST	Primarily occurs in sparsely vegetated areas within grassland habitats, but also found in open coastal scrub habitat. Feeds on filaree (*Erodium* sp.) and brome (*Bromus* sp.) seeds. Dig burrows in firm soil or use abandoned pocket gopher burrows.	**None.** Although the study area has *Erodium* species and *Bromus* species, the habitat consists more of a mixture of non-native vegetation than a grassland and soils on-site are unsuitable for the species. Additionally the nearest occurrence is 14 miles southeast of the project site.
Eumops perotis californicus	western mastiff bat	--/SSC	Roosts under exfoliating rock slabs on cliff faces and occasionally in large boulder crevices and building cracks. Forages in a variety of open areas, including washes, floodplains, chaparral, coastal sage scrub, woodlands, ponderosa pine forests, grassland, and agricultural areas.	**Low.** Although this species has been reported within five miles of the study area, and the study area lacks suitable rock slabs and cliff faces for this species to roost. The closest occurrence was reported north of the study area at Alta Loma High School.
Lasiurus xanthinus	western yellow bat	--/SSC	Roosts in trees and are commonly found in palms and cottonwoods. Typically forages over water and among trees within riparian, desert riparian, desert wash, and palm oasis habitats.	**None.** Although this species has been reported within five miles of the study area, the study area lacks suitable roosting habitat such as palms and cottonwoods, and lacks foraging habitat of open water and riparian, desert wash, or palm oasis habitat. The closest occurrence was reported north of the study area near Alta Loma.
Neotoma lepida intermedia	San Diego desert woodrat	--/SSC	Open chaparral, coastal sage scrub, pinyon-juniper, and Joshua tree habitats. This species builds large, stick nests in rock outcrops or around clumps of cactus or yucca.	**None.** This species has been reported over five miles away of the study area and the study area lacks suitable nesting habitat such as rock outcrops or cactus.

Appendix F
SENSITIVE ANIMAL SPECIES POTENTIAL TO OCCUR[1]

Species Name	Common Name	Status[2]	Habitat, Ecology, and Life History	Potential to Occur[3]
Perognathus longimembris brevinasus	Los Angeles pocket mouse	--/SSC	Sandy, gravelly, or stony soils within coastal scrub, alluvial sage scrub, and grassland habitats.	**None**. Although this species has been reported within five miles of the study area, the study area lacks suitable soils and suitable habitat such as alluvial sage scrub. The closest occurrence was northeast of the study area in relict alluvial fan sage scrub.

Source: HELIX (2021)

[1] Sensitive species reported within the Guasti quadrangle based on a database search conducted on CNDDB.

[2] Listing is as follows: F = Federal; S = State of California; E = Endangered; T = Threatened; CE = Candidate Endangered; CT = Candidate Threated; FP = Fully Protected; SSC = State Species of Special Concern. [3] Potential to Occur is assessed as follows. **None**: Species is so limited to a particular habitat that it cannot disperse across unsuitable habitat (*e.g.* aquatic organisms), and habitat suitable for its survival does not occur on the study area; **Not Expected**: Species moves freely and might disperse through or across the study area, but suitable habitat for residence or breeding does not occur on the study area (includes species recorded during surveys but only as transients); **Low**: Suitable habitat is present on the study area but of low quality and/or small extent. The species has not been recorded recently on or near the study area. Although the species was not observed during surveys for the current project, the species cannot be excluded with certainty; **Moderate**: Suitable habitat is present on the study area and the species was recorded recently near the study area; however, the habitat is of moderate quality and/or small extent. Although the species was not observed during surveys for the current project, the species cannot be excluded with certainty; **High**: Suitable habitat of sufficient extent for residence or breeding is present on the study area and the species has been recorded recently on or near the study area, but was not observed during surveys for the current project. However, focused/protocol surveys are not required or have not been completed; **Presumed Present**: The species was observed during biological surveys for the current project and is assumed to occupy the study area; **Presumed Absent**: Suitable habitat is present on the study area but focused/protocol surveys for the species were negative.

Appendix G

2019/2020 Non-Breeding Burrowing Owl Survey Report

HELIX Environmental Planning, Inc.
16485 Laguna Canyon Road
Suite 150
Irvine, CA 2618
949.234.8770 **tel**
619.462.1515 **fax**
www.**helixepi**.com

February 11, 2020 OIA-01

Mr. Keith Owens
Ontario International Airport Authority
1923 E Avion Avenue
Ontario, CA 91761

Subject: 2019\2020 non-breeding Burrowing Owl Survey Report for Potential Development of Ontario International Airport's Parcel Study

Dear Mr. Owens:

This letter report presents the results of the 2019 non-breeding season burrowing owl (*Athene cunicularia*; BUOW) survey conducted by HELIX Environmental Planning, Inc. (HELIX) for the Ontario International Airport (study area) located in the City of Ontario, San Bernardino County, California. The survey was conducted in accordance with the California Department of Fish and Wildlife (CDFW; previously California Department of Fish and Game [CDFG]) Staff Report on BUOW Mitigation (CDFG 2012). This letter report describes the methods used to perform the survey and the survey results.

STUDY AREA LOCATION

The 322-acre study area is generally located south of the Interstate (I-) 10 and west of I-15 (Figure 1, *Regional Location*). The study area is located within Section 25 of Township 1 South, Range 7 West of the Guasti, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2, *Vicinity Map*). Specifically, the study area is located to the northwest of the intersection of S Haven Avenue and Jurupa Street; to the northwest and southwest of the intersection of E Airport Drive and S Haven Avenue; and to the southwest and southeast of the intersection of S Grove Avenue and E Airport Drive (Figure 3, *Aerial Photograph*). The study area comprises approximately 320 acres of suitable burrowing owl habitat.

STUDY AREA DESCRIPTION

The study area is located directly on and surrounding the tarmac of the Ontario International Airport. The study area is dominated by non-native grass species, such as common ripgut grass (*Bromus diandrus*), puncture vine (*Tribulus terestris*), *red* brome (*Bromus madritensis* ssp. *rubens*), and slender oat (*Avena barbata*), which are maintained as required for weed abatement. The topography of the study area is mostly flat with elevations ranging from 902 feet above mean sea level (AMSL) near the southeast corner to 967 feet AMSL near the northeast corner. Immediate surrounding land uses include the commercial buildings to the north, east, south, and west.

METHODS

The focused BUOW survey was conducted according to the CDFW BUOW survey guidelines (CDFG 2012), which includes Part I Habitat Assessment and Focused Burrow Survey and Part II Focused BUOW Surveys. The CDFW BUOW survey guidelines are described in further detail below.

Part I: Habitat Assessment and Focused Burrow Survey

Prior to conducting the habitat assessment, HELIX consulted the California Natural Diversity Database (CNDDB) to determine the nearest BUOW occurrence(s). A habitat assessment was conducted by HELIX biologists Ezekiel Cooley and Lauren Singleton on November 1, 2018 to determine whether the study area supports suitable BUOW habitat. A focused burrow survey was conducted concurrently with the habitat assessment. All suitable burrows (i.e., greater than 11 centimeters [cm] in height and width and greater than 150 cm in depth) and burrow surrogates were recorded using a handheld Global Positioning System (GPS) unit (Figure 4, *Suitable Burrow and Transect Locations*). The habitat assessment and focused burrow survey were conducted prior to commencement of the BUOW focused surveys. The assessment was conducted on the study area and within a 150-meter (approximately 500-foot) buffer zone around the periphery of the study area (survey area). The survey area was slowly walked and assessed for suitable BUOW habitat, including:

- disturbed low-growing vegetation within grassland and shrublands (less than 30 percent canopy cover);
- gently rolling or level terrain;
- areas with abundant small mammal burrows, especially California ground squirrel (*Otospermophilus beecheyi*) burrows;
- fence posts, rocks, or other low perching locations; and
- man-made structures, such as earthen berms, debris piles, and cement culverts.

All potential burrows were checked for signs of recent owl occupation. Signs of occupation include:

- pellets/casting (regurgitate fur, bones, and/or insect parts);
- white wash (excrement); and/or
- feathers.

Part II: Locating Burrowing Owls

Since suitable habitat and burrows were observed within the survey area during the habitat assessment, non-breeding focused BUOW surveys were conducted to determine whether the survey area supports BUOW. The focused surveys consisted of four (4) non-breeding season surveys, spread evenly, throughout the nonbreeding season, that were performed by Mr. Cooley and Ms. Singleton and HELIX biologists Matthew Dimson, Amy Lee, and Daniel Torres between October 8, 2019 and January 14, 2020. (Table 1 *Survey Information*)

The biologists walked transects spaced no greater than 20 meters apart (approximately 65 feet) to allow for 100 percent visual coverage of all suitable habitat within the survey area (Figure 4). The biologists walked slowly and methodically, closely checking suitable habitat within the survey area for BUOW diagnostic sign (e.g., molted feathers, pellets/castings, or whitewash at or near a burrow entrance) and individual BUOW. If observed, BUOW sign and BUOW observations were recorded with a GPS unit. Inaccessible areas of the survey area were visually assessed using binoculars.

Table 1
Survey Information

	Biologist	Start/Stop Time	Start/Stop Weather Conditions	Survey Results
10/08/19	Ezekiel Cooley Lauren Singleton	0715-0900	62°F, wind 0-1 mph, 0% clouds 69°F, wind 1-2 mph, 0% clouds	• Active Burrow #1: One adult was observed next to a grated drain with a burrow located to the west of the drain.
10/11/19	Ezekiel Cooley Lauren Singleton	0710-0900	67°F, wind 4-5 mph, 0% clouds 71°F, wind 4-5 mph, 0% clouds	• Active Burrow #2: One adult was in a cement culvert.
10/15/19	Lauren Singleton Daniel Torres	0710-1000	56°F, wind 3-4 mph, 0% clouds 73°F, wind 1-2 mph, 0% clouds	• No BUOW detected.
11/05/19	Matthew Dimson Lauren Singleton	0715-0945	61°F, wind 0-1 mph, 0% clouds 73°F, wind 0-1 mph, 0% clouds	• No BUOW detected.
11/08/19	Matthew Dimson Lauren Singleton	0730-0915	61°F, wind 2-3 mph, 0% clouds 77°F, wind 2-3 mph, 0% clouds	• Active Burrow #2: One adult was in a cement culvert.
11/12/19	Amy Lee Lauren Singleton	0715-0945	55°F, wind 0-1 mph, 5% clouds 77°F, wind 0-1 mph, 0% clouds	• No BUOW detected.
12/03/19	Matthew Dimson Lauren Singleton	0800-1000	56°F, wind 0-1 mph, 100% clouds 63°F, wind 0-1 mph, 100% clouds	• No BUOW detected.
12/06/19	Matthew Dimson Lauren Singleton	0730-0930	50°F, wind 0-1 mph, 30% clouds 63°F, wind 2-3 mph, 50% clouds	• No BUOW detected.
12/10/19	Matthew Dimson Lauren Singleton	0710-0930	46°F, wind 1-2 mph, 20% clouds 55°F, wind 0-1 mph, 80% clouds	• No BUOW detected.
01/07/20	Ezekiel Cooley Matthew Dimson	0715-0900	46°F, wind 0-1 mph, 15% clouds 55°F, wind 0-1 mph, 20% clouds	• Active Burrow #3: One adult was observed below a grated drain with a burrow located on the south side of the drain.
1/10/20	Ezekiel Cooley Matthew Dimson	0710-0850	43°F, wind 2-3 mph, 100% clouds 50°F, wind 1-2 mph, 100% clouds	• No BUOW detected.
01/14/20	Ezekiel Cooley Matthew Dimson	0700-0900	43°F, wind 0-1 mph, 100% clouds 47°F, wind 0-1 mph, 100% clouds	• No BUOW detected.

RESULTS

Suitable BUOW habitat was observed within the survey area during the habitat assessment, including low-growing vegetation within the non-native grassland. Several burrows and burrow surrogates, such as vertical corrugated metal pipe storm drain risers, that could potentially be used by BUOWs were observed within the survey area (Figure 4). Suitable foraging habitat was observed within and adjacent to the survey area. There are CNDDB records of BUOWs within the survey area from 2007 and 2013 (CDFW 2019).

A total of three active burrows were detected within the survey area (Figure 4). One active burrow was located on the western end of the tarmac (Active Burrow [AB]-1) and two active burrows were located on the northeastern end of the tarmac (Active Burrow [AB]-2 and AB-3). A summary of observations is provided below.

AB-1 was on the study are in the middle of the tarmac between the two runways, approximately 2,100 feet to the northwest of South Vineyard Avenue and Avion Drive intersection. One adult BUOW was observed next to a grated drain with a burrow located to the west of the drain. This adult was only observed once on October 5, 2019 and was not present on subsequent surveys.

AB-2 was located on the eastern portion of the study area, approximately 2,200 feet to the southwest of South Haven Avenue and East Airport Drive. One adult BUOW was observed in a cement culvert on October 11 and November 8, 2019. The BUOW was not present on subsequent surveys.

AB-3 was located on the eastern portion of the study area, approximately 3,000 feet to the southwest of South Haven Avenue and East Airport Drive. One adult was observed below a grated drain with a burrow located on the south side of the drain. This adult was observed only once on January 7, 2020.

The locations of all suitable burrows, BUOW sign, and occupied burrows observed within and adjacent to the study area are shown on Figure 4.

CONCLUSION

A total of three active burrows were detected within the survey area. One adult BUOW was observed at each active burrow: AB-1, AB-2, and AB-3. AB-1 and AB-2 had no adult BUOW present during the final series of surveys.

These surveys are intended to document the non-breeding season activity on the survey area and may not be considered conclusive findings by CDFW even if BUOW are observed. A breeding season focused survey may be required to determine the full extent of use on the survey area.

In addition to breeding season protocol surveys, a take avoidance (pre-construction) survey would also be required and shall be conducted within 14 days prior to ground disturbance in accordance with CDFW Staff Report on BUOW Mitigation (2012). If ground-disturbing activities are delayed more than 14 days after the pre-construction survey has been completed, the study area must be resurveyed.

If you have any questions regarding the information presented in this letter report, please contact Ezekiel Cooley (EzekielC@helixepi.com) or Lauren Singleton (LaurenS@helixepi.com) at (949) 234-8770.

Sincerely,



Ezekiel Cooley
Biologist



Lauren Singleton
Biologist

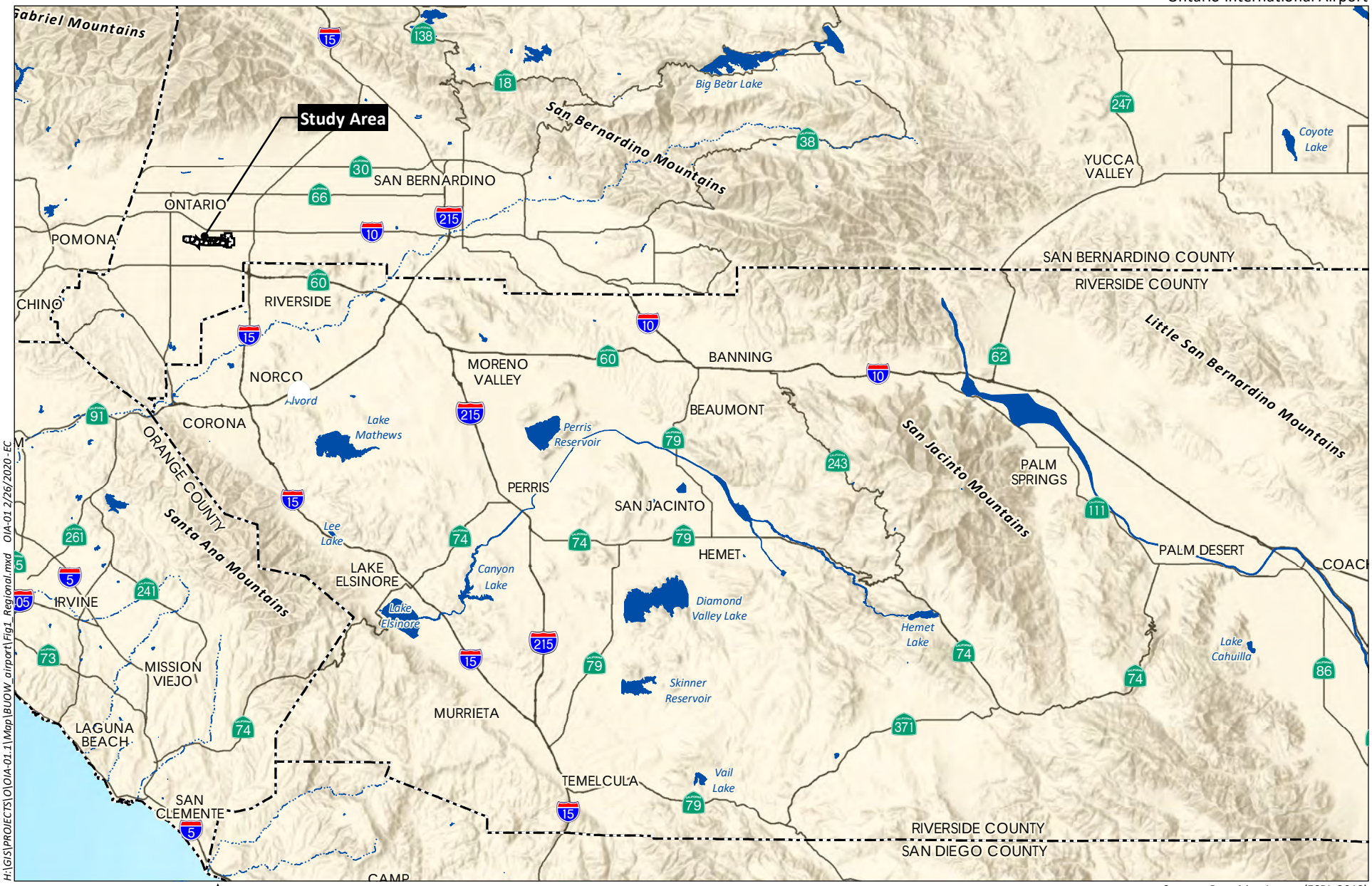
Attachments:

Figure 1: Regional Location
Figure 2: USGS Topography
Figure 3: Aerial Photograph
Figure 4: BUOW Observations and Burrow Locations

REFERENCES

California Department of Fish and Game. 2012. Staff report on burrowing owl mitigation. State of California Natural Resources Agency. March 7, 2012.

California Department of Fish and Wildlife (CDFW). 2019. California Natural Diversity Database and Rarefind. California Department of Fish and Wildlife: Sacramento, California. Retrieved from: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed July 31, 2019.



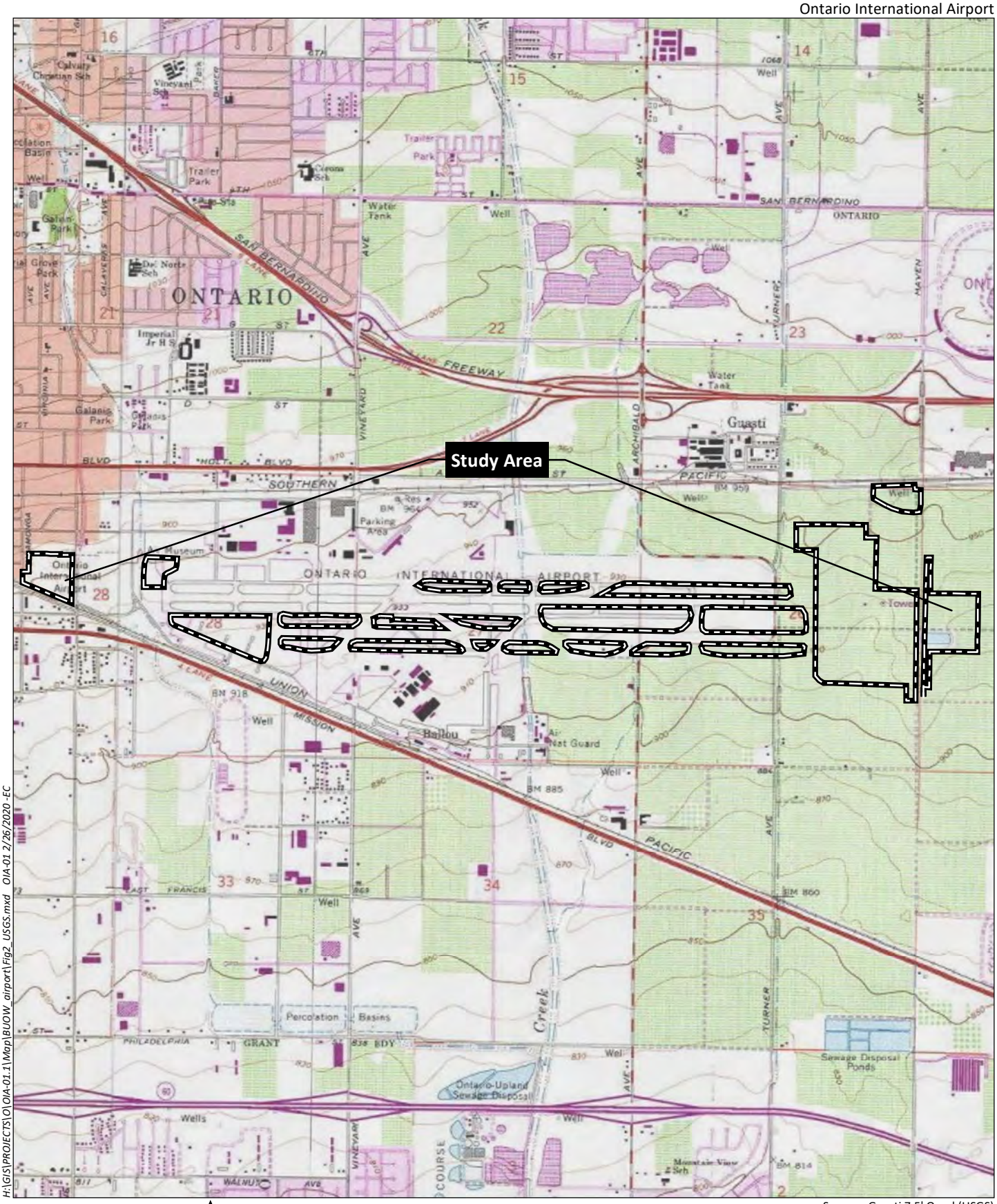
H:\GIS\PROJECTS\O\OIA-01.1\Map\BUOW_airport\Fig1_Regional.mxd OIA-01 2/26/2020 - EC

Source: Base Map Layers (ESRI, 2013)

HELIX Environmental Planning

Regional Location

Figure 1



H:\GIS\PROJECTS\O\OIA-01.1\Map\BUOW_airport\Fig2_USGS.mxd OIA-01 2/26/2020 -EC

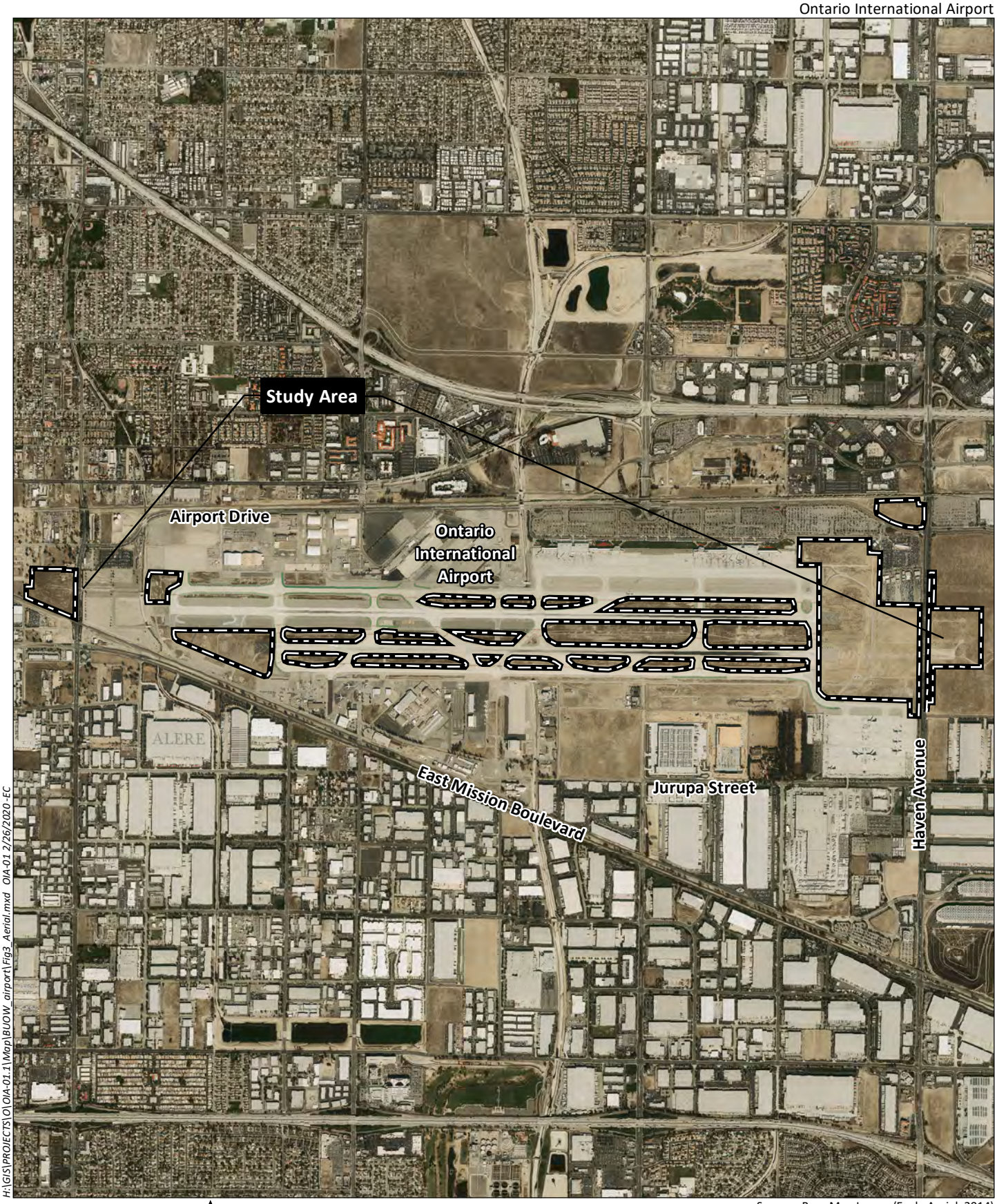
0 2,000 Feet

Source: Guasti 7.5' Quad (USGS)

HELIX Environmental Planning

USGS Topography

Figure 2



H:\GIS\PROJECTS\O\OIA-01.1\Map\BUOW airport\Fig3 Aerial.mxd OIA-01 2/26/2020 EC

0 2,500 Feet

Source: Base Map Layers (Eagle Aerial, 2014)

Aerial Photograph

Figure 3

Ontario International Airport

500-foot Survey Buffer
Survey Areas
2019/2020 Non-Breeding Season BUOW Observations
Suitable Burrows
Transects

AB-1
AB-3
AB-2

ALERE

Inset Map
0 200 Feet
AB-1
AB-3

Inset Map
0 200 Feet
AB-2

0 1,300 Feet

H:\GIS\PROJECTS\OIA\OIA-01.1\Mxd\BUOW_airport\Fig4_BUOW_obs.mxd OIA-01 2/26/2020 EC

Source: Aerial (Eagle Aerial, 2014)

HELIX Environmental Planning

2019/**2020** Non-Breeding Season BUOW Survey Areas

Figure 4

Appendix F

Cultural Resources

APPENDIX F:
Cultural Resources

The following reports are included as part of this appendix:

- Attachment A: Cultural Resources Report
- Attachment B: Research Results [CONFIDENTIAL]
- Attachment C: Tribal Coordination [CONFIDENTIAL]

Appendix F

Attachment A

Cultural Resources Report

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 tel
619.462.0552 fax
www.helixepi.com

February 28, 2022 00343.00023.001

Caroline E. Pinegar
HNTB Corporation
82 Running Hill Road, Suite 201
South Portland, ME 04106

Subject: **Cultural Resources Letter Report for the Rehabilitation of R/W 8R-26L and Associated Airfield Improvements at Ontario International Airport**

Dear Ms. Pinegar:

HELIX Environmental Planning, Inc. (HELIX) conducted a cultural resources study to identify any cultural resources extant within the study area for the proposed Rehabilitation of R/W 8R-26L and Associated Airfield Improvements (Proposed Action; project) located at Ontario International Airport (ONT). The study included a review of site records and previous studies conducted within half-mile of the project area, accessed through the South Central Coastal Information Center (SCCIC); a pedestrian field survey conducted with a Native American monitor of Gabrieleño descent to confirm the presence or absence of tribal, archaeological, and built environment resources (cultural resources) within the project area; and coordination with HNTB Corporation (HNTB) and the lead agency, the Ontario International Airport Authority (OIAA), to facilitate tribal consultation. The results of this study did not identify cultural resources within the project area. However, prehistoric resources have been recovered outside of the project area within ONT facilities. As such, this study recommends the project implement archaeological and Native American monitoring during project related ground-disturbing activities.

PROJECT LOCATION

The project is located at Ontario International Airport (ONT), located at 2500 E Airport Drive, Ontario, CA 91761, within San Bernardino County, approximately 35 miles east of Downtown Los Angeles in the center of Southern California (Inland Empire). The project location is shown on Figure 1, *Regional Location*, and Figure 2, *USGS Topography* (provided in Attachment A, *Figures*). The project focuses on the rehabilitation and reconstruction of Runway 8R-26L, associated airfield improvements, and the relocation of several objects within the Runway Safety Area (RSA) and Runway Object Free Area (ROFA), such as a vehicle safety road (VSR). The study area for the project is shown in Figure 3, *Aerial Photograph* (Attachment A), and includes 434.6 acres within the airport property.

PROJECT DESCRIPTION

OIAA proposes to make improvements to the existing 8R-26L Runway and associated airfield facilities to meet current Federal Aviation Administration (FAA) standards, improve safety, and enhance airfield efficiency. Connector taxiways will be reconstructed to align more closely with current FAA standards, as well as to improve pavement conditions for air traffic throughout the airfield. The proposed pavement sections will be designed for a 20-year life for all shoulder pavements, blast pad pavement, and the new taxiway pavement. Runway 8R-26L requires rehabilitation and reconstruction as it was built in 1979 and has exceeded the intended design service life of 20-years. Runway shoulder replacement is also proposed along sections of Runway 8L-26R in the vicinity of taxiway improvements. Also proposed is the development of a batch plant, located between East Avion Street and Mission Boulevard, south of the OIAA offices. Additionally, there are objects located within the RSA and ROFA that need to be relocated to meet FAA standards, such as the VSR. The airfield drainage includes tributary areas on the airfield located between the runways and taxiways. The proposed improvements are not increasing the airfield drainage areas; however, they are being modified to accommodate existing connector taxiways and construction of the new connector taxiways. The proposed improvements will not result in increased runway capacity.

REGULATIONS

Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance (Office of Historic Preservation [OHP] 1995). The California Environmental Quality Act (CEQA), Public Resources Code (PRC) 21084.1, and California Code of Regulations (CCR) Title 14 Section 15064.5, address determining the significance of impacts to archaeological and historic resources, and discuss significant cultural resources as "historical resources," which are defined as:

- resource(s) listed or determined eligible by the State Historical Resources Commission for listing in the California Register of Historical Resources (CRHR; 14 CCR Section 15064.5[a][1])

- resource(s) either listed in the National Register of Historic Places (NRHP) or in a "local register of historical resources" or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the PRC, unless "the preponderance of evidence demonstrates that it is not historically or culturally significant" (14 CCR Section 15064.5[a][2])

- resources determined by the Lead Agency to meet the criteria for listing on the CRHR (14 CCR Section 15064.5[a][3])

For listing in the CRHR, a historical resource must be significant at the local, state, or national level under one or more of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;

2. It is associated with the lives of persons important to local, California, or national history;

3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values;

4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Under 14 CCR Section 15064.5(a)(4), a resource may also be considered a "historical resource" for the purposes of CEQA at the discretion of the lead agency.

Significant resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Resource integrity, which is the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance, is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. In an archaeological deposit, integrity is assessed with reference to the preservation of material constituents and their culturally and historically meaningful spatial relationships. A resource must also be judged with reference to the particular CRHR criteria under which it is proposed for eligibility.

Tribal Cultural Resources

California State Assembly Bill 52 (AB 52) revised PRC Section 21074 to include Tribal Cultural Resources (TCRs) as an area of CEQA environmental impact analysis. As a general concept, a TCR is similar to the federally defined termed Traditional Cultural Properties (TCP); however, it incorporates consideration of local and state significance and required mitigation under CEQA. According to Patricia L. Parker and Thomas F. King (1998), "Traditional" in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is derived from the role the property plays in a community's historically rooted beliefs, customs, and practices.

A TCR may be considered significant if it is (i) included in a local or state register of historical resources; (ii) determined by the lead agency to be significant pursuant to criteria set forth in PRC Section 5024.1; (iii) a geographically defined cultural landscape that meets one or more of these criteria; (iv) a historical resource described in PRC Section 21084.1 or a unique archaeological resource described in PRC Section 21083.2; or (v) a non-unique archaeological resource if it conforms with the above criteria.

BACKGROUND

Prehistoric Period

Proposed dates for the earliest human occupation in California vary from around 20,000 years ago to 10,000 years ago. Carter (1957, 1978, 1980), Minshall (1976), and others (e.g., Childers 1974; Davis 1968, 1973) have long argued for the presence of Pleistocene humans in California. However, these sites identified as "early man" are all controversial. The material from the sites is generally considered non-artifactual, and the investigative methodology is often questioned (Moratto 1984). The most widely recognized timeline for the prehistory of Southern California was proposed by Wallace (1955) and divides the region's prehistory into four main periods, or "horizons:" Early, Milling Stone (Archaic Period), Intermediate, and Late horizons.

The best example of Early Prehistoric Period archaeological evidence in Southern California is in the San Dieguito complex of San Diego County, dating to over 9,000 years ago (Warren 1967; Warren et al. 2004). The San Dieguito Tradition is thought by most researchers to have an emphasis on big game hunting and coastal resources (Warren 1967). The material culture of the San Dieguito complex consists primarily of scrapers, scraper planes, choppers, large blades, and large projectile points. In some areas of California, the Early Prehistoric Period is often referred to as the Paleo-Indian period and is associated with the last Ice Age occurring during the Terminal Pleistocene (pre-10,000 years ago) and the Early Holocene, beginning circa 10,000 years ago (Erlandson 1994, 1997).

The Millingstone Horizon, or Archaic Period, dates from 7,000-8,600 to 1,300-3,000 years ago and is generally consistent with the Oak Grove complex of Santa Barbara, the Topanga complex of Los Angeles, and the La Jolla complex of San Diego (Warren et al. 2004). The Millingstone Horizon is also referred to as the Encinitas Tradition (Warren 1968). The Encinitas tradition is generally "recognized by millingstone assemblages in shell middens, often near sloughs and lagoons" (Moratto 1984:147). According to Wallace, "a changeover from hunting to the collection of seed foods is clearly reflected in the archaeological record for the period between 6,000 and 3,000 B.C. The importance of seeds in the diet of the prehistoric peoples can be seen in the numbers of food-grinding implements present at their settlements" (Wallace 1978:28). Basin metates, manos, discoidals, a small number of Pinto series and Elko series points, and flexed burials are also characteristic. Most of the archaeological evidence for Archaic Period occupation in southern California is derived from sites located in near-coastal valleys, and around estuaries that are present along the San Diego coast (Warren et al. 2004). In the project region, Archaic Period occupation is represented by a few diagnostic artifacts and one radiocarbon date of circa 2,200 years before present (BP) identified during archaeological excavations conducted for the Perris Reservoir project in Perris Valley (Bettinger 1974).

Dates for the Intermediate Horizon vary by locale but can generally be dated to between 2000 BC and AD 500 (Elsasser 1978). The Intermediate Horizon is consistent with the Hunting Culture of Santa Barbara County and is characterized by the presence of Pinto style points, named after the Pinto Basin in Riverside County, an increased use of the mortar and pestle, and the consumption of fleshier foods such as acorns as opposed to small, hard seeds (Stickel 1978). This change resulted in the adoption of a more sedentary lifestyle, as seen in the presence of seasonal campsites (Van Horn 1980).

The Late Prehistoric period is characterized by the incursion of Takic-speaking peoples of Uto-Aztecan linguistic stock into southern California. The expansion of the Takic group from a presumed Great Basin hearth land is unrefined, but several scholars have hypothesized as to when and how the so-called "Uto-Aztecan wedge" occurred. Sutton (2009) argues that the Takic group expanded into southern California from the San Joaquin Valley about 3,500 years ago. Moratto (1984) also proposes that Takic expansion into the Southern Coast region correlates to the end of the Early Period (Late Archaic) ca. 3,200 to 3,500 years ago, while Golla (2007) suggests an expansion of Uto-Aztecan speakers into southern California at approximately 2,000 years ago.

While the exact chronology of Takic-speaking groups' immigration to southern California remains uncertain, the beginning of the Late Prehistoric Period is marked by evidence of a number of new tool technologies and subsistence shifts in the archaeological record and is characterized by higher population densities and intensification of social, political, and technological systems. The changes include the production of pottery and the use of the bow and arrow for hunting instead of atlatl and

dart, a reduction of shellfish gathering in some areas, an increase in the storage of foodstuffs such as acorns, and new traits such as the cremation of the dead (Gallegos 2002; McDonald and Eighmey 2004).

Native American population figures in the region substantially increased toward the end of the Late Prehistoric Period. After AD 1600, a change occurred in settlement and subsistence patterns, and land use intensified region, which was reflected into the ethnohistoric period (Wilke 1974, 1978; Bean et al. 1991; Goldberg 2001).

Ethnohistory

The Late Horizon inhabitants of the project area are believed to be the same as those recorded ethnohistorically, namely the Gabrielino people. The Gabrielino occupied most of present-day Los Angeles and Orange Counties, extending along the coast from the southern portion of the Santa Monica Mountains to the northern portion of the Santa Ana Mountains and east along the watersheds of the Los Angeles, San Gabriel, and Santa Ana Rivers (Bean and Smith 1978). Additionally, the Gabrielino occupied several off-shore islands, including San Clemente, Santa Catalina, and San Nicholas. The name Gabrielino stems from one of the two major Spanish missions established in the Gabrielino territory, the Mission San Gabriel Arcángel. The Gabrielino were among the most powerful and populous ethnic nationalities in California's prehistory; however, few ethnographic studies were accomplished, and, therefore, little is known of them (Bean and Smith 1978).

At the time of Spanish explorer Juan Rodriguez Cabrillo's entrance into Gabrielino territory, it is estimated that their population may have reached approximately 5,000 people (Bean and Smith 1978; Shipley 1978). They were semi-nomadic and subsisted on a hunter-gatherer lifestyle in the rich landscape abundant in coastal resources, as well as acorns, pine nuts, and small game. The Gabrielino settlements were situated near water courses; permanent villages were always established "in the fertile lowlands along rivers and streams" (Bean and Smith 1978: 540). Both primary and subsistence villages were occupied continuously, with smaller gathering camps being intermittently occupied, depending on the season and resource. Gabrielino people maintained a rich material culture of varied and technical tools. They created wooden planked canoes, called *ti'ats*, which allowed them to populate and exploit the resources of the Southern Channel Islands (Welch 2006:3-4). Among these resources was steatite, a type of soapstone that was carved into vessels and ornaments and traded with neighboring tribes. The Gabrielino also created rock art and produced ceramic vessels. They used asphaltum, which occurs naturally in the area, both as a waterproof seal and as an adhesive to attach shell decorations to items. Other tools included portable mortars and metates, scrapers, knives, drills, paddles, wooden spoons and bowls, bone saws, needles, fishhooks, awls, slings, clubs, and baskets (Bean and Smith 1978). Their pre-contact and contact period burial practices included cremation and flex burials (Moratto 1984).

Historical Background

Spanish Period

Coastal Southern California's historic period began in September 1542 when Juan Rodriguez Cabrillo landed on Santa Catalina Island as part of his exploration expedition up the coast north of "New Spain." Although the impact of this initial contact did not usher in instant changes in the region, it marks the opening of the area to new contact, colonialism, and cultural shifts.

During the mid-eighteenth century, Spain escalated its involvement in California from exploration to colonization (Weber 1992). In 1769, a Spanish expedition headed by Gaspar de Portolá and Junípero Serra traveled north from San Diego, seeking suitable locations to establish military presidios and religious missions in order to extend the Spanish Empire into Alta California. The Presidio of San Diego and the Mission San Diego de Alcalá were established in 1769, followed by the Presidio of Monterey and Mission San Carlos Borromeo de Carmelo in 1770 in northern California. Built between 1769 and 1821, the Mission San Gabriel Arcángel and 20 other missions stood, literally and figuratively, as symbols of Spanish colonialism, importing new systems of labor, demographics, settlement, and economies to the area. Agriculture and animal husbandry were the main pursuits of the Missions. At Mission San Gabriel Arcángel, the Gabrielino were forced to labor in these activities to make the Mission self-sufficient (McCawley 2006). Native American revolts were common at the mission throughout the late 1770s; the most notable Gabrielino revolt was led by Toypurina, a chief's daughter, against Mission San Gabriel in 1785 (Bean and Smith 1978: 540-541).

In the early nineteenth century, ranchos and mission outposts, called *asistencias*, were established in inland southern California, increasing the amount of Spanish contact in the region. An asistencia was established in San Bernardino County, near Redlands, in 1819. The *asistencia* was an outpost of the San Gabriel Mission, which had laid claim to large tracts of land in southwestern San Bernardino County and western Riverside County for cattle grazing activities (Lech 2012). In 1820, Father Payeras, a senior mission official, promoted the idea that the San Bernardino *asistencia* be developed into a full mission, with the idea of establishing an inland mission system (Lech 2004). However, Mexico won its independence from Spain in 1821, bringing an end to the Spanish Period in California.

Mexican Period

Although Mexico gained its independence from Spain in 1821, Spanish patterns of culture and influence remained for a time. The missions continued to operate as they had in the past, and laws governing the distribution of land were also retained for a time. Following the secularization of the missions in 1834, large ranchos were granted to prominent and well-connected individuals, ushering in the Rancho Era, with the society making a transition from one dominated by the church and the military to a more civilian population, with people living on ranchos or in pueblos. With the numerous new ranchos in private hands, cattle ranching expanded and prevailed over agricultural activities.

The project lies northeast of the Rancho Santa Ana del Chino land grant. Rancho Santa Ana del Chino was originally composed of approximately 22,203 acres of land bordered by San Jose Rancho to the northwest, Jurupa and El Rincon Ranchos to the southeast, and public lands on the other sides (Lecouvreur 1862). The Rancho was granted to Don Antonio Maria Lugo by the Mexican government in 1841. Lugo gifted his son-in-law, Isaac Williams, a portion of the Rancho as a wedding present upon his marriage to Lugo's daughter, Maria de Jesus in 1843 (Partridge 2017). Williams acquired an additional 13,310 acres on the northeastern border of the Rancho, creating a total of over 35,000 acres (Brown and Boyd 1922). The Rancho was "famous for its splendid water supply and fertile soil" and Williams took advantage of its resources by importing sheep from New Mexico, building a sawmill, and planting orchards (Brown and Boyd 1922:30). He built a large adobe house in 1841 within the western portion of the Rancho (OHP n.d.). Later, this adobe became a stop on the Butterfield stage route and was the site of a battle of the Mexican-American War known as the Battle of Chino (Brown and Boyd 1922).

The battle occurred in September 1846 between Mexican Californios led by Cervol Varela (or Barelas) and Americans under Lieutenant A.H. Gillespie. When his troops were attacked, Gillespie demanded assistance from D.B. Wilson, the owner of Rancho Jurupa; Wilson stopped at William's adobe to ask for ammunition only to be warned by a scout that the Californios were approaching. Wilson and Williams decided to stand siege at the adobe. Fifty Californios attacked, and a gun battle ensued during which one man was killed. The Californios set fire to the adobe's roof, forcing Wilson and Williams to surrender. They were captured and taken to Los Angeles where they were threatened but ultimately released. After the American annexation of California, Wilson applied for and received an $80,000 reimbursement for property damages during the battle (Brown and Boyd 1922).

American Period

American governance began in 1848, when Mexico signed the Treaty of Guadalupe Hidalgo, ceding California to the United States at the conclusion of the Mexican–American War. California's acquisition by the United States substantially increased the growth of the population in California. The California gold rush, the end of the Civil War, and the passage of the Homestead Act implementing the United States' manifest destiny to occupy and exploit the North American continent brought many people to California after 1848.

While the American system required that the newly acquired land be surveyed prior to settlement, the Treaty of Guadalupe Hidalgo bound the United States to honor the land claims of Mexican citizens who were granted ownership of ranchos by the Mexican government (Lech 2004). The Land Act of 1851 established a board of commissioners to review land grant claims, and land patents for the land grants were issued in the latter half of the eighteenth century. However, the cost of defending their claim and the evidence required by the State Lands Commission to prove title claims meant that many Mexican-era ranchos were claimed as public land that was open to American settlement.

A land patent for Rancho Santa Ana del Chino land grant was issued by the United States to Isaac Williams in 1869 (9 Stat. 631). Rancho Santa Ana del Chino remained in the Williams family until 1881, when the land foreclosed and was sold to Richard Gird (Van Horn 1980). Gird purchased additional land totaling 47,000 acres and used much of the land for raising stock (Brown and Boyd 1922). He laid out the town of Chino across 23,000 acres, split into 10-acre lots, and promoted railroad lines to the area (Van Horn 1980). In 1894, Gird sold 41,000 acres to Charles Phillips for $1,600,000. Two years later, Phillips turned around and sold the Rancho to an English syndicate, who subdivided the land into smaller parcels for purchase (Brown and Boyd 1922).

Southern California was developed by Americans and other immigrants who migrated to the western frontier in pursuit of gold and other mining, agriculture, trade, and land speculation (Lech 2004). This population growth of southern California during the early years of the American Period brought a need for mail and freight travel. In 1857, John Butterfield was awarded a six-year contract to transport mail twice a week between St. Louis, Missouri, and San Francisco, California (Helmich 2008). The Butterfield Stage Route used the same trail as the Sonora (or Southern Emigrant) Trail from Yuma through Warner Springs and Temecula, up north through Temescal Valley to Chino, and then to Los Angeles. Local mail routes within southern California were also developed, beginning in the 1850s, such as the line begun in 1852 by Phineas Banning between Los Angeles and San Diego (Stott 1968). In 1868, Tomlinson & Co. briefly operated a daily mail route from Tucson, Arizona to Los Angeles via San Diego and San

Bernardino (Stott 1968), although, after only four months, the company had lost $12,000 and discontinued service (Mills 1957).

While stagecoaches were successful at transporting gold, people, and mail, the need for a railroad to California was imperative. In the 1850s, surveys were initiated by the federal government to determine a railroad route to the Pacific coast (Lech 2004). Although the first transcontinental railroad was completed in 1869 to northern California, in the 1870s, the Southern Pacific Railroad Company, incorporated in 1865 and consolidated in 1870, began to construct a southern route that would traverse the state (Fickewirth 1992). In the early 1880s, the California Southern Railway, a subsidiary of the Atchison, Topeka and Santa Fe Railway (Santa Fe), was completed and allowed for travel through the Cajon Pass to Barstow to a junction of the Atlantic and Pacific Railroad and down to San Diego. Additionally, Richard Gird, who had purchased the Rancho Santa Ana del Chino along with additional land in the region during the early 1880s, established a narrow-gauge railway in 1887 within the Chino Valley, the Chino Valley Railroad. The railway was built to connect with the Southern Pacific line at Ontario, and a railway station was erected on the far side of the existing Southern Pacific tracks (Galvin & Associates 2004).

With the completion of the California Southern Railway, settlers flocked to southern California in even greater numbers. The development and urbanization of Los Angeles and Orange Counties pushed agricultural and dairy farms pursuits further into western San Bernardino County, which saw a land boom of farming and ranching at the turn of the century.

City of Ontario

William and George Chaffey acquired approximately 7,000 acres of land between 1881 and 1882, a portion of which would become the cities of Ontario and Upland (Galvin & Associates 2004). The Chaffey brothers designed a water system composed of miles of cement pipe from an underground source that brought water to every parcel within Ontario. The brothers then established a “mutual water company” which granted stockholdings to landowners. The City of Ontario was incorporated in 1891, and the growing citrus industry led to the establishment of the first college in San Bernardino, Chaffey College, which was constructed in 1883 on twenty acres of the Ontario Colony. Other crops such as grapes, peaches, and walnuts were also cultivated in Ontario during this time (Galvin & Associates 2004). The Chaffey brothers’ water system was an important development within the City because it facilitated the agricultural industry within the region. In the late nineteenth century, the City received an award at the World Fair, identifying it as a “Model Irrigation Colony,” leading to the City being referred to as the “Model Colony” (Galvin & Associates 2004).

A Southern Pacific Railway depot located near the center of the town brought prospective buyers, farmers, and landowners to the area, and Ontario became a rich agricultural source for the region. The roughly 60-year period (until ca. 1950) which followed saw continued agricultural growth. The citrus industry dominated Ontario’s agricultural industry, and in the 1920s, the largest business in Ontario was the Exchange Orange Products Company (now Sunkist Growers, Inc.), which was a subsidiary of the California Fruit Growers Exchange (Galvin & Associates 2004). This period of agricultural prosperity was followed by the post-World War II (WWII) population boom, which led to the subdivision of former large-scale groves into residential housing developments. The economy soon shifted from an agricultural to an industrial and manufacturing economy (Galvin & Associates 2004).

Ontario International Airport

The origins of ONT began in 1923 when a local flying club landed an airplane on a dirt field between South San Antonio and South Mountain avenues, and the Union Pacific and Southern Pacific railroad tracks, which they called the landing area Latimer Field. In 1929, Ontario saw its first full airport when the City purchased 30 acres just a few miles east of Latimer Field, at the current location of the southwest corner of the current airport, to be known as the Ontario Airport (Watson 1983).

Six years later, in 1935, Carl von Darnell leased land from the City and established Darnell's Flying Service. They developed their business with the construction of a wood-framed hanger as well as creating a runway, before selling the business to Arthur Nelson. Nelson continued the flight school with subsidies from a program offered by the Civil Aeronautics Authority, a Federal agency tasked with training a pool of potential military pilots in anticipation of war with Germany (USACE 1995).

The flying field saw further expansion in the 1940s, beginning when the City leased an additional 405 acres from Ballou Ranch, later annexing the land and its neighboring parcels in a move approved by President Roosevelts Works Project Administration (WPA). The WPA proceeded to improve the Ontario Municipal Airport by constructing two concrete runways, drainage structures, roadways, lighting, in addition to water supply and storage facilities (USACE 1995). With the United States entering WWII, the U.S. Army Air Corps acquired the majority of the Airport for wartime use on May 30, 1942 (USACE 1995). After the war, the California Air National Guard took over a portion of the military facilities to establish a training station and was responsible for further expansion of the runways up to 1966 (California State Military Museum 2021).

In 1945, the Ontario master plan included the incorporation of the airport as an important piece in the growth of the City, as the Ontario Municipal Airport was the only Southern California Airfield capable of handling large aircraft (Daily Report 1945). Transportation of cargo across the Pacific was already occurring from Ontario, and due to those activities and the City's focus on developing the airport, the Ontario Municipal Airport was designated an official international Port of Entry in 1946 (Daily Report 1946).

The airport continued to grow, with a new two-story terminal constructed in 1950, control towers in 1953, and then the replacement of the original terminal with Terminal One in the late 1950s. The runways saw continued and repeated expansion to allow for the landing of jet aircraft and proposed military activities. With the growth of the aviation/aerospace industry, companies such as Lockheed Aircraft Services and GE Aircraft Engines arrived, and with the increase in national and international passenger flights, the airport saw even more expansion.

METHODS

Records Search

HELIX requested a confidential search of the California Historical Resources Information System (CHRIS) records at the SCCIC, located on the campus of California State University, Fullerton, on August 12, 2021. The SCCIC maintains records of previously documented cultural resources and technical studies; it also maintains copies of the OHP's portion of the statewide Historical Resources Inventory. The search included any previously recorded cultural resources within the project area and surrounding 0.5-mile

area. The purpose of the CHRIS records search is to identify whether any cultural resources have been documented in the project area and assess the potential for undocumented resources to be present by comparison to adjacent areas. Due to Covid-19 protocols, the SCCIC was only able to provide data that is already digital, meaning that additional studies and resources may be present within the search radius. HELIX received the results of the SCCIC record search on November 4, 2021.

Previous Surveys

The records search results identified 14 previous cultural resource studies within the record search limits, two of which overlap with the project area - SB-05358 and SB-07074 (Table 1, *Previous Studies within a Half-Mile of the Project Area,* provided in Attachment B, *Record Search Results*). SB-05358 is a letter report regarding the installation of a 60-foot stealth mono palm with a parabolic that was installed at the airport shuttle van lot at 1228 East Holt Boulevard. SB-07074 consisted of an environmental review for a Verizon telecommunication facility. These two studies did not identify cultural resources within the project area.

Previously Recorded Sites

The records search results identified 20 previously recorded cultural resources within a 0.5-mile radius of the project area (Table 2, *Previously Recorded Resources within a Half-Mile of the Project Area,* provided in Attachment B); none of the resources are located directly within the project area. Of the 20 resources identified in the vicinity, 15 are historic-period built-environment resources, three are historic-period archaeological sites, and two are historic districts. The record search did not identify any prehistoric sites. As only digitized resources were provided, there is the possibility of additional resources being present within a half-mile of the project area.

NATIVE AMERICAN CONTACT PROGRAM

A Sacred Lands File search was requested by OIAA through the Native American Heritage Commission (NAHC). The Sacred Lands File search results were received on April 13, 2021 (provided in Attachment C, *Native American Consultation*). The results indicated that no known sacred lands of Native American Cultural Resources are within the project area. The NAHC noted that negative results may not indicate the absence of Native American cultural resources in the area and provided a contact list of 12 Native American tribal organizations that may have knowledge of cultural resources in or near the airport property.

In accordance with AB 52, OIAA sent letters to the Native American representatives and interested parties as identified by the NAHC on August 27, 2021. Three responses were received to date (Table 3*, Native American Consultation Responses,* provided in Attachment C). San Manuel Band of Mission Indians (SMBMI) responded via email on September 1, 2021, and Agua Caliente Band of Cahuilla Indians (ACBCI) responded via email on September 2, 2021 to indicate the project is not located within the boundaries of the Tribes' Traditional Use Area. The Gabrieleno Band of Mission Indians – Kizh Nation (Kizh Nation) responded via email on September 17, 2021 to request a consultation with the lead agency.

OIAA initiated consultation on November 4, 2021 with Kizh Nation. The tribe indicated the airport is considered sensitive to tribal cultural resources. Although no tribal resources have been identified

within the project area, the tribe has knowledge of several resources, including prehistoric isolates and fire hearths associated with habitation, within the airport property. As such, the tribe requests Native American monitoring during all ground-disturbing activities related to the project. To date, consultation remains ongoing between OIAA and Kizh Nation.

Fieldwork

HELIX archaeologist, Kassie Sugimoto, conducted an intensive pedestrian survey of the project area along with Christina Conley-Haddock, a Native American representative from the Gabrielino Tongva Indians of California, on October 5, 2021. The pedestrian survey consisted of a systematic surface inspection of all accessible project areas with transects walked at 15-m intervals or less to ensure that any surface-exposed artifacts and cultural resources could be identified. The ground surface was inspected for the presence of prehistoric artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools); historic artifacts (e.g., metal, glass, ceramics); sediment discoloration that might indicate the presence of a cultural midden; roads and trails; and depressions and other features that might indicate the former presence of structures or buildings (e.g., post holes, foundations).

In inaccessible areas that were unsafe for a pedestrian survey due to airport activities, a reconnaissance-level survey was undertaken. The reconnaissance survey consisted of inspecting the area from within a vehicle and at a safe distance, looking for indications that cultural resources were present. The project area was photographed using a digital camera, and property boundaries were identified with a handheld global positioning system unit. All field notes, photographs, and records related to the current study are on file at HELIX's office in La Mesa, California.

No cultural resources were identified during the survey. Ground visibility was excellent (76 to 100 percent) across the surveyed area. The project area is primarily level open space, though there are some buildings and a parking lot. Modern refuse, comprised of plastic fragments, was noted across the project area. Soil was consistent across the surveyed area and was imported fill used to cap the project area as part of the historic construction of the airport and associated structure.

CONCLUSION AND RECOMMENDATIONS

HELIX requested a records search through the SCCIC, a review of the Sacred Lands File, reviewed archival research, and conducted a pedestrian field survey of the project area. The SCCIC record search did not identify any cultural resources within the project area. Furthermore, the Sacred Lands File search, conducted through the NAHC, failed to identify any tribal cultural resources within the project area. However, during AB 52 consultation with Kizh Nation, the tribe indicated that the ONT facility, including the project area, is sensitive to tribal cultural resources. Although not recorded at the SCCIC, the tribe has knowledge of prehistoric isolates and a fire hearth located within the airport property. As such, there is potential for the proposed project to impact buried prehistoric archaeological and tribal cultural resources if found during construction.

To reduce the potential impacts to buried archaeological and tribal cultural resources, this study recommends the project implement Native American and archaeological monitoring during all ground-disturbing activities within undisturbed native soils. The archaeological and Native American monitoring program should include the attendance by the project archaeologist and Native American monitor at a pre-construction meeting with the construction contractor. Archaeological and Native American

monitors should be present during initial ground-disturbing activities within native soils, including grubbing and clearing, trenching, drilling, auguring, and grading. Monitors would have the authority to temporarily halt or redirect grading and other ground-disturbing activity in the event that cultural resources are encountered.

In the event that human remains are discovered, the County Coroner shall be contacted. If the remains are determined to be of Native American origin, the Most Likely Descendant, as identified by the NAHC, shall be contacted in order to determine proper treatment and disposition of the remains. All requirements of Health & Safety Code §7050.5 and PRC §5097.98 shall be followed.

If you have any questions regarding the monitoring program, please call Kassie Sugimoto at (949) 234-8770, or via email at KassieS@helixepi.com.

Sincerely,

Trevor Gittelhough, M.A., RPA
Senior Archaeologist

Kassie Sugimoto, M.A.
Cultural Resources Project Manager

Attachments:

Attachment A: Figures
Attachment B: Record Search Results
Attachment C: Native American Consultation

REFERENCES

Bean, Lowell John and Charles R. Smith
1978 Gabrielino. In *California*, edited by Robert F. Heizer, pp. 538-549. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Bean, Lowell J., Sylvia B. Vane, and Jackson Young
1991 *The Cahuilla Landscape: The Santa Rosa and San Jacinto Mountains.* Menlo Park, CA: Ballena Press.

Bettinger, Robert L.
1974 Dating the Perris Reservoir Assemblages. In *Perris Reservoir Archaeology,* edited by J.F. O'Connell, P.J. Wilke, T.F. King, and C.L. Mix, pp. 159–162. California Department of Parks and Recreation Reports No. 14. Sacramento.

Brown, John and James Boyd
1922 *History of San Bernardino and Riverside Counties: With Selected Biography of Actors and Witnesses of the Period Growth and Achievement*. Western Historical Association.

California State Military Museum
2021 Ontario Air National Guard Station. http://www.militarymuseum.org/OntarioANGS.html; accessed December 2021.

Carter, George F.
1957 *Pleistocene Man at San Diego*. Johns Hopkins Press, Baltimore.

1978 An American Lower Paleolithic. *Anthropological Journal of Canada* 16:2-38.

1980 *Earlier Than You Think: A Personal View of Man in America*. Texas A&M University Press, College Station.

Childers, W. Morlin
1974 Preliminary Report on the Yuha Burial, California. *Anthropological Journal of Canada* 12 (1):2-9.

Daily Report
1945 *Airport to Play Major Role in West Progress*. Daily Report, November 7, 1945.

1946 *Ask International Port Status for Ontario's Field*. Daily Report, April 1, 1946.

Davis, Emma Lou
1968 Early Man in the Mojave Desert. Eastern *New Mexico University Contributions in Anthropology 1,* (4):42-47.

1973 People of the Old Stone Age at China Lake. Ms., on file at Great Basin Foundation, San Diego.

Erlandson, Jon M.
1994 *Early Hunter-Gatherers of the California Coast*. New York, Plenum Press.

1997 The Middle Holocene along the California Coast. In Archaeology of the California Coast during the Middle Holocene, edited by J.M. Erlandson and M.A. Glassow. pp. 61–72. Perspectives in California Archaeology, Vol. 4, J.E. Arnold, series editor. Institute of Archaeology, University of California, Los Angeles.

Gallegos, Dennis R.
2002 Southern California in Transition. In *Catalysts to Complexity: Late Holocene Societies of the Southern California Coast*, edited by J. M. Erlandson and T. L. Jones, pp. 27–40. Perspectives in California Archaeology, Vol. 6, J. E. Arnold, series editor. Institute of Archaeology, University of California, Los Angeles.

Galvin & Associates
2004 *The City of Ontario's Historic Context for the New Model Colony Area*. City of Ontario.

Goldberg, Susan
2001 Land Use, Mobility, and Intensification Evaluation and Refinement of the Model. In *Metropolitan Water District of Southern California, Eastside Reservoir Project, Final Report of Archaeological Investigations, Volume IV: Prehistoric Archaeology Synthesis of Findings*, edited by S. K. Goldberg, Chap. 14. Report prepared by Applied Earthworks, Hemet, California for Metropolitan Water District of Southern California, Los Angeles.

Golla, Victor
2007 Linguistic Prehistory. In *California Prehistory: Colonization, Culture, and Complexity,* edited by T. L. Jones, and K. A. Klar, pp. 71–82. AltaMira Press, New York.

Lech, Steve
2004 *Along the Old Roads: A History of the Portion of Southern California That Became Riverside County, 1772–1893*. Steve Lech, Riverside, California.

2012 *Pioneers of Riverside County: The Spanish, Mexican and Early American Periods*. The History Press, Charleston, SC.

Lecouvreur, Frank
1862 "Plat of the Rancho Santa Ana del Chino, with Addition [Calif.]: showing the proposed alteration of the exterior boundary line, on authority of the approved maps of the 'Rancho Santa Ana del Chino,' 'Rancho Addition to Santa Ana del Chino,' and 'Rancho El Rincon' and his own survey / compiled and drawn by Frank Lecouvreur, by request of Robt. L. Carlisle, Esqre., October 24, 1862." Online Archive of California. Electronic document available at: http://cdn.calisphere.org/data/13030/5c/hb3q2nb15c/files/hb3q2nb15c-FID7.jpg. Accessed December 2021.

McCawley, William
2006 *The First Angelinos: The Gabrielino Indians of Los Angeles*. Malki Museum Press and Ballena Press, Banning and Novato, CA.

McDonald, Meg, and James D. Eighmey
2004 Late Period Prehistory in San Diego. In *Prehistoric and Historic Archaeology of Metropolitan San Diego: A Historic Properties Background Study*. Prepared for the Metropolitan Wastewater Department, City of San Diego. Encinitas, California: ASM Affiliates.

Minshall, Herbert L.
1976 *The Broken Stones*. Copley Books, San Diego.

Moratto, Michael
1984 *California Archaeology.* Academic Press, New York.

Office of Historic Preservation
n.d. California Historical Landmarks by County: San Bernardino. California State Parks, Sacramento, CA. Electronic document available at: http://ohp.parks.ca.gov/?page_id=21476, accessed on March 8, 2017.

Parker, Patricia L. and Thomas F. King
1998 *Guidelines for Evaluating and Documenting Traditional Cultural Properties*. National Park Service, Washington, D.C.

Shipley, William F.
1978 Native Languages of California. In *California*, edited by Robert F. Heizer, pp. 80-90. Handbook of North American Indians, Vol. 8, William G. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

Stickel, E. Gary
1978 *Los Angeles-Long Beach Harbor Areas Prehistory and Early History, Los Angeles County, California*. U.S. Army Corps of Engineers, Los Angeles District.

Sutton, Mark Q.
2009 People and Language: Defining the Takic Expansion into Southern California. *Pacific Coast Archaeological Society Quarterly* 41(2&3):31-93.

U.S. Army Corps of Engineers (USACE)
1995 *Defense Environmental Restoration Program for Formerly Used Defense Sites, Ordinance and Explosive Waste, Chemical Warfare Materials Archives Search Report, Ontario Army Airfield and Air National Guard Training Site, Ontario CA, San Bernardino County, Project Nos. J09CA053103 & J09CA52200*. U.S. Army Corps of Engineers, St. Louis District.

Wallace, William J.
1955 A Suggested Chronology for Southern California Coastal Archaeology. *Southwestern Journal of Anthropology,* 11(3):214–230.

1978 Post-Pleistocene Archaeology, 9000 to 2000 B.C. In *California*, edited by Robert F. Heizer, pp. 25-36. Handbook of North American Indians, Vol. 8, William G. Sturtevant, general editor, Smithsonian Institution, Washington D.

Warren, Claude N.
1967 The San Dieguito Complex: A Review and Hypothesis. *American Antiquity* 32:233-236.

1968 Cultural Tradition and Ecological Adaptation on the Southern California Coast. *Archaic Prehistory in the Western United States: Symposium of the Society for American Archaeology, Santa Fe, 1968*. Eastern New Mexico University Contributions in Anthropology 1(3):1–14.

Warren, C.N., G. Siegler, and F. Dittmer
2004 Paleoindian and Early Archaic Periods. In *Prehistoric and Historic Archaeology of Metropolitan San Diego: A Historic Properties Background Study*. Prepared for the Metropolitan Wastewater Department, City of San Diego. Encinitas, California: ASM Affiliates.

Watson Dennis
1983 *A Short Pictorial History of Ontario International Airport*. Ontario City Library, Robert E. Ellingwood Model Colony Room.

Weber, David
1992 *The Spanish Frontier in North America*. Yale University Press.

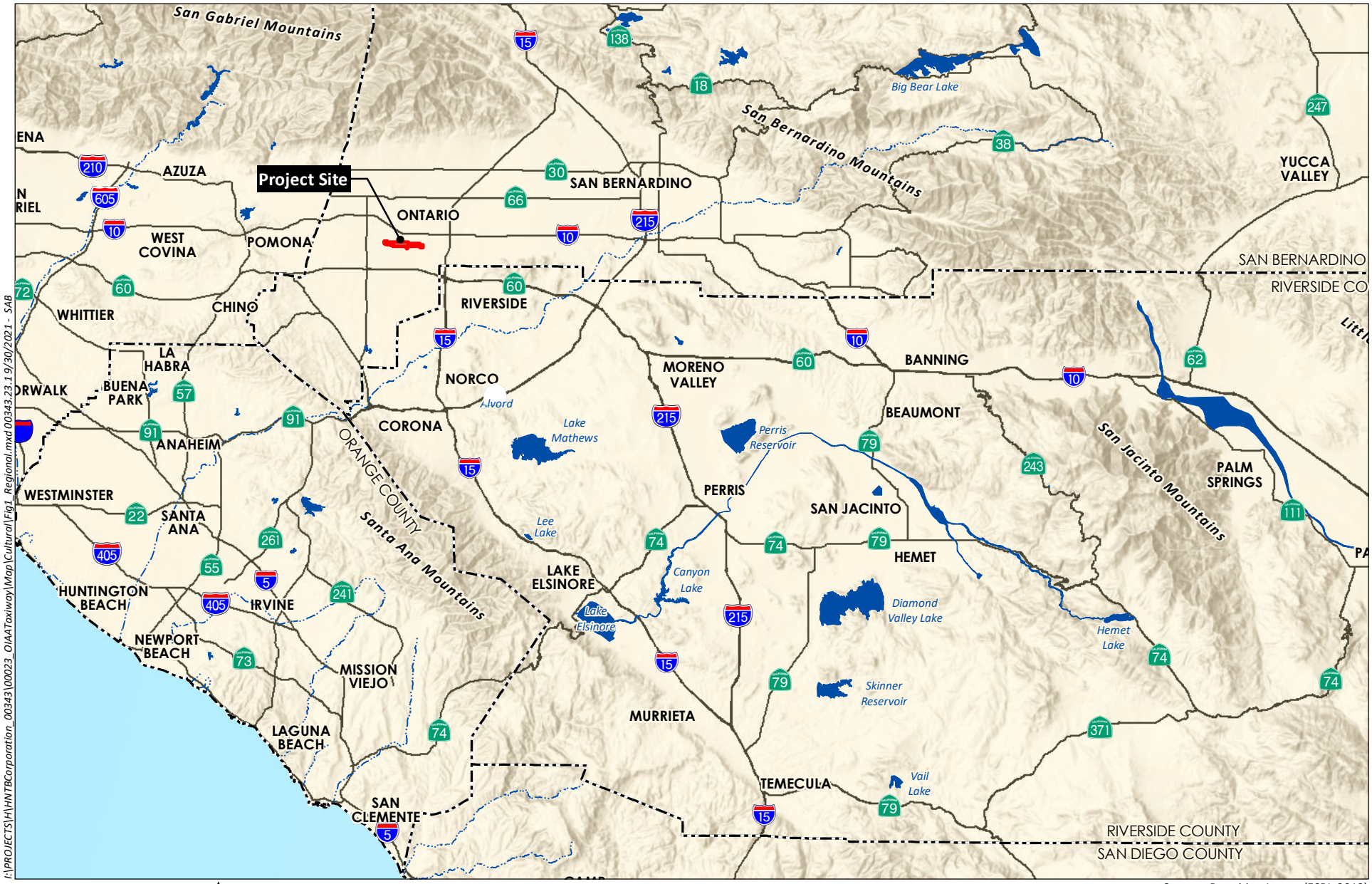
Welch, Rosanne
2006 *A Brief History of the Tongva Tribe: The Native Inhabitants of the Lands of the Puente Hills Preserve.* Unpublished Master's Thesis. Department of History, Claremont Graduate University, Claremont, California.

Wilke, Philip J.
1974 The Peppertree Site (4-Riv-463). In *Perris Reservoir Archeology: Late Prehistoric Demographic Changes in Southeastern California*, edited by James F. O'Connell, Philip J. Wilke, Thomas F. King, and Carol L. Mix, pp.49–63. California Department of Parks and Recreation Archeology Reports 14.

1978 Late Prehistoric Human Ecology at Lake Cahuilla, Coachella Valley, California. *Contributions of the University of California Archaeological Research Facility* No. 38.

Attachment A

Figures



I:\PROJECTS\H\HNTBCorporation_00343\00023_OIAATaxiway\Map\Cultural\Fig1_Regional.mxd 00343.23.1 9/30/2021 - SAB

Source: Base Map Layers (ESRI, 2013)

HELIX Environmental Planning

Regional Location

Figure 1

Project Site

0 2,000 Feet

N

Source: ONTARIO & GUASTI 7.5' Quad (USGS)

I:\PROJECTS\HUNTBCorporation_00343\00023_OIAATowivoy\Map\Cultural\Fig2_USGS.mxd 00343.23.1 2/24/2022 - SAB

HELIX Environmental Planning

USGS Topography

Figure 2



I:\PROJECTS\H\HNTBCorporation_00343\00023_ONAATaxiway\MapCultural\Fig3_Aerial.mxd 00343.23.1 2/24/2022 - SAB

Source: Aerial (San Bernardino County, 2020)

HELIX Environmental Planning

Aerial Photography

Figure 3

Appendix G

Introduction to Noise

TABLE OF CONTENTS **Page**

1 Noise and Its Effect on People 1

1.1 Noise and its Metrics 1

1.1.1 The Decibel (dB) 1

1.1.2 A-Weighted Decibel (dBA) 3

1.1.3 Maximum Sound Level (L_{max}) 6

1.1.4 Sound Exposure Level (SEL) 7

1.1.5 Equivalent Sound Level (L_{eq}) 8

1.1.6 Community Noise Equivalent Level (CNEL) 9

1.1.7 Day-Night Average Sound Level (DNL) 9

1.2 The Effects of Aircraft Noise on People 10

1.2.1 Community Annoyance 10

1.2.2 Speech Interference 12

1.2.3 Sleep Disturbance 13

2 Airport Noise Modeling 15

2.1 Introduction 15

2.2 Noise Modeling Software 15

2.3 Noise Metrics – CNEL and DNL 15

2.4 Operations 15

2.4.1 Average Annual Day (AAD) 15

2.4.2 Stage Length 15

2.4.3 Day/Evening/Night Split 15

2.5 Runway and Track Utilization 16

2.6 Maintenance Engine Run-ups 16

2.7 Terrain 16

2.8 Weather 16

LIST OF FIGURES

Page

Figure 1 Frequency Response Characteristics of Various Weighting Networks 4

Figure 2 Sound Levels of Typical Noise Sources (dBA) 5

Figure 3 Variation of Community Noise in a Suburban Neighborhood 5

Figure 4 Common Aircraft Departure Noise Levels 6

Figure 5 Relationship Between Single Event Noise Metrics 8

Figure 6 Typical Range of Outdoor Community Day Night Average Sound Levels 10

Figure 7 Relationship Between Annoyance and Day Night Average Sound Level 11

Figure 8 Percent Sentence Intelligibility 13

Figure 9 Sleep Disturbance Dose Response Relationship 14

1 Noise and Its Effect on People

Aircraft noise exposure in this document is primarily addressed using the Community Noise Equivalent Level (CNEL) metric. To assist reviewers in interpreting complex noise metrics, this appendix presents an introduction to the relevant fundamentals of acoustics and noise terminology, and the effects of noise on human activity.

1.1 Noise and its Metrics

Noise, often defined as unwanted sound, is one of the most common environmental issues associated with aircraft operations. Of course, aircraft are not the only sources of noise in an urban or suburban surrounding, where interstate and local roadway traffic, rail, industrial and neighbourhood sources may also intrude on the everyday quality of life. Nevertheless, aircraft are readily identifiable to those affected by their noise and are typically singled out for criticism. Consequently, aircraft noise problems often dominate analyses of environmental impacts.

A “metric” is defined as something “of, involving, or used in measurement.” As used in environmental noise analyses, a metric refers to the unit or quantity that quantitatively measures the effect of noise on the environment. Noise studies have typically involved a confusing proliferation of noise metrics used by individual researchers who have attempted to understand and represent the effects of noise. As a result, literature describing environmental noise or environmental noise abatement has included many different metrics.

Various federal agencies involved in environmental noise mitigation have agreed on common metrics for environmental impact analysis documents. Furthermore, the Federal Aviation Administration (FAA) has specified which metrics, such as CNEL and DNL, should be used for federal aviation noise assessments.

This section discusses the following acoustic terms and metrics:

- Decibel (dB)
- A-Weighted Decibel (dBA)
- Maximum Sound Level (L_{max})
- Sound Exposure Level (SEL)
- Equivalent Sound Level (L_{eq})
- Community Noise Equivalent Level (CNEL)
- Day-Night Average Sound Level (DNL)

1.1.1 The Decibel (dB)

All sounds come from a sound source—a musical instrument, a speaking voice, or an airplane passing overhead. It takes energy to produce sound. The sound energy produced by any sound source is transmitted through the air in sound waves—tiny, quick oscillations of pressure just

above and just below atmospheric pressure. These oscillations, or sound pressures, impinge on the ear creating the sound we hear.

Our ears are sensitive to a wide range of sound pressures. The loudest sound that we hear without pain has about one trillion times more energy than the quietest sounds we hear. On a linear scale, this range is unwieldy. Therefore, we compress the total range of sound pressures to a more meaningful range by introducing the concept of sound pressure level (SPL) and its logarithmic unit of decibel (dB).

SPL is a measure of the sound pressure of a given noise source relative to a standard reference value (typically the quietest sound that a young person with good hearing can detect). Decibels are logarithmic quantities —logarithms of the ratio of the two pressures, the numerator being the pressure of the sound source of interest, and the denominator being the reference pressure (the quietest sound we can hear).

The logarithmic conversion of sound pressure to SPL means that the quietest sound we can hear (the reference pressure) has a SPL of about zero decibels, while the loudest sounds we hear without pain have SPLs less than or equal to about 120 dB. Most sounds in our day-to-day environment have SPLs from 30 to 100 dB.

Because decibels are logarithmic quantities, they require logarithmic math and not simple (linear) addition and subtraction. For example, if two sound sources each produce 100 dB and are operated together, they produce only 103 dB—not 200 dB as might be expected. Four equal sources operating simultaneously result in a total SPL of 106 dB. In fact, for every doubling of the number of equal sources, the SPL (of all of the sources combined) increases another three decibels. A ten-fold increase in the number of sources makes the SPL increase by 10 dB. A hundredfold increase makes the level increase by 20 dB, and it takes a thousand equal sources to increase the level by 30 dB.

If one source is much louder than another, the two sources together will produce the same SPL (and sound to our ears) as if the louder source were operating alone. For example, a 100 dB source plus an 80 dB source produce 100 dB when operating together. The louder source “masks” the quieter one. But if the quieter source gets louder, it will have an increasing effect on the total SPL. When the two sources are equal, as described above, they produce a level 3 decibels above the sound level of either one by itself.

From these basic concepts, note that one hundred 80 dB sources will produce a combined level of 100 dB; if a single 100 dB source is added, the group will produce a total SPL of 103 dB. Clearly, the loudest source has the greatest effect on the total.

There are two useful rules of thumb to remember when comparing SPLs: (1) most of us perceive a 6 to 10 dB increase in the SPL to be an approximate doubling of loudness, and (2) changes in SPL of less than about 3 dB are not readily detectable outside of a laboratory environment.

1.1.2 A-Weighted Decibel (dBA)

Another important characteristic of sound is its frequency, or “pitch.” This is the rate of repetition of the sound pressure oscillations as they reach our ear. Frequency can be expressed in units of cycles per second (cps) or Hertz (Hz). Although cps and Hz are equivalent, Hz is the preferred scientific unit and terminology.

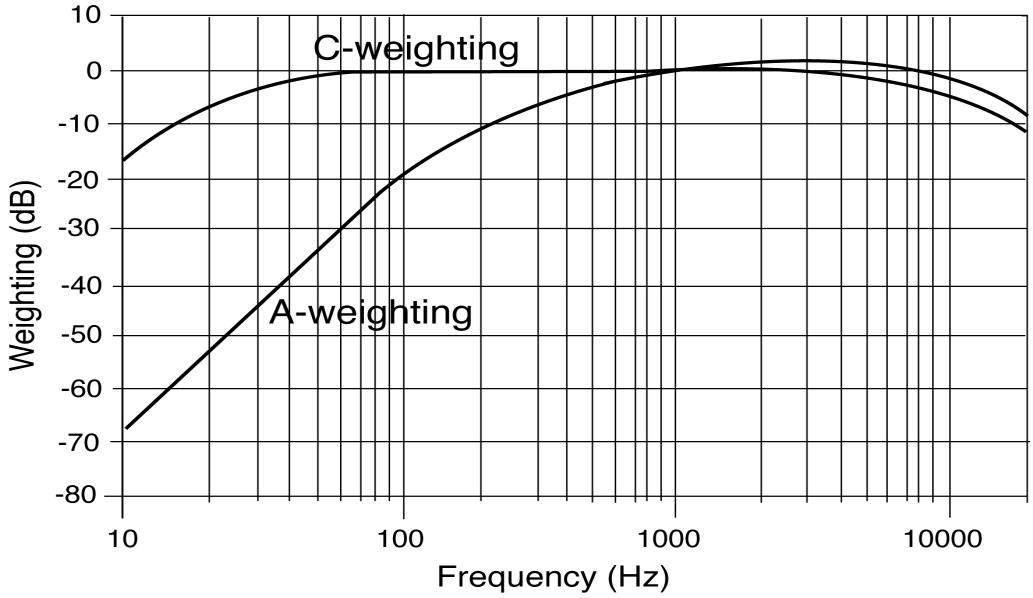
A very good ear can hear sounds with frequencies from 16 Hz to 20,000 Hz. However, most people hear from approximately 20 Hz to approximately 10,000-15,000 Hz. People respond to sound most readily when the predominant frequency is in the range of normal conversation, around 1,000 to 4,000 Hz. Acousticians have developed and applied “filters” or “weightings” to SPLs to match our ears’ sensitivity to the pitch of sounds and to help us judge the relative loudness of sounds made up of different frequencies. Two such filters, “A” and “C,” are most applicable to environmental noises.

A-weighting significantly de-emphasizes noise at low and high frequencies (below approximately 500 Hz and above approximately 10,000 Hz) where we do not hear as well. The filter has little or no effect at intervening frequencies where our hearing is most efficient. **Figure 1** shows a graph of the A-weighting as a function of frequency and its aforementioned characteristics. Because this filter generally matches our ears’ sensitivity, sounds having higher A-weighted sound levels are usually judged to be louder than those with lower A-weighted sound levels, a relationship which does not always hold true for unweighted levels. Therefore, A-weighted sound levels are normally used to evaluate environmental noise. SPLs measured through this filter are referred to as A-weighted decibels (dBA).

As shown in Figure 1, C-weighting is nearly flat throughout the audible frequency range, hardly de-emphasizing the low frequency noise. C-weighted levels are not used as frequently as A-weighted levels, but they may be preferable in evaluating sounds whose low-frequency components are responsible for secondary effects such as the shaking of a building, window rattle, perceptible vibrations or other factors that can cause annoyance and complaints. Uses include the evaluation of blasting noise, artillery fire, sonic boom, and in some cases, aircraft noise inside buildings. SPLs measured through this filter are referred to as C-weighted decibels (dBC).

Other weighting networks have been developed to correspond to the sensitivity and perception of other types of sounds, such as the “B” and “D” filters. However, A-weighting has been adopted as the basic measure of community environmental noise by the U.S. Environmental Protection Agency (EPA) and nearly every other agency concerned with aircraft noise throughout the United States.

Figure 1
Frequency Response Characteristics of Various Weighting Networks



Source: ANSI S1.4-1983 "Specification of Sound Level Meters."

Figure 2 presents typical A-weighted sound levels of several common environmental sources. Sound levels measured (or computed) using A-weighting are most properly called "A-weighted sound levels" while sound levels measured without any frequency weighting are most properly called "sound levels." However, since this document deals only with A-weighted sound levels, the adjective "A-weighted" will be hereafter omitted, with A-weighted sound levels referred to simply as sound levels. As long as the use of A-weighting is understood, there is no difference implied by the terms "sound level" and "A-weighted sound level" or by the dB or dBA units.

An additional dimension to environmental noise is that sound levels vary with time and typically have a limited duration, as shown in **Figure 3**. For example, the sound level increases as an aircraft approaches, then falls and blends into the background as the aircraft recedes into the distance (although even the background varies as birds chirp, the wind blows or a vehicle passes by). Sounds can be classified by their duration as continuous like a waterfall, impulsive like a firecracker or sonic boom or intermittent like an aircraft overflight or vehicle passby.

Figure 2

Sound Levels of Typical Noise Sources (dBA)

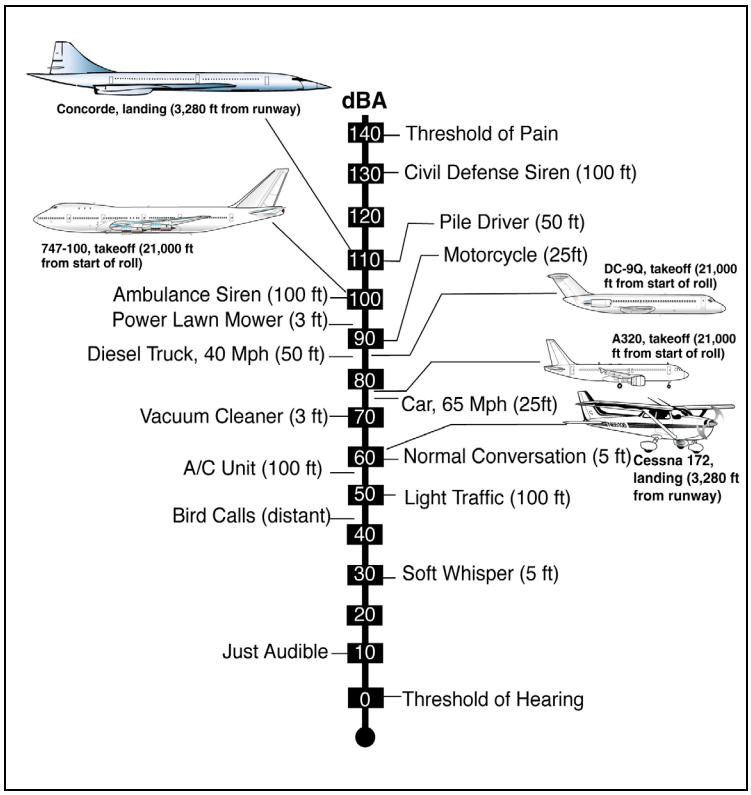
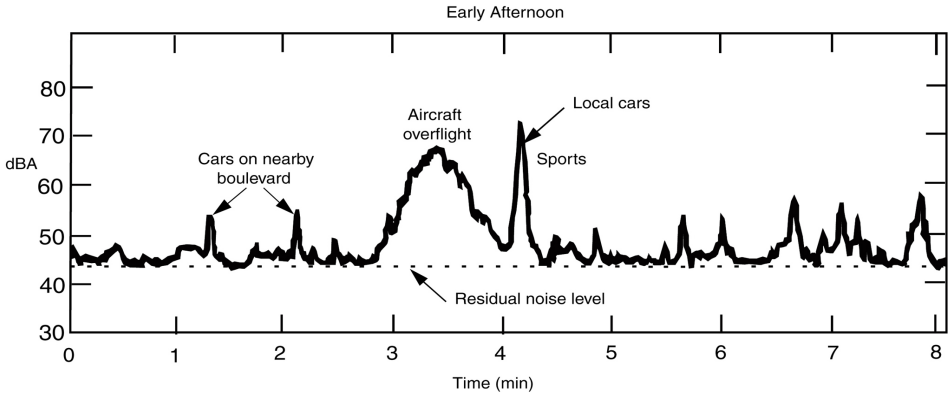


Figure 3

Variation of Community Noise in a Suburban Neighborhood



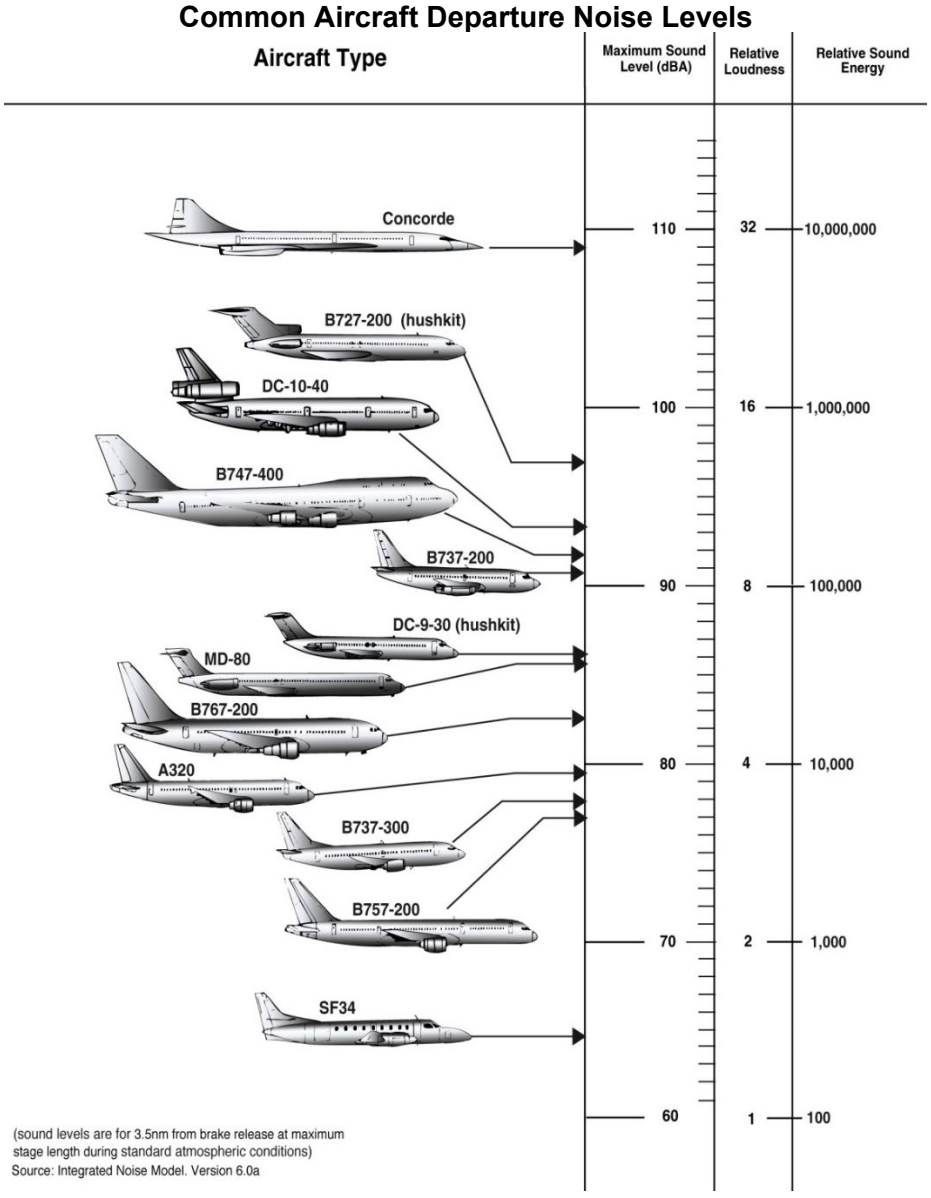
Source: “Community Noise,” NTID 300.3 EPA, December 1971.

1.1.3 Maximum Sound Level (L_{max})

The variation in sound level over time often makes it convenient to describe a particular noise "event" by its maximum sound level, abbreviated as L_{max}. For the aircraft overflight event in Figure 3, the L_{max} is approximately 67 dBA.

Figure 4 shows L_{max} values for a variety of common aircraft from the FAA's Integrated Noise Model (INM) database. These L_{max} values for each aircraft type are for aircraft performing a maximum stage (trip) length departure on a day with standard atmospheric conditions at a reference distance of 3.5 nautical miles (NM) from their brake release point. Of the dozen aircraft types listed on the figure, the Concorde has the highest L_{max} and the Saab 340 (SF340) has the lowest L_{max}.

Figure 4



The maximum level describes only one dimension of an event; it provides no information on the cumulative noise exposure generated by a sound source. In fact, two events with identical maxima may produce very different total exposures. One may be of short duration, while the other may continue for an extended period. The metric, discussed later in this appendix, corrects for this deficiency.

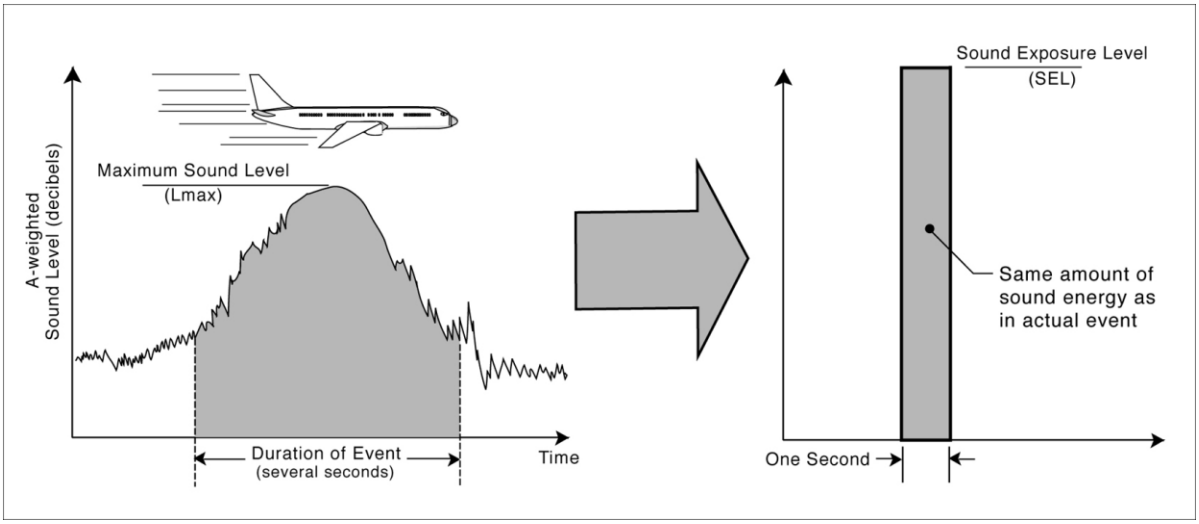
1.1.4 Sound Exposure Level (SEL)

A frequently used metric of noise exposure for a single aircraft flyover is the Sound Exposure Level, or SEL. SEL may be considered an accumulation of the sound energy over the duration of an event. The shaded area in **Figure 5** illustrates that portion of the sound energy (or "dose") included in an SEL computation. The dose is then normalized (standardized) to a duration of one second. This "revised" dose is the SEL, shown as the shaded rectangular area in Figure 5. Mathematically, the SEL represents the sound level of the constant sound that would, in one second, generate the same acoustic energy as the actual time-varying noise event. For events that last more than one second, SEL does not directly represent the sound level heard at any given time, but rather provides a measure of the net impact of the entire acoustic event.

Note that, because the SEL is normalized to one second, it will always be larger in magnitude than the maximum A-weighted level for an event that lasts longer than one second. In fact, for most aircraft overflights, the SEL is on the order of 7 to 12 dBA higher than the L_{max}. The fact that it is a cumulative measure means that not only do louder flyovers have higher SELs than quieter ones (of the same duration), but longer flyovers also have greater SELs than shorter ones (of the same L_{max}).

It is the SEL's inclusion of both the intensity and duration of a sound source that makes SEL the metric of choice for comparing the single-event levels of varying duration and maximum sound level. This metric provides a comprehensive basis for modeling a noise event in determining overall noise exposure.

Figure 5
Relationship Between Single Event Noise Metrics



1.1.5 Equivalent Sound Level (L_{eq})

Maximum A-weighted level and SEL are used to measure the noise associated with individual events. The following metrics apply to longer-term cumulative noise exposure that often includes many events.

The first cumulative noise metric, the Equivalent Sound Level (abbreviated L_{eq}), is a measure of the exposure resulting from the accumulation of A-weighted sound levels over a particular period of interest (e.g., an hour, an 8-hour school day, nighttime or a full 24-hour day). However, because the length of the period can be different depending on the time frame of interest, the applicable period should always be identified or clearly understood when discussing the metric. Such durations are often identified through a subscript, for example $L_{eq(8)}$ or $L_{eq(24)}$.

As for its application to aircraft noise issues, L_{eq} is often presented for consecutive 1-hour periods to illustrate how the hourly noise dose rises and falls throughout a 24-hour period, as well as how certain hours are significantly affected by a few loud aircraft. Since the period of interest for this study is in a full 24-hour day, $L_{eq(24)}$ is the proper nomenclature.

Conceptually, L_{eq} may be thought of as a constant sound level over the period of interest that contains as much sound energy as the actual time-varying sound level with its normal “peaks” and “valleys,” as illustrated in Figure 3. In the context of noise from typical aircraft flight events and as noted earlier for SEL, L_{eq} does not represent the sound level heard at any particular time, but rather represents the total sound exposure for the period of interest. Also, it should be noted that the “average” sound level suggested by L_{eq} is not an arithmetic value, but a logarithmic, or “energy-averaged,” sound level. Thus, loud events tend to dominate the noise environment described by the L_{eq} metric.

1.1.6 Community Noise Equivalent Level (CNEL)

The Community Noise Equivalent Level (CNEL) metric is the predominant noise assessment metrics used in California. CNEL is the same as L_{eq} (an energy-average noise level over a 24-hour period) except that:

- 5 dB is added to those noise events occurring at evening (between 7 p.m. and 10 p.m.).
- 10 dB is added to those noise events occurring at night (between 10 p.m. and 7 a.m.).

This weighting reflects the added intrusiveness of evening and nighttime noise events attributable to the fact that community background noise levels decrease during these hours. CNEL does not represent the sound level heard at any particular time, but rather represents the total (and partially weighted) sound exposure.

1.1.7 Day-Night Average Sound Level (DNL)

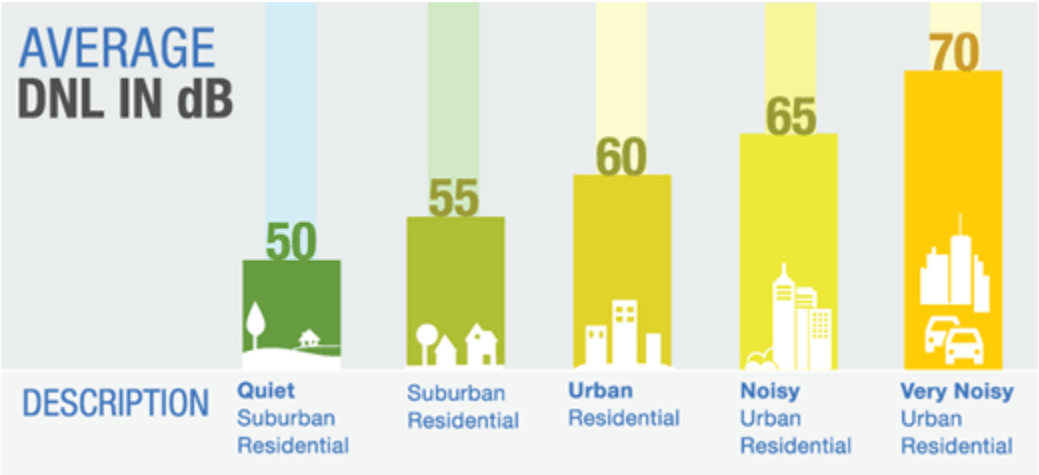
DNL is the predominant noise assessment metrics used in states except California. DNL is similar with CNEL with the exception of 5 dB penalty applied to evening hours. Typical DNL values for a variety of noise environments are shown in **Figure 6** to indicate the range of noise exposure levels usually encountered.

Due to the DNL metric's excellent correlation with the degree of community annoyance from aircraft noise, DNL has been formally adopted by most federal agencies for measuring and evaluating aircraft noise for land use planning and noise impact assessment. Federal interagency committees such as the Federal Interagency Committee on Urban Noise (FICUN) and the Federal Interagency Committee on Noise (FICON) which include the EPA, FAA, Department of Defense, Department of Housing and Urban Development (HUD), and Veterans Administration, found DNL to be the best metric for land use planning. They also found no new cumulative sound descriptors or metrics of sufficient scientific standing to substitute for DNL. Other cumulative metrics could be used only to supplement, not replace DNL. Furthermore, FAA Order 1050.1E for environmental documents requires that DNL be used in describing cumulative noise exposure and in identifying aircraft noise/land use compatibility issues.[1] [2] [3] [4] [5]

Measurements of DNL are practical only for obtaining values for a relatively limited number of points. Instead, many noise studies, including this document, are based on estimates of DNL using an FAA-approved computer-based noise model.

Figure 6

Typical Day-Night Average Sound Levels



Source: Federal Agency Review of Selected Airport Noise Analysis Issues, Federal Interagency Committee on Noise, August 1992.

1.2 The Effects of Aircraft Noise on People

To many people, aircraft noise can be an annoyance and a nuisance. It can interfere with conversation and listening to television, disrupt classroom activities in schools and disrupt sleep. Relating these effects to specific noise metrics aids in the understanding of how and why people react to their environment. This section addresses three ways we are potentially affected by aircraft noise: annoyance, interference of speech and disturbance of sleep.

1.2.1 Community Annoyance

The primary potential effect of aircraft noise on exposed communities is one of annoyance. The U.S. EPA defines noise annoyance as any negative subjective reaction on the part of an individual or group.[1]

Scientific studies [1 2 3 6 7] and a large number of social/attitudinal surveys [8 9] have been conducted to appraise the U.S. and inter-national community of annoyance due to all types of environmental noise, especially aircraft events. These studies and surveys have found the DNL to be the best measure of that annoyance.

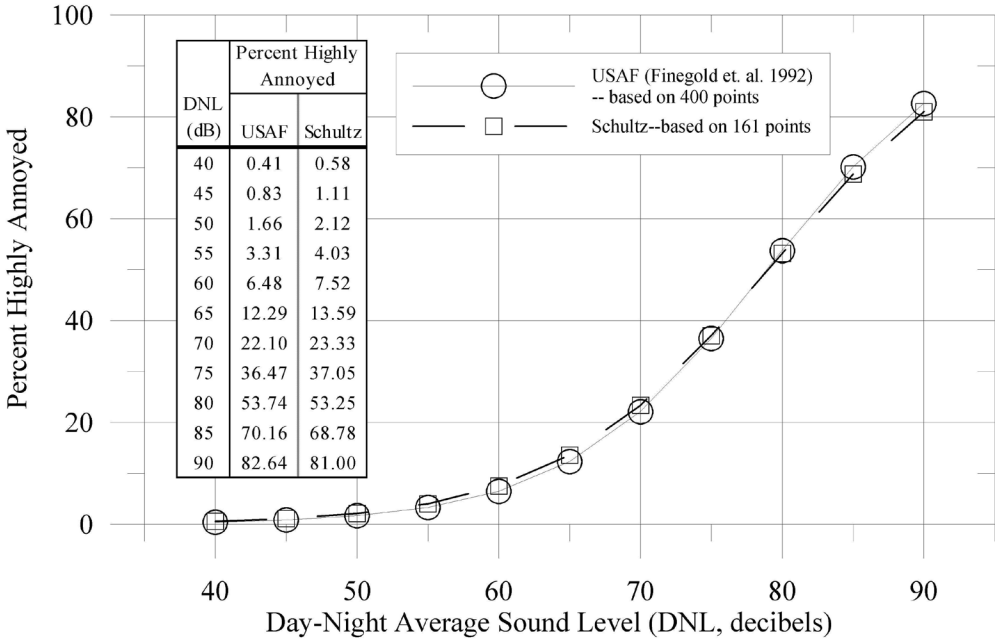
This relation between community annoyance and time-average sound level has been confirmed, even for infrequent aircraft noise events.[10] For helicopter overflights occurring at a rate of 1 to 52 per day, the stated reactions of community individuals correlated with the daily time-average sound levels of the helicopter overflights.

The relationship between annoyance and DNL that has been determined by the scientific community and endorsed by many federal agencies, including the FAA, is shown in **Figure 7.** Two lines in Figure 7 represent two large sets of social/ attitudinal surveys: one for a curve fit of

161 data points compiled by an individual researcher, Ted Schultz, in 1978[8] and one for a curve fit of 400 data points (which include Schultz's 161 points) compiled in 1992 by the U.S. Air Force.[11] The agreement of these two curves simply means that when one combines the more recent studies with the early landmark surveys in 1978, the results of the early surveys (i.e., the quantified effect of noise on annoyance) are confirmed.

Figure 7

Relationship Between Annoyance and Day-Night Average Sound Level



DNL (dB)	Percent Highly Annoyed	
	USAF	Schultz
40	0.41	0.58
45	0.83	1.11
50	1.66	2.12
55	3.31	4.03
60	6.48	7.52
65	12.29	13.59
70	22.10	23.33
75	36.47	37.05
80	53.74	53.25
85	70.16	68.78
90	82.64	81.00

Source: Federal Interagency Committee on Noise (FICON),
"*Federal Agency Review of Selected Airport Noise Analysis Issues*",
August 1992, p. 3-6, Figure 3.1

Figure 7 shows the percentage of people "highly annoyed" by a given DNL. For example, the two curves in the figure yield a value of about 13% for the percentage of people that would be highly annoyed by a DNL exposure of 65 dB. The figure also shows that at very low values of DNL, such as 45 dB or less, 1% or less of the exposed population would be highly annoyed. Furthermore, at very high values of DNL, such as 90 dB, more than 80% of the ex-posed population would be highly annoyed.

Recently, the use of DNL has been criticized as not accurately representing community annoyance and land-use compatibility with aircraft noise. One frequent criticism is based on the inherent feeling that people react more to single noise events and not as much to "meaningless" time-average sound levels. In fact, a time-average noise metric, such as DNL, takes into account both the noise levels of all individual events which occur during a 24-hour period and the number of times those events occur. As described briefly above, the logarithmic nature of the decibel unit causes the noise levels of the loudest events to control the 24-hour average.

As a simple example of this characteristic, consider a case in which only one aircraft overflight occurs in daytime hours during a 24-hour period, creating a sound level of 100 dB for 30 seconds. During the remaining 23 hours 59 minutes and 30 seconds of the day, the ambient sound level is 50 dB. The DNL for this 24-hour period is 65.5 dB. As a second example, assume that 10 such 30-second overflights occur in daytime hours during the next 24-hour period, with the same ambient sound level of 50 dB during the remaining 23 hours and 55 minutes of the day. The DNL for this 24-hour period is 75.4 dB. Clearly, the averaging of noise over a 24-hour period does not ignore the louder single events and tends to emphasize both the sound levels and number of those events. This is the basic concept of a time-average sound metric, and, specifically, the CNEL/DNL.

It is often suggested that a lower DNL, such as 60 or 55 dB, be adopted as the threshold of community noise annoyance for FAA environmental analysis documents. While there is no technical reason why a lower level cannot be measured or calculated for comparison purposes, a DNL of 65 dB:

- Provides a valid basis for comparing and assessing community noise effects.
- Represents a noise exposure level that is normally dominated by aircraft noise and not other community or nearby highway noise sources.
- Reflects the FAA's threshold for grant-in-aid funding of airport noise mitigation projects.
- HUD also established a DNL standard of 65 dB for eligibility for federally guaranteed home loans.

1.2.2 Speech Interference

A primary effect of aircraft noise is its tendency to drown out or "mask" speech, making it difficult to carry on a normal conversation.

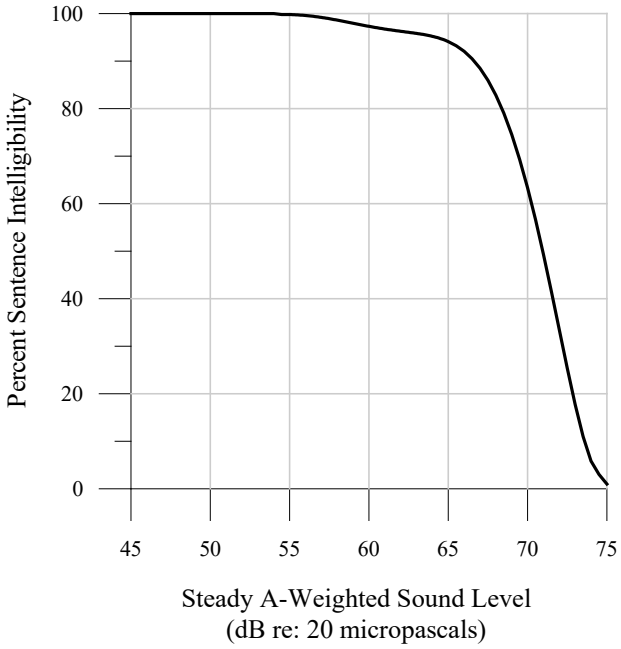
Speech interference associated with aircraft noise is a primary cause of annoyance to individuals on the ground. The disruption of routine activities, such as radio or television listening, telephone use or family conversation, causes frustration and aggravation. Research has shown that "whenever intrusive noise exceeds approximately 60 dB indoors, there will be interference with speech communication."[1]

Indoor speech interference can be expressed as a percentage of sentence intelligibility among two people speaking in relaxed conversation approximately one meter apart in a typical living room or bedroom.[1] The percentage of sentence intelligibility is a non-linear function of the (steady) indoor background sound level, as shown in **Figure 8**. This curve was digitized and curve-fitted for the purposes of this document. Such a curve-fit yields 100 percent sentence intelligibility for background levels below 57 dB and yields less than 10 percent intelligibility for background levels above 73 dB. Note that the function is especially sensitive to changes in sound level between 65 dB and 75 dB. As an example of the sensitivity, a 1 dB increase in background sound level from 70 dB to 71 dB yields a 14 percent decrease in sentence intelligibility.

In the same document from which Figure 8 was taken, the EPA established an indoor criterion of 45 dB DNL as requisite to protect against speech interference indoors.

Figure 8

Percent Sentence Intelligibility



Source: EPA 1974

1.2.3 Sleep Disturbance

Sleep disturbance is another source of annoyance associated with aircraft noise. This is especially true because of the intermittent nature and content of aircraft noise, which is more disturbing than continuous noise of equal energy and neutral meaning.

Sleep disturbance can be measured in one of two ways: “Arousal” represents awakening from sleep, while a change in “sleep stage” represents a shift from one of four sleep stages to another stage of lighter sleep without awakening. In general, arousal requires a higher noise level than does a change in sleep stage.

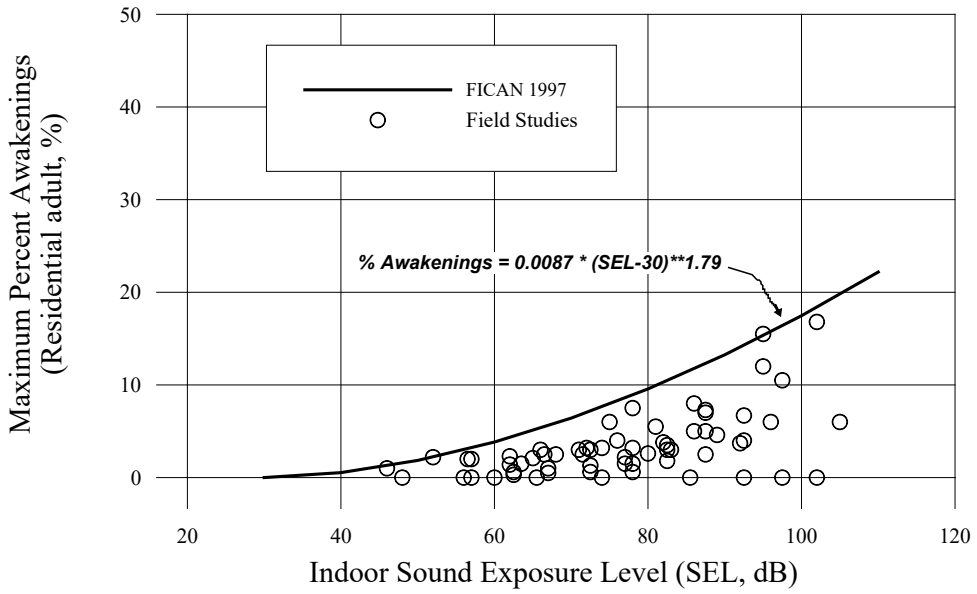
In terms of average daily noise levels, some guidance is available to judge sleep disturbance. The EPA identified an indoor DNL of 45 dB as necessary to protect against sleep interference.[1]

In June 1997, the Federal Interagency Committee on Aviation Noise (FICAN) reviewed the sleep disturbance issue and presented a sleep disturbance dose-response prediction curve.[12] FICAN based their curve on data from field studies[13] [14] [15] [16] and recommends the curve as the tool for analysis of potential sleep disturbance for residential areas. **Figure 9** shows this curve which, for an indoor SEL of 60 dB, predicts that a maximum of approximately 5 percent of the residential

population exposed are expected to be behaviourally awakened. FICAN cautions that this curve should only be applied to long-term adult residents.

Figure 9

Sleep Disturbance Dose-Response Relationship



Source: FICA 1977

2 Airport Noise Modeling

2.1 Introduction

Noise levels in the vicinity of an airport can be modeled using the aircraft fleet, the time of day of operations, the runway orientation, layout, and utilization, representative noise model flight tracks and their respective utilization, aircraft performance data, weather and terrain input data. For projects that require federal actions, the FAA mandates the use of Aviation Environmental Design Tool (AEDT) to conduct aviation noise modeling. The CNEL metrics (See Section 1.1.6) was used as the primary noise metrics for this study.

2.2 Noise Modeling Software

In 2015, the FAA released the Aviation Environmental Design Tool version 2b (AEDT 2b), which replaces both the INM and the Emissions and Dispersion Modeling System (EDMS), used for air quality analysis. The FAA issued a policy statement effective May 29, 2015 that required the use of AEDT 2b for new projects. Since the release of the AEDT 2b, the FAA has published several service packs that fixed various bugs and expanded its modeling capabilities. On September 12th, 2016, the FAA released AEDT version 2c (AEDT 2c) that incorporates various additional upgrades. On March 29th, 2021, the FAA released AEDT version 3d (AEDT 3d) with additional improvements, which is the most current version when this report was written.

2.3 Noise Metrics – CNEL and DNL

In California, the CNEL is the predominant noise evaluation metrics which considers noise impacts during evening hours in addition to the DNL. Details on CNEL are included in Section 1.1.6. The DNL is the noise metric adopted by the Federal government to assess cumulative (i.e., multiple aircraft events) noise in the vicinity of airports for states other than California. Details on DNL are included in Section 1.1.7. The FAA has adopted the CNEL noise metrics as the standard noise metric for California. Therefore, in this analysis, aircraft noise is reported in terms of CNEL.

2.4 Operations

2.4.1 Average Annual Day (AAD)

AEDT uses the Average Annual Day (AAD) to represent the time and frequency of flights at the airport. AAD operations are representative of all aircraft operations that occur over the course of a year, averaged over 365 days.

2.4.2 Stage Length

Stage length is a noise modeling term used to refer to trip distance for an aircraft departure from origin to destination, and is a surrogate for aircraft weight. The trip distance influences the take-off weight (and therefore the thrust and performance) of the aircraft, as more fuel is required to fly longer distances and therefore adds weight to the aircraft.

2.4.3 Day/Evening/Night Split

As described in Section 1.1.7, for CNEL, a 10 dB penalty is added to operations occur during the nighttime hours (between 10 p.m. and 7 a.m.) and a 5 dB penalty is added to operations occur during the evening hours (between 7 p.m. and 10 p.m.).

2.5 Runway and Track Utilization

Runway use is a primary factor in the determination of noise exposure as how much each runway and helipad is utilized may determine the overall shape of the noise contour.

To determine projected noise levels on the ground, it is necessary to determine not only the frequency of aircraft operations, but also the altitude and location in which they fly. Flight routes to and from an airport, which are modeled as tracks in AEDT, are generally a function of the geometry of the airport's runways and the surrounding airspace structure in the vicinity of the airfield.

2.6 Maintenance Engine Run-ups

Engine run-ups can be modeled in AEDT, and depending on their frequency, may influence the size and location of noise exposure contours

2.7 Terrain

Terrain data is used to account for effects that variations in terrain have on noise propagation.

2.8 Weather

The noise model allows for the modeling of atmospheric conditions in the calculation of noise exposure, taking into consideration temperature and humidity. Temperature is an important factor in aircraft performance, as higher temperatures decrease the density of air, which increases aircraft takeoff distance and reduces climb performance. This generally results in increased noise propagation in hot temperatures, as compared to colder temperatures.

Endnotes

[1] U.S. Environmental Protection Agency, “Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety,” Report 550/9-74-004, March 1974.

[2] “Guidelines for Considering Noise in Land Use Planning and Control,” Federal Interagency Committee on Urban Noise (FICUN), June 1980.

[3] “Federal Agency Review of Selected Airport Noise Analysis Issues,” Federal Interagency Committee on Noise (FICON), August 1992.

[4] 14 CFR Part 150, Airport Noise Compatibility Planning, Amendment 150-3, Updated April 2012.

[5] FAA Order 1050.1E, Chg 1, Environmental Impacts: Policies and Procedures, Department of Transportation, Federal Aviation Administration, March 20, 2006.

[6] “Sound Level Descriptors for Determination of Compatible Land Use,” American National Standards Institute Standard ANSI S3.23-1980.

[7] “Quantities and Procedures for Description and Measurement of Environmental Sound, Part I,” American National Standards Institute Standard ANSI S21.9-1988.

[8] Schultz, T.J., “Synthesis of Social Surveys on Noise Annoyance,” *J. Acoust. Soc. Am.,* 64, 377-405, August 1978.

[9] Fidell, S., Barger, D.S., Schultz, T.J., “Updating a Dosage-Effect Relationship for the Prevalence of Annoyance Due to General Transportation Noise.” J. Acoust. Soc. Am., 89, 221-233, January 1991.

[10] “Community Reactions to Helicopter Noise: Results from an Experimental Study,” *J. Acoust. Soc. Am.,* 479-492, August 1987.

[11] Finegold, L.S., C.S. Harris, H.E. VonGierke., "Applied Acoustical Report: Criteria for Assessment of Noise Impacts on People." *J. Acoust. Soc. Am.,* June 1992.

[12] Federal Interagency Committee on Aviation Noise (FICAN), “Effects of Aviation Noise on Awakenings from Sleep,” June 1997.

[13] Pearson, K.S., Barber, D.S., Tabachnick, B.G., “Analyses of the Predictability of Noise-Induced Sleep Disturbance,” USAF Report HSD-TR-89-029, October 1989.

[14] Ollerhead, J.B., Jones, C.J., Cadous, R.E., Woodley, A., Atkinson, B.J., Horne, J.A., Pankhurst, F., Reyner, L, Hume, K.I., Van, F., Watson, A., Diamond, I.D., Egger, P., Holmes, D., McKean, J., “Report of a Field Study of Aircraft Noise and Sleep Disturbance.” London Department of Safety, Environment, and Engineering, 1992.

[15] Fidell, S., Pearsons, K., Howe, R., Tabachnick, B., Silvati, L., Barber, D.S. “Noise-Induced Sleep Disturbance in Residential Settings,” AL/OH-TR-1994-0131, Wright Patterson AFB, OH, Armstrong Laboratory, Occupational and Environmental Health Division, 1994.

[16] Fidell, S., Howe, R., Tabachnick, B., Pearsons, K., Sneddon, M., “Noise-Induced Sleep Disturbance in Residences Near Two Civil Airports,” Langley Research Center, 1995.

Appendix H

Noise Analysis

DRAFT

Baseline Conditions and Future Alternatives Noise Analysis

Supplemental EIR for Rehabilitation of Runway 8R-26L and Associated Improvements at ONT

April 11, 2022

Prepared for:

Ontario International Airport Authority

Prepared by:

HNTB

This page is left intentionally blank.

TABLE OF CONTENTS **Page**

1 Introduction 1
2 Baseline Conditions 1
2.1 Noise Model Inputs 2
2.1.1 Facilities and Runways 2
2.1.2 Aircraft Types and Operations 2
2.1.3 Stage Length 3
2.1.4 Day/Evening/Night Split 4
2.1.5 Run-up Operation 6
2.1.6 Runway Use 6
2.1.7 Track Geometry and Use 7
2.1.8 Weather 10
2.1.9 Terrain 10
2.2 Baseline Conditions Noise Contour 10
3 Future Alternatives 12
3.1 2023 No Project Alternative 13
3.1.1 Noise Model Inputs 13
3.1.1.1 Runway Use 13
3.1.1.2 Track Geometry and Use 14
3.1.1.3 Run-up Operations 14
3.1.2 Noise Model Outputs 15
3.2 2023 Proposed Project 19
3.2.1 Noise Model Inputs 19
3.2.1.1 Runway Use 19
3.2.2 Noise Model Outputs 20
3.3 2023 Two-Year Program Alternative 25
3.3.1 Noise Model Inputs 25
3.3.1.1 Runway Use 25
3.3.2 Noise Model Outputs 26
3.4 2024 No Project Alternative 31
3.4.1 Noise Model Inputs 31
3.4.1.1 Runway Use 31
3.4.1.2 Run-up Operations 31
3.4.2 Noise Model Outputs 32
3.5 2024 Proposed Project and Two-Year Program Alternative 34
3.5.1 Noise Model Inputs 34
3.5.1.1 Runway Use 34
3.5.2 Noise Model Outputs 35
3.6 2025 No Project Alternative 40
3.6.1 Noise Model Inputs 40
3.6.1.1 Runway Use 40
3.6.1.2 Run-up Operations 40
3.6.2 Noise Model Outputs 41
3.7 2025 Proposed Project 43
3.7.1 Noise Model Inputs 43
3.7.1.1 Runway Use 43
3.7.2 Noise Model Outputs 44

4 Cumulative Impact Analysis 49
4.1 Noise Model Inputs 49
4.1.1 Fleet Mix 49
4.1.2 Runway Use and Track Use 51
4.2 Noise Model Outputs 51
5 Summary 54

LIST OF FIGURES

Page

Figure 1: Airport Facilities and Runways 5

Figure 2: Modeled Arrival Flight Tracks 8

Figure 3: Modeled Departure Flight Tracks 9

Figure 4: Baseline Conditions Noise Contour 11

Figure 5: 2023 No Project Alternative Noise Contour 16

Figure 6: Baseline Conditions vs. 2023 No Project Alternative Noise Contours 17

Figure 7: Baseline Conditions vs. 2023 No Project Alternative Noise Contours Case Study 18

Figure 8: 2023 Proposed Project Noise Contour 22

Figure 9: 2023 Proposed Project vs. Baseline Conditions Noise Contours 23

Figure 10: 2023 Proposed Project vs. 2023 No Project Alternative Noise Contours 24

Figure 11: 2023 Two-Year Program Alternative Noise Contour 28

Figure 12: 2023 Two-Year Program Alternative vs. Baseline Conditions Noise Contours 29

Figure 13: 2023 Two-Year Program Alternative vs. 2023 No Project Alternative Noise Contours 30

Figure 14: 2024 No Project Alternative Noise Contour 33

Figure 15: 2024 Proposed Project Noise Contour 37

Figure 16: 2024 Proposed Project vs. Baseline Conditions Noise Contours 38

Figure 17: 2024 Proposed Project vs. 2024 No Project Alternative Noise Contours 39

Figure 18: 2025 No Project Alternative Noise Contour 42

Figure 19: 2025 Proposed Project Noise Contours 46

Figure 20: 2025 Proposed Project vs. Baseline Conditions Noise Contours 47

Figure 21: 2025 Proposed Project vs. 2025 No Project Alternative Noise Contours 48

Figure 22: 2024 / 2025 Proposed Project – Cumulative Impact vs. Baseline Conditions Noise Contours52

Figure 23: 2024 / 2025 Proposed Project – Cumulative Impact vs. No Project Noise Contours..... 53

LIST OF TABLES **Page**

Table 1: Departure Stage Length Distribution.....3

Table 2: Baseline Conditions Day/Evening/Night Split 4

Table 3: Baseline Conditions Run-up Operations.....6

Table 4: Baseline Conditions Runway Use.....7

Table 5: Weather Parameters for the Baseline Conditions.....10

Table 6: 2023 No Project Alternative Runway Use.....13

Table 7: 2023 No Project Alternative Run-up Operations.....14

Table 8: 2023 Proposed Project vs. Baseline Conditions Runway Uses 19

Table 9: 2023 Proposed Project vs. 2023 No Project Alternative Runway Uses 20

Table 10: 2023 Comparison of Two-Year Program Alternative and Baseline Conditions Runway Uses .25

Table 11: 2023 Comparison of Two-Year Program Alternative vs. 2023 No Project Alternative Runway Uses 26

Table 12: 2024 No Project Alternative Runway Use.....31

Table 13: 2024 No Project Alternative Run-up Operations.....31

Table 14: 2024 Proposed Project / Two-Year vs. Baseline Conditions Runway Uses.....34

Table 15: 2024 Proposed Project vs. 2024 No Project Alternative Runway Uses 35

Table 16: 2025 No Project Alternative Runway Use.....40

Table 17: 2025 No Project Alternative Run-up Operations.....41

Table 18: 2025 Proposed Project vs. Baseline Conditions Runway Uses 43

Table 19: 2025 Proposed Project vs. 2025 No Project Alternative Runway Uses 44

Table 20: Anticipated SACC Cargo Operations in 2024 and 2025.....50

ATTACHMENTS

Attachment 1: Fleet Mix Development

Attachment 2: Flight Track Development

This page is left intentionally blank.

1 Introduction

The Ontario International Airport Authority (OIAA) is preparing a Supplemental Environmental Impact Report (SEIR) to evaluate the potential environmental effects associated with the proposed rehabilitation of Runway 8R-26L and associated airfield improvements at Ontario International Airport (ONT).

This technical memorandum summarizes the assumptions and methodologies used to develop noise contours for the ONT Runway 8R-26L Rehabilitation and Associated Airfield Improvements Supplemental EIR. Noise contours were developed for Baseline Conditions and the following alternatives:

- Baseline Conditions (2019/2020 Hybrid)
- No Project Alternative (2023)
- Proposed Project (2023)
- Two-Year Program Alternative (2023)
- No Project Alternative (2024)
- Proposed Project / Two-Year Program Alternative (2024)
- No Project Alternative (2025)
- Proposed Project (2025)

In addition, cumulative noise impacts with the proposed rehabilitation of Runway 8R-26L and associated airfield improvements and the proposed South Air Cargo Complex (SACC) operations were also evaluated in the following alternatives:

- Proposed Project – Cumulative Impact (2024)
- Proposed Project – Cumulative Impact (2025)

2 Baseline Conditions

The term “Baseline Conditions” is applied for discussion of the existing noise environment used for the noise. This term is used instead of “Existing Condition,” which would indicate the use of the year 2021 in this case, which, due to the COVID-19 pandemic, do not represent activity levels that have been, or will be, typical of ONT or that are reasonably expected to exist during the timeframe for project implementation. The Baseline Conditions noise impacts were determined using a hybrid base year (2019/2020) approach. Per CEQA Guidelines Section 15125(a)(1), “where necessary to provide the most accurate picture practically possible of the project's impacts, a lead agency may define existing conditions by referencing historic conditions, or conditions expected when the project becomes operational, or both, that are supported with substantial evidence.” Thus, to more accurately represent historically consistent existing conditions at ONT, and to avoid a potentially misleading comparison of project impacts, noise is described and compared using a hybrid of 2019 and 2020 operations. The Baseline Conditions noise contour for this SEIR was developed using calendar year 2019 aircraft operations with modifications to reflect increased cargo operations experienced during 2020 and continuing into 2021.

Specifically, the hybrid base year (2019/2020) Baseline Conditions fleet mix was based on the ONT Airport Noise Monitoring System (ANOMS) radar data from 2019 and 2020, and FAA's Traffic Flow Management System Count (TFMSC). Passenger air carriers, air taxi, and General Aviation (GA) operations were obtained from the 2019 ANOMS data and the all-cargo operations were obtained from the 2020 ANOMS data. This approach represents a hybrid base year scenario which recognizes the reduction in passenger carrier and air taxi operations, and the increase in all-cargo operations, attributable to the COVID-19 pandemic. Noise impacts were evaluated in terms of the Community Noise Equivalent Level (CNEL) in decibels (dB). The CNEL is the noise metric adopted by the federal government to assess cumulative noise (i.e., multiple aircraft events) near airports in California. The CNEL is a cumulative metric with a 5- dB penalty applied to evening aircraft events (7:00 pm – 9:59 pm) and 10- dB penalty applied to nighttime aircraft events (10:00 pm – 6:59 am).

2.1 Noise Model Inputs

Inputs to the noise model include facilities and runways at the Airport, aircraft types and operations (fleet mix), stage length, day/evening/night split, engine maintenance run-up operations, runway use, track geometry and use, weather, and terrain. The following sections describe inputs of the noise model for the Baseline Conditions.

2.1.1 Facilities and Runways

ONT operates two parallel runways: Runway 8R-26L and Runway 8L-26R. Runway 8L-26R is the longer runway and is 150 feet wide and 12,197 feet long. Runway 8R-26L is the shorter runway and is 150 feet wide and 10,200 feet long. The Airport does not have a designated helipad but for noise modeling purposes, a helipad was defined at the parking area of the Airport Fixed Base Operator (FBO). **Figure 1** depicts the runways and assumed helipad location at the Airport.

2.1.2 Aircraft Types and Operations

Fleet mixes, including aircraft types, number and hours of operation, and flight distance, are the major components of modeling noise in the vicinity of an airport. The fleet mixes developed in *Attachment 1, Fleet Mix Development*, were applied in the modeling of the Baseline Conditions, No Project Alternative, Proposed Project, and Two-Year Program Alternative noise contours. The fleet mixes for years 2023, 2024 and 2025 are based on the hybrid base year (Baseline Conditions) fleet mix and supplemented with announced airline aircraft replacement and retirement plans, as well as announced new airlines and destinations. The future forecast of operations and enplanements in the 2020 Draft TAF were used as the future alternatives' base operations and enplanements numbers. Operations were grouped by passenger air carrier, all-cargo carrier, air taxi, General Aviation (GA), and military. In the noise model, operations are represented by the Average Annual Day (AAD) operations, which is equal to the total annual operations divided by 365.

For the Baseline Conditions, passenger air carriers and air taxi operations were obtained from the 2019 Airport Noise and Operations Monitoring System (ANOMS) data while all-cargo carrier operations were obtained from the 2020 ANOMS data. This approach represents a hybrid

Baseline Conditions fleet mix which recognizes the impact of the COVID-19 pandemic resulting in reduced passenger air carrier and air taxi operations, and increased all-cargo operations in 2020. This hybrid fleet mix normalizes operations for modeling the Baseline Conditions noise contour. The top 108 aircraft types, which accounted for more than 99.0% of operations in 2019 and 2020, were included in the Baseline Conditions fleet mix.

2.1.3 Stage Length

The departure stage length is a noise modeling term used to refer to nonstop trip distance for an aircraft departure from origin to destination and is a surrogate for aircraft weight. The trip distance influences the take-off weight (and therefore the thrust and performance) of the aircraft, as more fuel is required to fly longer distances and therefore adds weight to the aircraft. The noise model uses twelve stage length brackets in increments of 500 or 1,000 nautical miles (nm) as well as a stage length for the maximum departure weight. For the Baseline Conditions analysis, stage lengths were calculated based on the reported origin and destination included in the 2019 and 2020 ANOMS data. A small portion of the departure stage length performance model is not available in AEDT. In these cases, the closest stage lengths were applied. **Table 1** summarizes the distribution of the departure stage lengths in the Baseline Conditions. Approximately half of the departures have a stage length of less than 500 nautical miles. A small percentage of flights have a stage length of more than 2,500 nautical miles.

Table 1: Departure Stage Length Distribution

Stage Length	Range (nautical miles)	Percentage
1	0 - 500	54.2%
2	501 - 1,000	11.9%
3	1,001 - 1,500	15.4%
4	1,501 - 2,500	17.8%
5	2,501 - 3,500	0.0%
6	3,501 - 4,500	-
7	4,501 - 5,500	0.1%
8	5,501 - 6,500	0.6%
9	6,500 - 7,500	0.0%

Sources: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

2.1.4 Day/Evening/Night Split

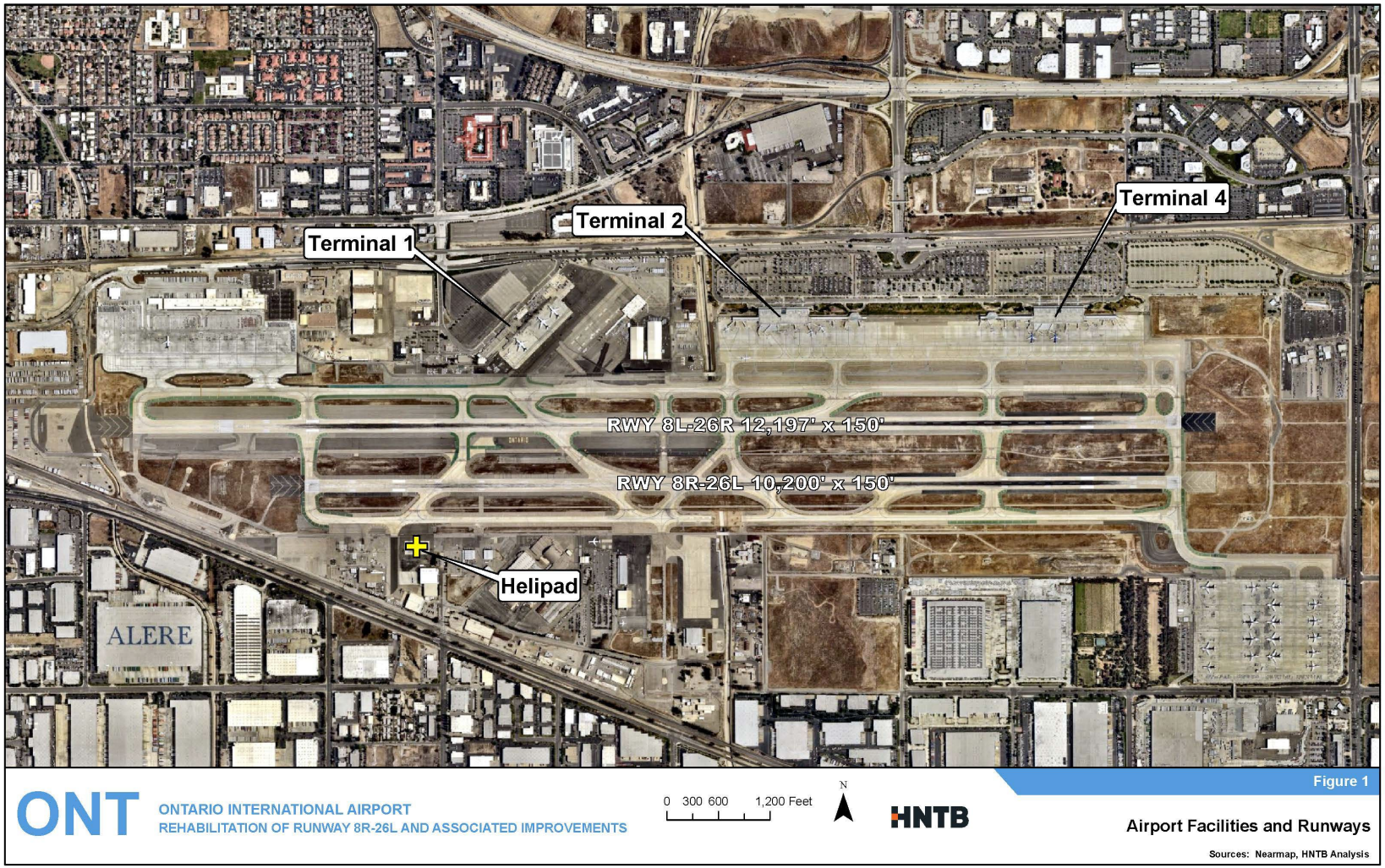
The CNEL metric takes into consideration the time of day of aircraft operations. In the noise analysis, daytime is defined as 7:00 am to 6:59 pm, evening is defined as 7:00 pm to 9:59pm, and nighttime is defined as 10:00 pm to 6:59 am. The 5-dB and 10-dB penalties during evening and nighttime hours are intended to account for the added intrusiveness of aircraft noise during time periods when ambient noise due to vehicle traffic and other sources is typically less than during the daytime, and when people are more likely to be resting. For the Baseline Conditions analysis, runway time (radar start time for departures and end time for arrivals) in the 2019 and 2020 radar data for each operation was used to identify daytime, evening, and nighttime distribution for the noise analysis (day/evening/night split). **Table 2** summarizes the day/evening/night split by operation groups. In the Baseline Conditions, approximately 60.1% of the arrivals occur during daytime hours, 19.3% during evening hours, and 20.6% during nighttime hours. For departures, approximately 57.0% of operations occur during daytime hours, 12.6% during evening hours, and 30.4% during nighttime hours.

Table 2: Baseline Conditions Day/Evening/Night Split

Operation Group	Arrival				Departure			
	Day	Evening	Night	Total	Day	Evening	Night	Total
Passenger Air	61.9%	19.7%	18.5%	100.0%	61.3%	12.8%	25.9%	100.0%
Air Taxi	64.5%	18.7%	16.9%	100.0%	75.8%	6.9%	17.3%	100.0%
All-Cargo Carrier	51.5%	20.7%	27.8%	100.0%	43.5%	13.1%	43.3%	100.0%
GA	78.8%	14.2%	7.0%	100.0%	80.2%	10.9%	8.9%	100.0%
Military	100.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%
Total	60.1%	19.3%	20.6%	100.0%	57.0%	12.6%	30.4%	100.0%

Sources: 2019 and 2020 Radar Data and HNTB Analysis, 2021.

Figure 1: Airport Facilities and Runways



2.1.5 Run-up Operation

Aircraft maintenance engine run-ups can be modeled in AEDT 3d, and depending on their frequency and orientation, may influence the size and location of noise contours. The Airport provided detailed engine run-up logs for use in the engine run-up contour modeling. Based on the information provided by the OIAA planning staff, the duration of a run-up operation was assumed to be 25 minutes when the duration information is missing from the run-up logs. If the aircraft types are missing from the run-up logs, the operation was proportionally distributed to other aircraft types of the same airline in the run-up logs. As a result, there are fractional run-up operations in the model. **Table 3** summarizes the Baseline Conditions run-up input.

Table 3: Baseline Conditions Run-up Operations

AEDT Aircraft	Operations
737700	2.0
737800	0.5
747400	1.0
727EM2	6.0
757PW	8.6
757RR	8.4
7673ER	42.5
A300-622R	1.5
A320-211	1.0
A320-232	1.0
CNA750	2.5
FAL20	0.3
FAL900EX	2.1
MD11GE	6.0
MD11PW	11.5
Grand Total	**95.0**

Source: 2019 ONT Run-up logs.

2.1.6 Runway Use

Runway use represents how aircraft utilize the runways and helipads at an airport and is a primary factor in the determination of noise exposure. For the Baseline Conditions, runway use for each airline and aircraft combination was obtained from the 2019 and 2020 radar data and was used for the Baseline Conditions (shown in **Table 4**).

Table 4: Baseline Conditions Runway Use

Operation Type	Runway	Day	Evening	Night	Total
Arrival	8L	4.6%	4.9%	7.1%	5.2%
	8R	2.0%	0.9%	1.1%	1.6%
	26L	43.9%	39.4%	45.8%	43.4%
	26R	48.5%	54.4%	45.5%	49.0%
	H01	1.0%	0.4%	0.6%	0.8%
Arrival Total		100.0%	100.0%	100.0%	100.0%
Departure	8L	3.8%	3.6%	35.1%	13.3%
	8R	3.1%	3.0%	36.7%	13.3%
	26L	35.1%	38.4%	13.4%	28.9%
	26R	57.0%	54.2%	14.4%	43.7%
	H01	0.9%	0.8%	0.5%	0.8%
Departure Total		100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2021.

2.1.7 Track Geometry and Use

To determine projected noise levels on the ground, it is necessary to determine not only the frequency of aircraft operations, but also the altitude and location in which they fly. Flight routes to and from an airport are generally a function of the geometry of the airport's runways and the surrounding airspace structure near the airfield. To develop representative tracks and calculate track use, eight weeks of representative radar data were selected. The following weeks were used for the track geometry and track use calculation:

- January 6th to Jan 19th, 2019
- April 21st to May 4th, 2019
- July 7th to July 20th, 2019
- October 20th to November 2nd, 2019

Figure 2 and **Figure 3** depict the modeled arrival and departure flight tracks for the Baseline Conditions. Track use was calculated based on four aircraft groups including passenger, cargo, GA, and military as well as three aircraft types including jets, propellers, and helicopters. Detailed tracks by arrival and departure, runway, aircraft group, and aircraft types are shown in *Attachment 2, Flight Track Development.* **Table B-1** in Attachment 2 summarizes the track use.

Figure 2: Modeled Arrival Flight Tracks

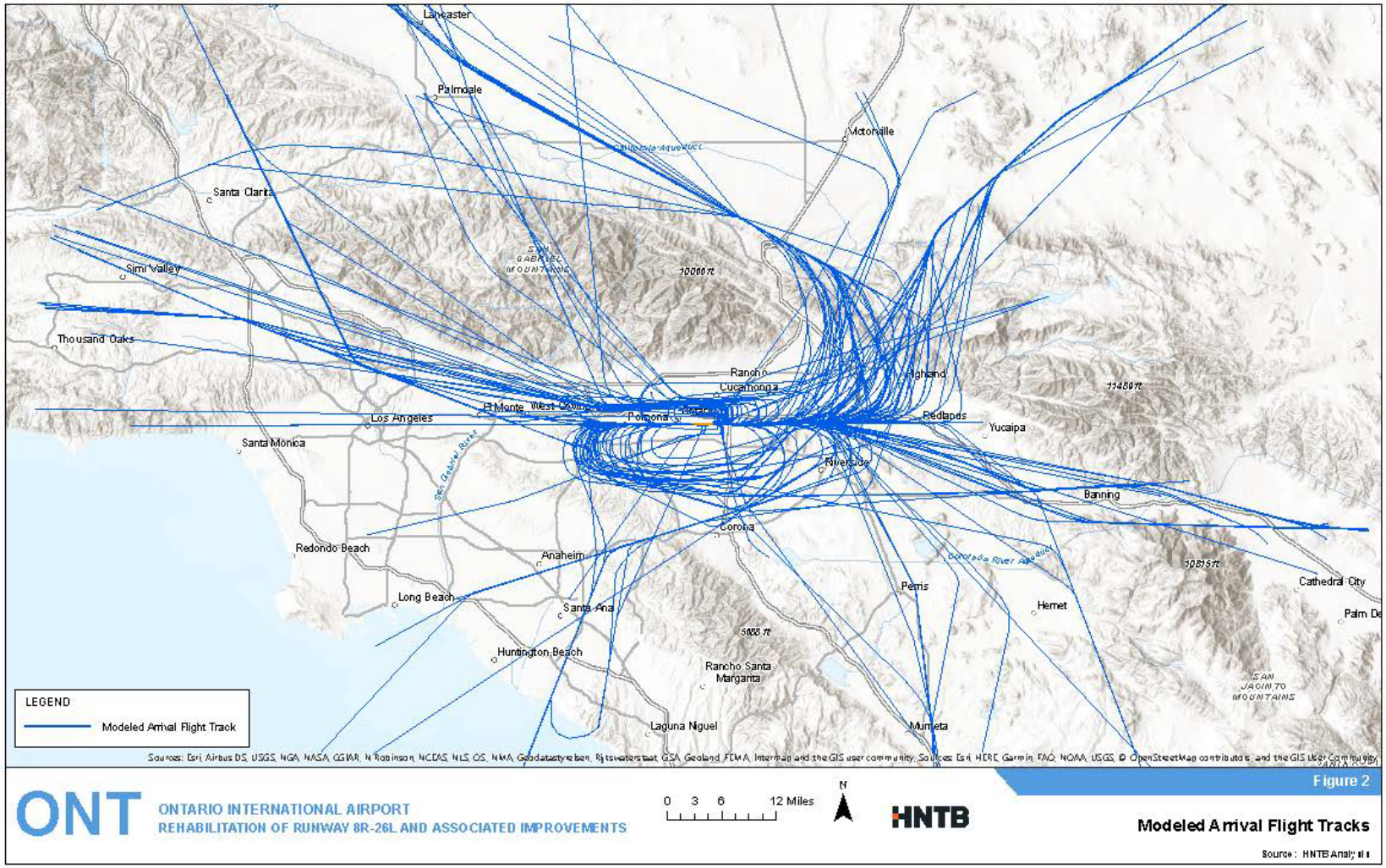
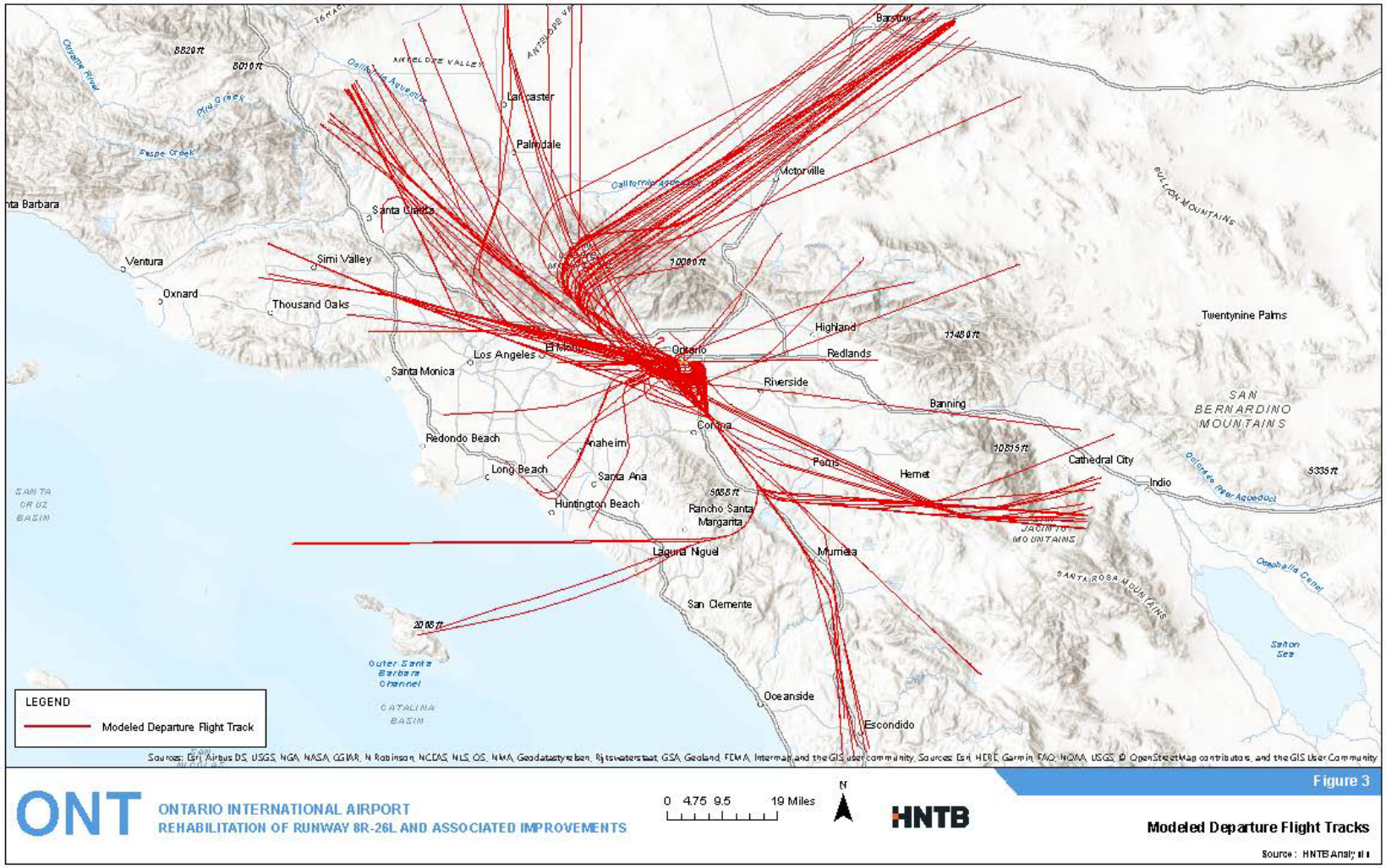


Figure 3: Modeled Departure Flight Tracks



2.1.8 Weather

AEDT allows for the modeling of atmospheric conditions in the calculation of noise exposure, taking into consideration temperature and humidity. For the Baseline Conditions, parameters in **Table 5** were applied based on the AEDT 10-year (2011 – 2020) average weather parameters for the Airport.

Table 5: Weather Parameters for the Baseline Conditions

Parameters	Baseline Conditions
Temperature (ºF)	65.6
Dew Point (ºF)	45.6
Pressure (millibar)	982.3
Humidity (%)	48.4
Wind (knots)	5.0

Sources: AEDT 3d and HNTB Analysis, 2022.

2.1.9 Terrain

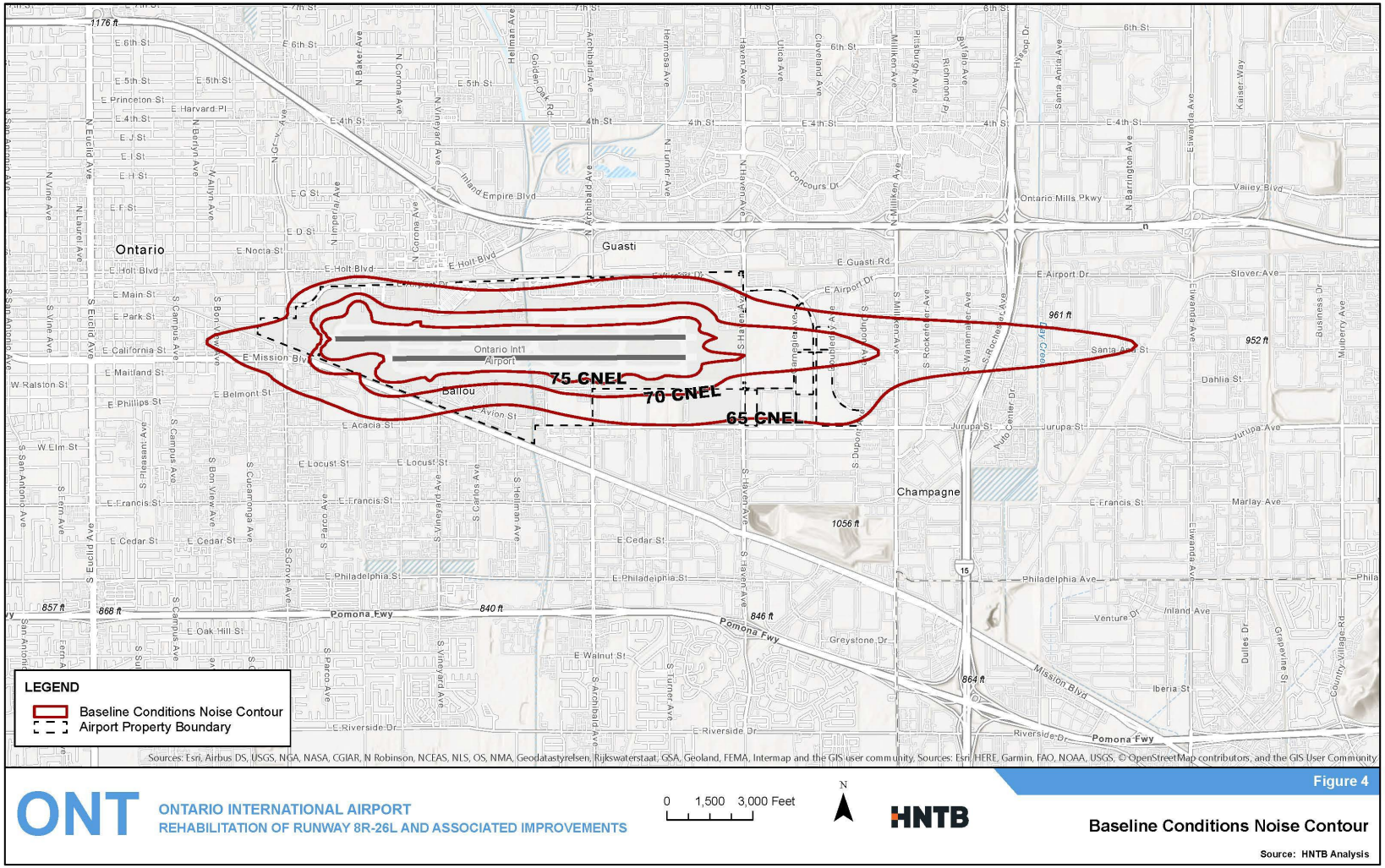
Terrain data is used to account for effects that variations in terrain have on noise propagation. Terrain data was obtained from The National Map (TNM) v2.0 developed by the United States Geological Survey (USGS) and was used in the noise modeling.

2.2 Baseline Conditions Noise Contour

Based on inputs described in Section 2.1, noise contours were modeled using AEDT 3d. **Figure 4** depicts the 65dB, 70dB, and 75dB CNEL noise contours for the Baseline Conditions. In general, the noise contours follow an east-west direction consistent with the runway orientation. The noise contour to the southeast of the Airport is primarily driven by departures from Runways 8L and 8R, especially at nighttime during the Contra Flow[1].

[1] During the nighttime hours, depending on wind condition, ONT operates contraflow where aircraft takes off to the east while still landing to the west. Contra Flow is utilized to alleviate noise impacts to the residential area to the west of the Airport.

Figure 4: Baseline Conditions Noise Contour



3 Future Alternatives

Runway use and flight patterns would be temporarily impacted during runway closures due to the lack of ability to operate in Contra Flow conditions. Therefore, noise impacts during construction in 2023, 2024 and 2025 were analyzed, encompassing the entire proposed construction periods. There are no noise impacts associated with the Proposed Project beyond the construction period. This study analyzed two alternatives including a three-year construction alternative (Proposed Project) and a two-year construction alternative (Two-Year Program Alternative).

The Proposed Project assumes the following runway closure and construction phasing:

- **2023** – maximum nine months of runway closure
  - Runway 8L-26R will be closed for four months (from mid-January to mid-May)
  - Runway 8R-26L will be closed for five months (from June to October)
- **2024** – maximum nine months of runway closure
  - Runway 8R-26L will be closed for nine months (from mid-January to mid-October)
- **2025** – maximum five months of runway closure
  - Runway 8L-26R will be closed for five months (from mid-January to mid-June)

The Two-Year Program Alternative assumes the following runway closure and construction phasing:

- **2023** – maximum nine months of runway closure
  - Runway 8L-26R will be closed for six months (mid-Jan to mid-July)
  - Runway 8R-26L will be closed for three months (mid-July to mid-October)
- **2024** – maximum nine months of runway closure
  - Runway 8R-26L will be closed for nine months (mid-Jan to mid-October)

In 2024, the Proposed Project construction phasing is identical to the Two-Year Program Alternative construction phasing. Therefore, the 2024 noise contours of both alternatives are expected to be identical.

Based on the phasing discussed above, this study analyzed the following future year alternatives:

- 2023 No Project Alternative
- 2023 Proposed Project
- 2023 Two-Year Program Alternative
- 2024 No Project Alternative
- 2024 Proposed Project (identical to 2024 Two-Year Program Alternative)
- 2025 No Project Alternative
- 2025 Proposed Project

The following sections discuss the inputs to the noise models and the noise model outputs. It is assumed that the fleet mixes of the No Project alternatives will be the same as the Proposed Project and Two-Year Program Alternative of the same year. Simulations using AirTOP were conducted to project runway use changes in the future alternatives. As required by CEQA, the noise levels associated with the Proposed Project in 2023, 2024 and 2025 were compared to the noise levels associated with the Baseline Conditions for the purpose of making a significance determination. For the Proposed Project, the future noise exposure would be influenced by factors that are not attributable to the Project itself, specifically from background operational growth that is projected to occur with or without the Proposed Project, as well changes in fleet mix that can impact overall noise levels. In order to remove the influence of background growth and differences in aircraft fleet noise levels, this analysis also compares noise exposure of the Proposed Project in a given year with the noise exposure from the No Project Alternative in the same year. *Thus, the No Project vs. Proposed Project in years 2023, 2024 and 2025 are included for informational purposes as well.*

3.1 2023 No Project Alternative

The 2023 No Project Alternative assumes both runways will be open for the full year.

3.1.1 Noise Model Inputs

The 2023 No Project Alternative fleet mix was developed as part of the fleet mix forecast in *Attachment 1, Fleet Mix Development.* Several parameters, such as the facility and runways, stage length, day/evening/night split, weather parameters and terrain were assumed to be the same as the Baseline Conditions. Other inputs are described in the following sections.

3.1.1.1 Runway Use

Runway use changes through AirTOP simulation were applied in the 2023 No Project Alternative as compared with the Baseline Conditions. For aircraft that are new in the fleet mix, their runway uses were assumed to be the same as the aircraft they are expected to replace or similar aircraft types. **Table 6** shows the 2023 No Project Alternative runway use.

Table 6: 2023 No Project Alternative Runway Use

Operation Type	Runway	Day	Evening	Night	Total
Arrival	8L	4.4%	4.7%	6.5%	4.9%
	8R	2.1%	0.9%	1.1%	1.7%
	26L	45.0%	42.7%	47.9%	45.1%
	26R	47.4%	51.2%	43.8%	47.4%
	H01	1.1%	0.5%	0.7%	0.9%
Arrival Total		100.0%	100.0%	100.0%	100.0%
Departure	8L	3.6%	4.5%	33.5%	12.3%
	8R	3.1%	3.1%	37.8%	13.1%
	26L	35.3%	39.0%	13.7%	29.5%
	26R	57.0%	52.5%	14.4%	44.2%

Operation Type	Runway	Day	Evening	Night	Total
	H01	1.0%	0.9%	0.6%	0.9%
Departure Total		100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

3.1.1.2 Track Geometry and Use

An additional fourteen weeks of radar data in 2020 (eight weeks) and 2021 (six weeks[2]) were used to verify whether there were flight procedure changes from 2019 to 2021. The radar data sample included the following:

- January 5th to January 18th, 2020
- April 19th to May 2nd, 2020
- July 12th to July 25th, 2020
- October 18th to Oct 31st, 2020
- January 3rd to Jan 16th, 2021
- April 18th to May 1st, 2021
- July 11th to July 24th, 2021

It was determined that the majority of the flight paths remain the same except for the arrival flight paths over the San Bernardino Mountains. In 2019, traffic over the San Bernardino Mountains followed an east route and a west route. In 2020 and 2021, only the east route was used (shown in Figure 41 in *Attachment 2)*. Other flight tracks remain the same as in the Baseline Conditions.

3.1.1.3 Run-up Operations

The aircraft engine maintenance run-up operations in the No Project Alternative were based on the Baseline Conditions run-up operations with operations adjusted based on growth of each aircraft in the fleet mix from the Baseline Conditions to the No Project Alternative. **Table 7** summarizes the run-up operations applied in the 2023 No Project Alternative.

Table 7: 2023 No Project Alternative Run-up Operations

AEDT Aircraft	Operations
737700	1.7
737800	0.3
747400	1.0
727EM2	6.1
757PW	8.7
757RR	8.5

[2] At the time of this analysis, data was only available through Summer 2021.

AEDT Aircraft	Operations
7673ER	53.0
A300-622R	1.5
A320-211	0.4
A320-232	0.8
CNA750	3.4
FAL20	0.4
FAL900EX	2.3
MD11GE	4.2
MD11PW	7.3
Grand Total	**99.5**

Source: 2019 ONT Run-up logs and HNTB analysis, 2022.

3.1.2 Noise Model Outputs

Figure 5 depicts the No Project Alternative 65dB, 70dB, and 75dB CNEL noise contours and **Figure 6** compares the No Project Alternative and the Baseline Conditions noise contours. The No Project noise contour is slightly smaller than the Baseline Conditions noise contour due to the expected changes in the fleet mix. In 2024, operations by the Boeing 737 MAX and Airbus A320 NEO are expected to increase and replace a portion of the Boeing 737 New Generation (NG) and Airbus A320 CEO operations. Since the Boeing 737 MAX and Airbus A320 NEO have smaller noise footprints than the Boeing 737 NG and Airbus A320 CEO, the overall size of the noise contour is expected to slightly decrease. In addition, operations from older and noisier aircraft types, such as MD-11, are expected to decrease, which also contributes to the smaller No Project Alternative noise contour.

A case study was conducted to verify that the smaller 2023 No Project Alternative noise contours resulted from quieter aircraft types in the fleet mix. In the case study, the Boeing 737 MAX and Airbus A320 NEO operations were replaced by the Boeing 737 NG and Airbus A320 CEO operations with the rest of the operations remaining the same as the 2023 No Project Alternative. The case study noise contours were slightly larger than the Baseline Conditions, which verifies the quieter aircraft as the driver for the smaller 2023 No Project Alternative noise contour compared with the Baseline Conditions noise contour. **Figure 7** depicts the noise contour comparison between the Baseline Conditions and the 2023 No Project Alternative case study noise contour.

Figure 5: 2023 No Project Alternative Noise Contour

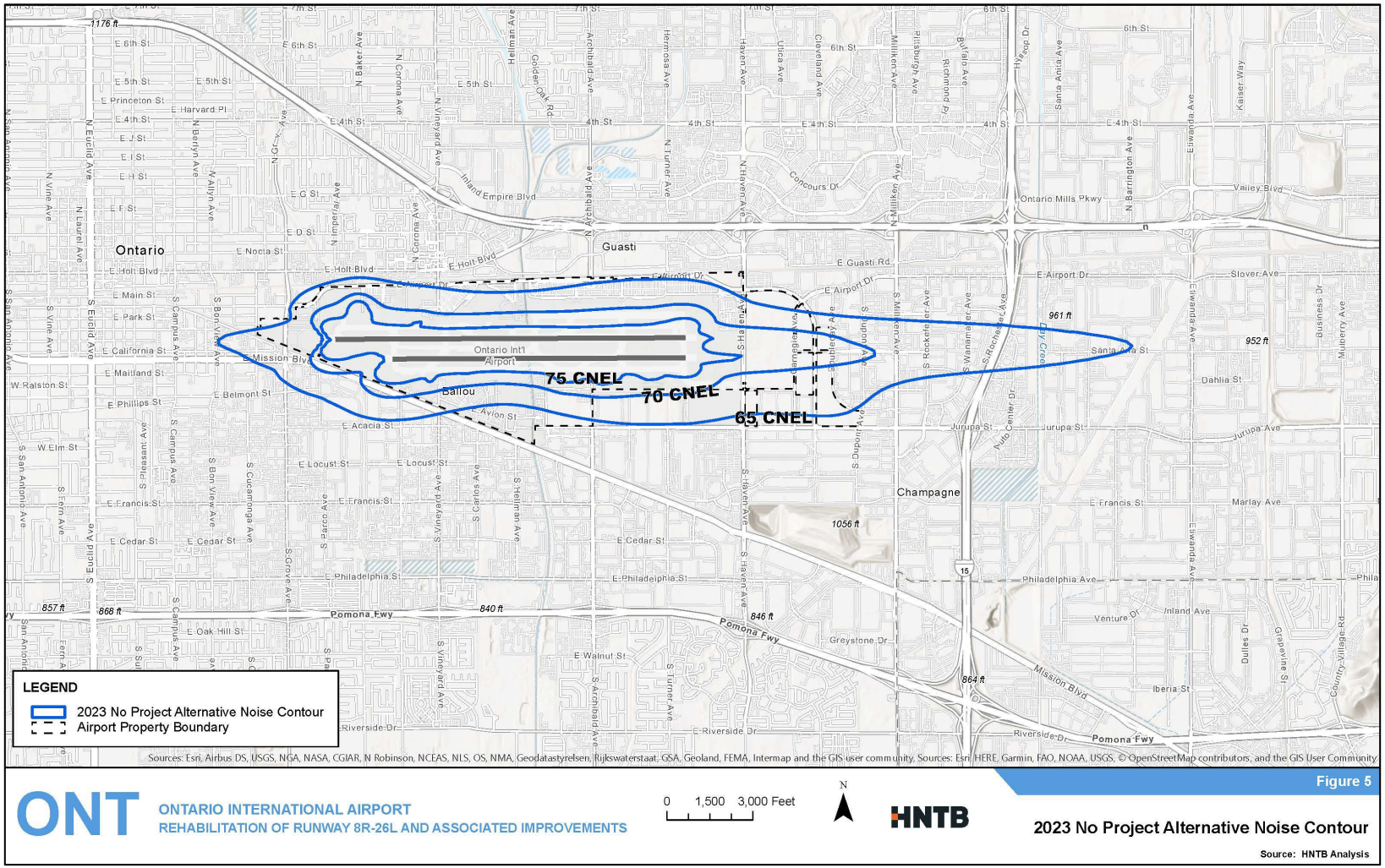


Figure 6: Baseline Conditions vs. 2023 No Project Alternative Noise Contours

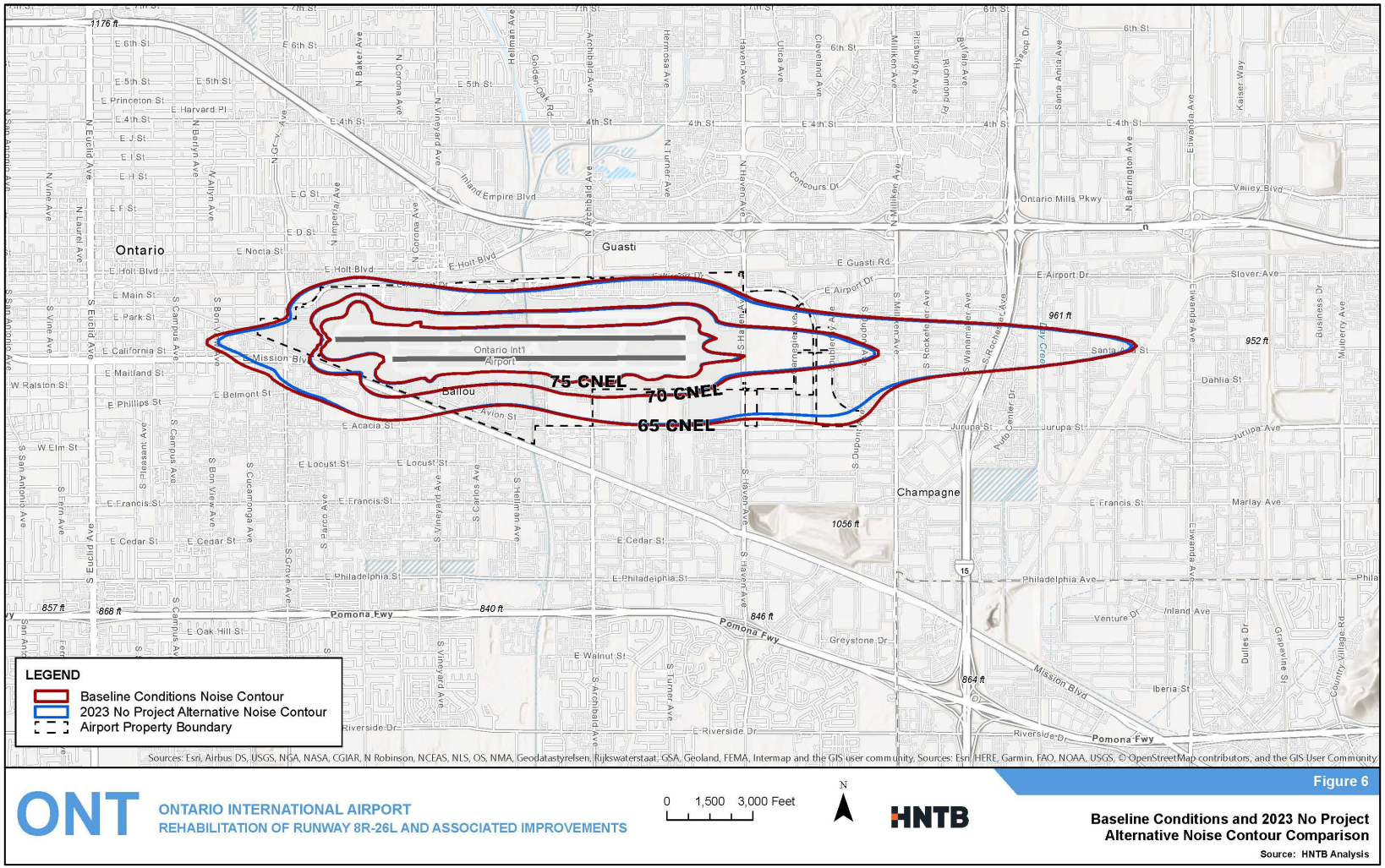
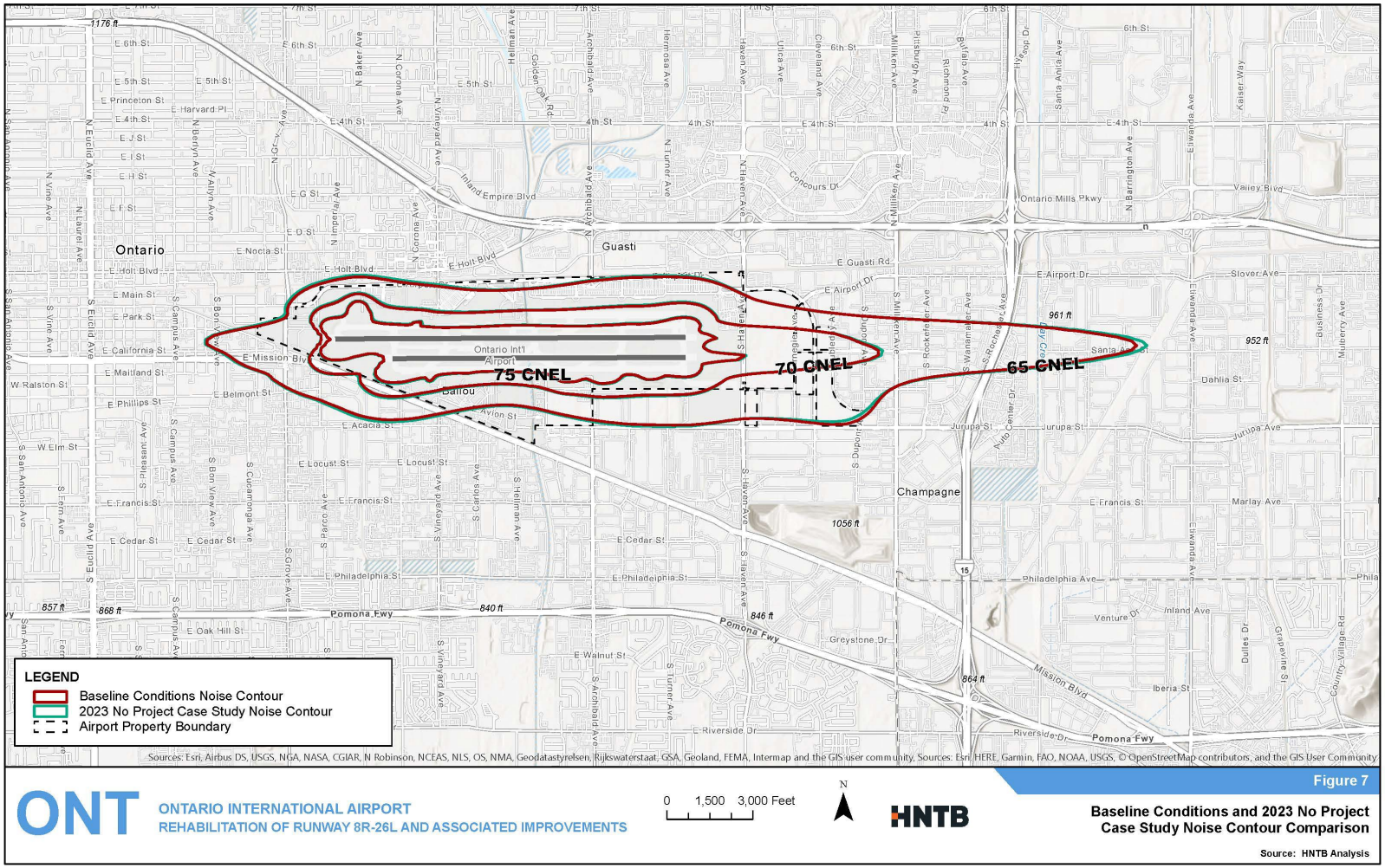


Figure 7: Baseline Conditions vs. 2023 No Project Alternative Noise Contours Case Study



3.2 2023 Proposed Project

The 2023 Proposed Project assumes Runway 8L-26R will be closed for four months from mid-January to mid-May and Runway 8R-26L will be closed for five months from June to October.

3.2.1 Noise Model Inputs

The 2023 Proposed Project fleet mix is identical to the 2023 No Project Alternative fleet mix. Most of the noise model input parameters, such as the facility and runways, stage length, day/evening/night split, weather parameters, terrain, track use, and run-up operations were assumed to be the same as the 2023 No Project Alternative.

3.2.1.1 Runway Use

Based on the proposed construction phasing, the Airport would operate with a single runway for nine months and two runways for the remaining three months. During the nighttime hours, depending on weather, ONT operates Contra Flow where aircraft takes off to the east while still landing to the west. Contra Flow is utilized to alleviate noise impacts to the residential area to the west of the Airport. During runway rehabilitation, however, Contra Flow would not be implemented, which in turn impacts the runway use and track use.

Table 8 summarizes the runway use in the 2023 Proposed Project, as compared with the Baseline Conditions. **Table 9** summarizes the runway use in the 2023 Proposed Project, as compared with the 2023 No Project Alternative.

Table 8: 2023 Proposed Project vs. Baseline Conditions Runway Uses

Operation Type	Runway	2023 Proposed Project				Baseline Conditions			
		Day	Evening	Night	Total	Day	Evening	Night	Total
Arrival	8L	3.5%	3.6%	4.0%	3.6%	4.6%	4.9%	7.1%	5.2%
	8R	2.4%	2.2%	2.2%	2.3%	2.0%	0.9%	1.1%	1.6%
	26L	42.3%	41.9%	43.2%	42.4%	43.9%	39.4%	45.8%	43.4%
	26R	50.7%	51.9%	49.9%	50.8%	48.5%	54.4%	45.5%	49.0%
	H01	1.1%	0.5%	0.7%	0.9%	1.0%	0.4%	0.6%	0.8%
Arrival Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Departure	8L	3.3%	3.5%	8.4%	4.8%	3.8%	3.6%	35.1%	13.3%
	8R	2.7%	2.7%	9.5%	4.6%	3.1%	3.0%	36.7%	13.3%
	26L	39.9%	40.9%	36.6%	39.1%	35.1%	38.4%	13.4%	28.9%
	26R	53.1%	52.0%	45.0%	50.6%	57.0%	54.2%	14.4%	43.7%
	H01	1.0%	0.9%	0.6%	0.9%	0.9%	0.8%	0.5%	0.8%
Departure Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

Table 9: 2023 Proposed Project vs. 2023 No Project Alternative Runway Uses

Operation Type	Runway	2023 Proposed Project				2023 No Project Alternative			
		Day	Evening	Night	Total	Day	Evening	Night	Total
Arrival	8L	3.5%	3.6%	4.0%	3.6%	4.4%	4.7%	6.5%	4.9%
	8R	2.4%	2.2%	2.2%	2.3%	2.1%	0.9%	1.1%	1.7%
	26L	42.3%	41.9%	43.2%	42.4%	45.0%	42.7%	47.9%	45.1%
	26R	50.7%	51.9%	49.9%	50.8%	47.4%	51.2%	43.8%	47.4%
	H01	1.1%	0.5%	0.7%	0.9%	1.1%	0.5%	0.7%	0.9%
Arrival Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Departure	8L	3.3%	3.5%	8.4%	4.8%	3.6%	4.5%	33.5%	12.3%
	8R	2.7%	2.7%	9.5%	4.6%	3.1%	3.1%	37.8%	13.1%
	26L	39.9%	40.9%	36.6%	39.1%	35.3%	39.0%	13.7%	29.5%
	26R	53.1%	52.0%	45.0%	50.6%	57.0%	52.5%	14.4%	44.2%
	H01	1.0%	0.9%	0.6%	0.9%	1.0%	0.9%	0.6%	0.9%
Departure Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

3.2.2 Noise Model Outputs

Figure 8 illustrates the 2023 Proposed Project 65dB, 70dB, and 75dB CNEL noise contours and **Figure 9** compares the 2023 Proposed Project with the Baseline Conditions noise contours. The 2023 Proposed Project would result in changes in noise exposure as compared to the Baseline Conditions. The change in Proposed Project noise conditions compared to the Baseline Conditions is attributable to three factors:

1. Background growth in passenger activity and aircraft operations that is anticipated at ONT with or without the Proposed Project.
2. Changes in fleet mix projected in future years that can impact overall noise levels. Generally, operations from older and noisier aircraft are expected to decrease in future years.
3. Runway closure periods associated with the Proposed Project construction that results in ONT operating on a single-runway without Contra Flow for periods in 2023, as compared to the Baseline Conditions where both runways are operational.

Figure 10 compares the 2023 Proposed Project with the 2023 No Project Alternative noise contours. Since Runway 8L-26R is scheduled to be closed for four months and Runway 8R-26L is scheduled to be closed for five months (one month longer than Runway 8L-26R), Runway 8L-26R is expected to be utilized more frequently than usual. Therefore, the Proposed Project contours to the east of the Airport are expected to shift slightly to the north as arrivals from the east would only utilize both runways for three months in 2023 and utilize Runway 26R solely for five months and Runway 26L solely for four months. To the southeast of the Airport, the departure noise contour from Runway 8L and 8R is expected to shift to the southwest of the Airport as Contra Flow would not be implemented for nine months during the rehabilitation. During normal operations, departures at nighttime use Runways 8L and 8R to the east under Contra Flow. During

the rehabilitation, however, jet departures at night use Runways 26L and 26R to the west in absence of Contra Flow. As shown in Table 9, nighttime departures from Runways 8L and 8R would decrease from 33.5% and 37.8% in the 2023 No Project Alternative to 8.4% and 9.5%, respectively in the 2023 Proposed Project. Nighttime departures from Runways 26L and 26R would increase from 13.7% and 14.4% in the 2023 No Project Alternative to 36.6% and 45.0% in the 2023 Proposed Project. Therefore, the noise contour driven by the nighttime departures is expected to shift from the southeast of the Airport to the southwest of the Airport under the 2023 Proposed Project.

Figure 8: 2023 Proposed Project Noise Contour

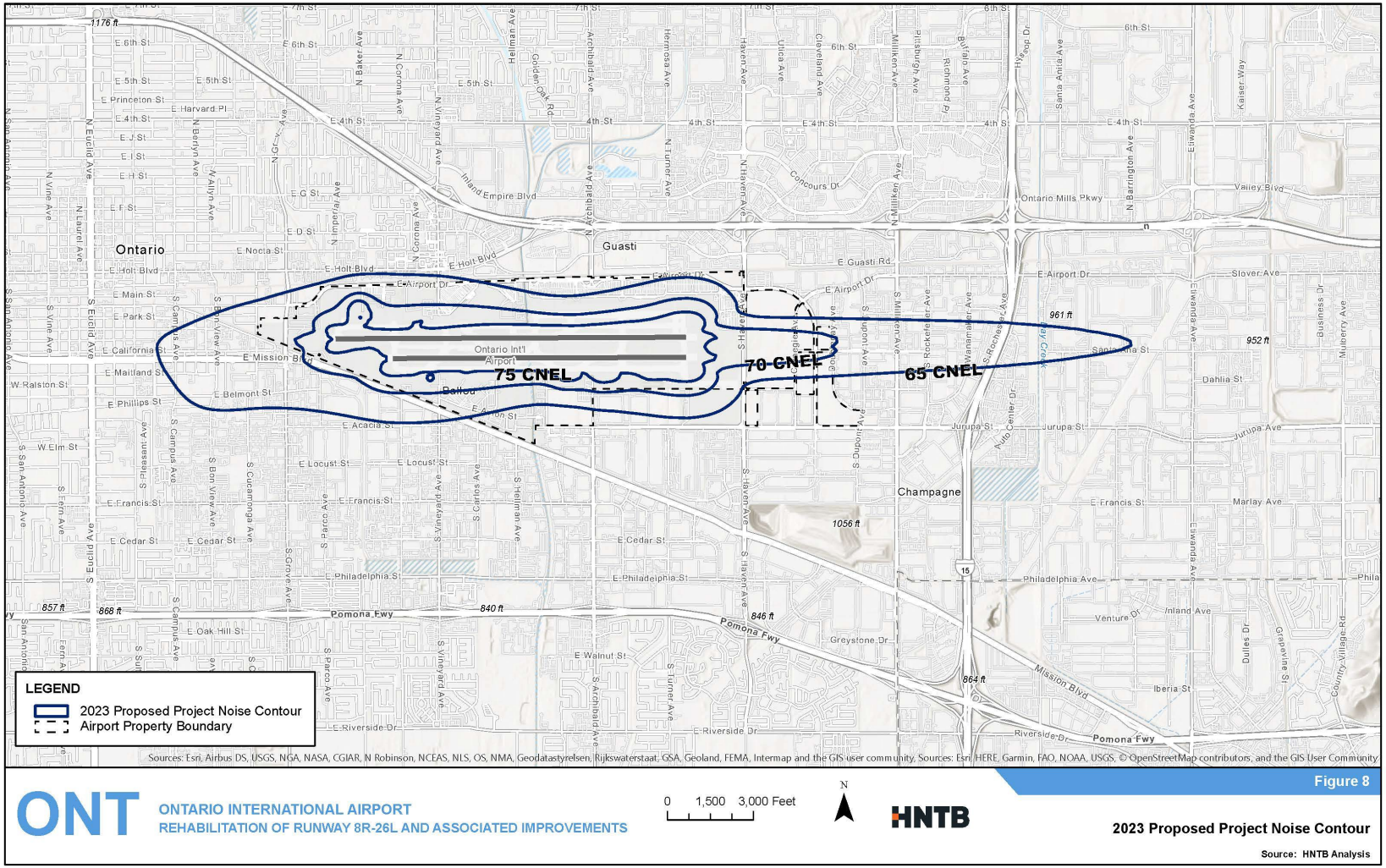


Figure 9: 2023 Proposed Project vs. Baseline Conditions Noise Contours

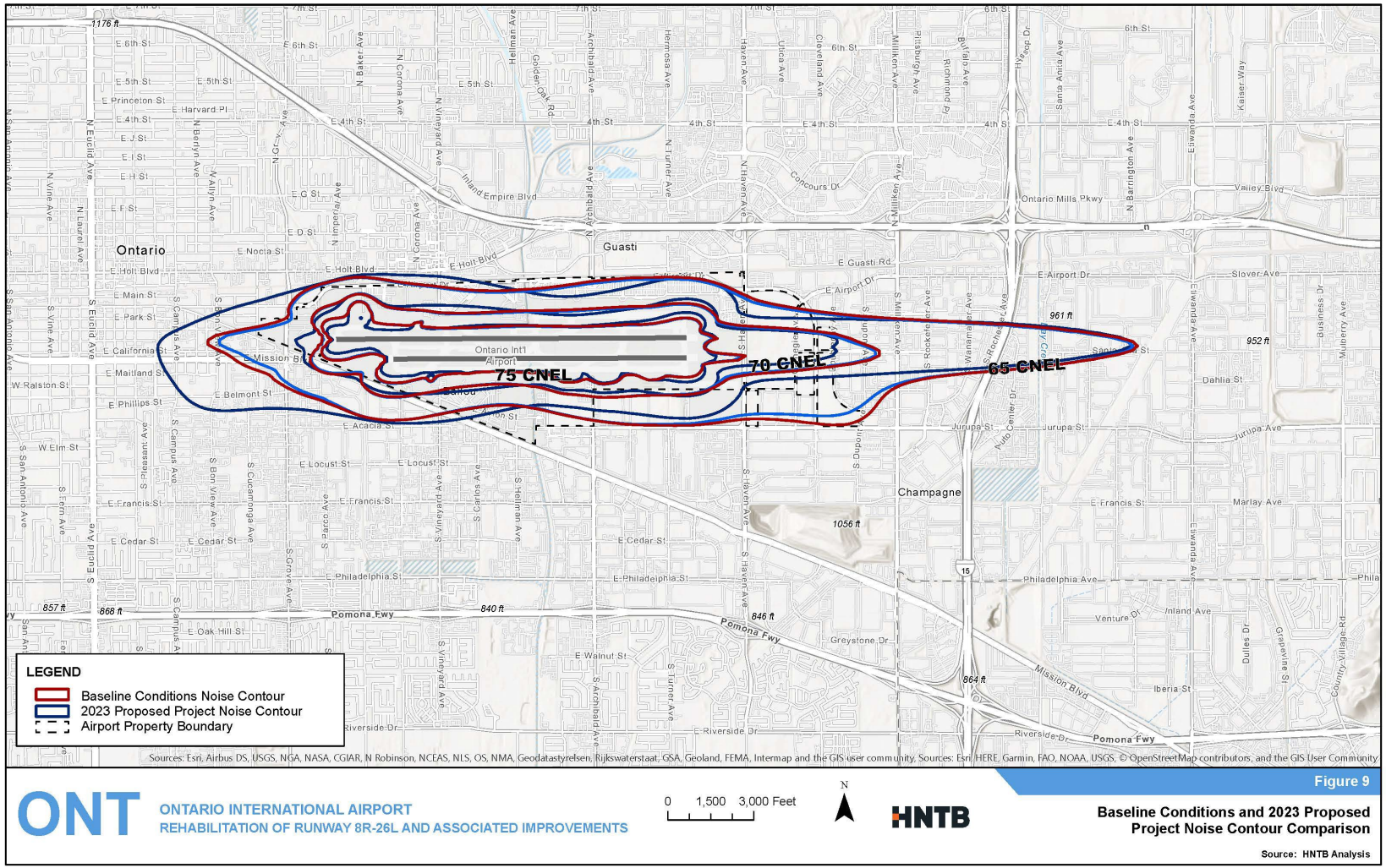
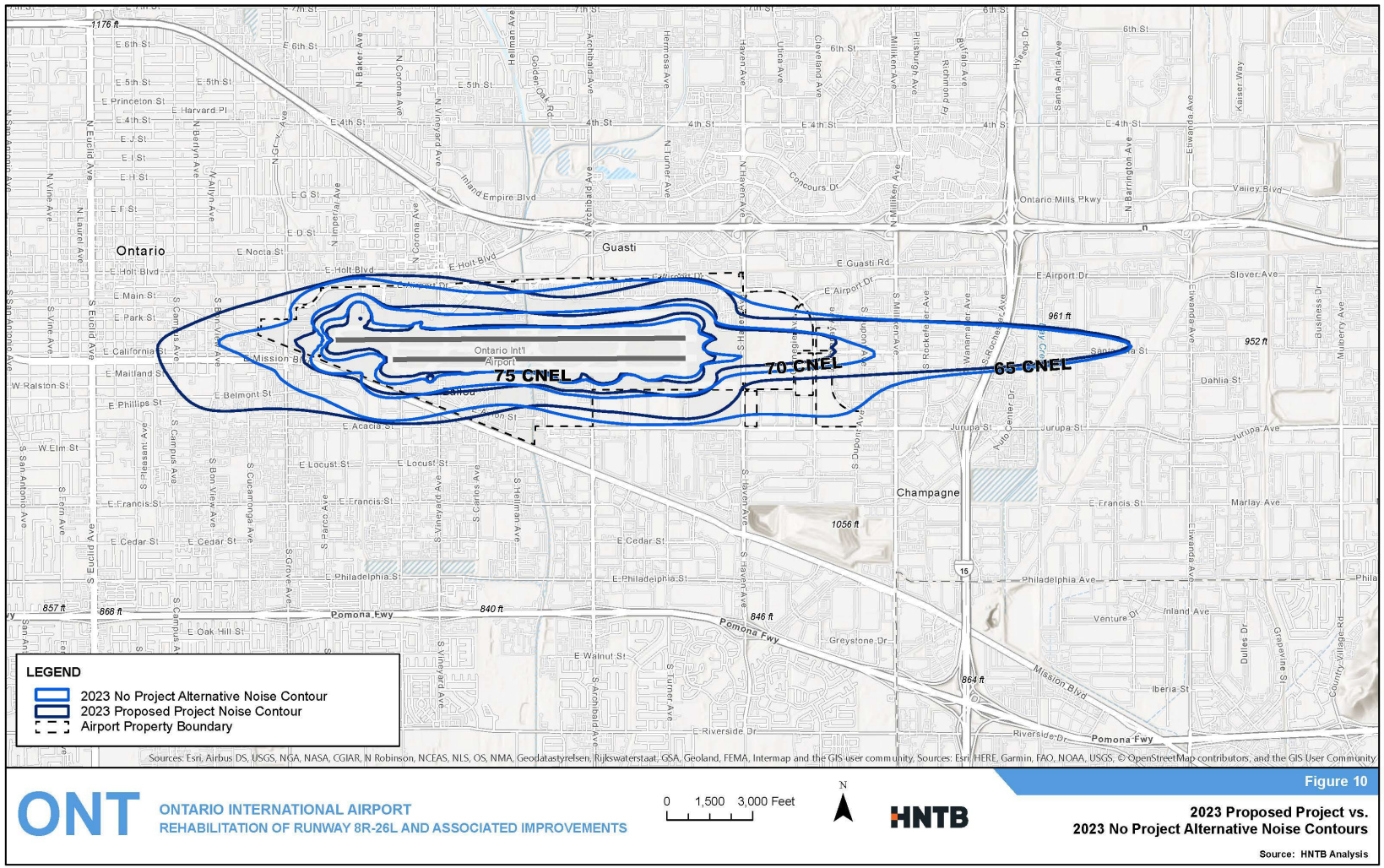


Figure 10: 2023 Proposed Project vs. 2023 No Project Alternative Noise Contours



3.3 2023 Two-Year Program Alternative

The 2023 Two-Year Program Alternative assumes Runway 8L-26R will be closed for six months from mid-January to mid-July as compared with four months from mid-January to mid-May in the 2023 Proposed Project. Runway 8R-26L will be closed for three months from mid-July to mid-October in the 2023 Two-Year Program Alternative as compared with five months from June to October in the 2023 Proposed Project.

3.3.1 Noise Model Inputs

The 2023 Proposed Project fleet mix is identical to the 2023 No Project Alternative fleet mix. Most of the noise model input parameters, such as the facility and runways, stage length, day/evening/night split, weather parameters, terrain, track use, and run-up operations were assumed to be the same as the 2023 No Project Alternative.

3.3.1.1 Runway Use

Table 10 compares the runway uses between the 2023 Two-Year Program Alternative and the Baseline Condition. **Table 11** compares the runway uses between the 2023 Two-Year Program Alternative and the Baseline Conditions.

Table 10: 2023 Comparison of Two-Year Program Alternative and Baseline Conditions Runway Uses

Operation Type	Runway	Two-Year Program Alternative				Baseline Conditions			
		Day	Evening	Night	Total	Day	Evening	Night	Total
Arrival	8L	2.5%	2.6%	3.1%	2.7%	4.6%	4.9%	7.1%	5.2%
	8R	3.4%	3.1%	3.2%	3.3%	2.0%	0.9%	1.1%	1.6%
	26L	57.8%	57.6%	58.8%	58.0%	43.9%	39.4%	45.8%	43.4%
	26R	35.2%	36.3%	34.3%	35.2%	48.5%	54.4%	45.5%	49.0%
	H01	1.1%	0.5%	0.7%	0.9%	1.0%	0.4%	0.6%	0.8%
Arrival Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Departure	8L	2.3%	2.6%	8.4%	4.1%	3.8%	3.6%	35.1%	13.3%
	8R	3.6%	3.6%	9.5%	5.3%	3.1%	3.0%	36.7%	13.3%
	26L	55.4%	56.4%	53.1%	54.9%	35.1%	38.4%	13.4%	28.9%
	26R	37.6%	36.5%	28.5%	34.8%	57.0%	54.2%	14.4%	43.7%
	H01	1.0%	0.9%	0.6%	0.9%	0.9%	0.8%	0.5%	0.8%
Departure Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

Table 11: 2023 Comparison of Two-Year Program Alternative vs. 2023 No Project Alternative Runway Uses

Operation Type	Runway	Two-Year Program Alternative				2023 No Project Alternative			
		Day	Day	Day	Day	Day	Evening	Night	Total
Arrival	8L	2.5%	2.5%	2.5%	2.5%	4.4%	4.7%	6.5%	4.9%
	8R	3.4%	3.4%	3.4%	3.4%	2.1%	0.9%	1.1%	1.7%
	26L	57.8%	57.8%	57.8%	57.8%	45.0%	42.7%	47.9%	45.1%
	26R	35.2%	35.2%	35.2%	35.2%	47.4%	51.2%	43.8%	47.4%
	H01	1.1%	1.1%	1.1%	1.1%	1.1%	0.5%	0.7%	0.9%
Arrival Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Departure	8L	2.3%	2.3%	2.3%	2.3%	3.6%	4.5%	33.5%	12.3%
	8R	3.6%	3.6%	3.6%	3.6%	3.1%	3.1%	37.8%	13.1%
	26L	55.4%	55.4%	55.4%	55.4%	35.3%	39.0%	13.7%	29.5%
	26R	37.6%	37.6%	37.6%	37.6%	57.0%	52.5%	14.4%	44.2%
	H01	1.0%	1.0%	1.0%	1.0%	1.0%	0.9%	0.6%	0.9%
Departure Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

Since Runway 8L-26R will be closed longer in the 2023 Proposed Project Alternative 2, the percentages of arrivals and departures to and from Runway 8L-26R is expected to decrease in the 2023 Two-Year Program Alternative as compared with the 2023 Proposed Project.

3.3.2 Noise Model Outputs

Figure 11 illustrates the 2023 Two-Year Program Alternative 65dB, 70dB, and 75dB CNEL noise contours, **Figure 12** compares the 2023 Two-Year Program Alternative noise contours with the Baseline Conditions noise contours. The 2023 Two-Year Program Alternative would result in changes in noise exposure as compared to the Baseline Conditions. The change in the 2023 Two-Year Program Alternative noise conditions compared to the Baseline Conditions is attributable to three factors:

1. Background growth in passenger activity and aircraft operations that is anticipated at ONT with or without the Two-Year Program Alternative.

2. Changes in fleet mix projected in future years that can impact overall noise levels. Generally, operations from older and noisier aircraft are expected to decrease in future years.

3. Runway closure periods associated with the 2023 Two-Year Program Alternative construction that results in ONT operating on a single-runway without Contra Flow for periods in 2023, as compared to the Baseline Conditions where both runways are operational.

Figure 13 compares the 2023 Two-Year Program Alternative noise contours with the 2023 No Project Alternative. The causes of the contour differences between the 2023 Two-Year Program Alternative noise contours with the 2023 No Project Alternative are very similar with the causes

of the contour differences between the 2023 Proposed Project Alternative with the 2023 No Project Alternative noise contours.

Figure 11: 2023 Two-Year Program Alternative Noise Contour

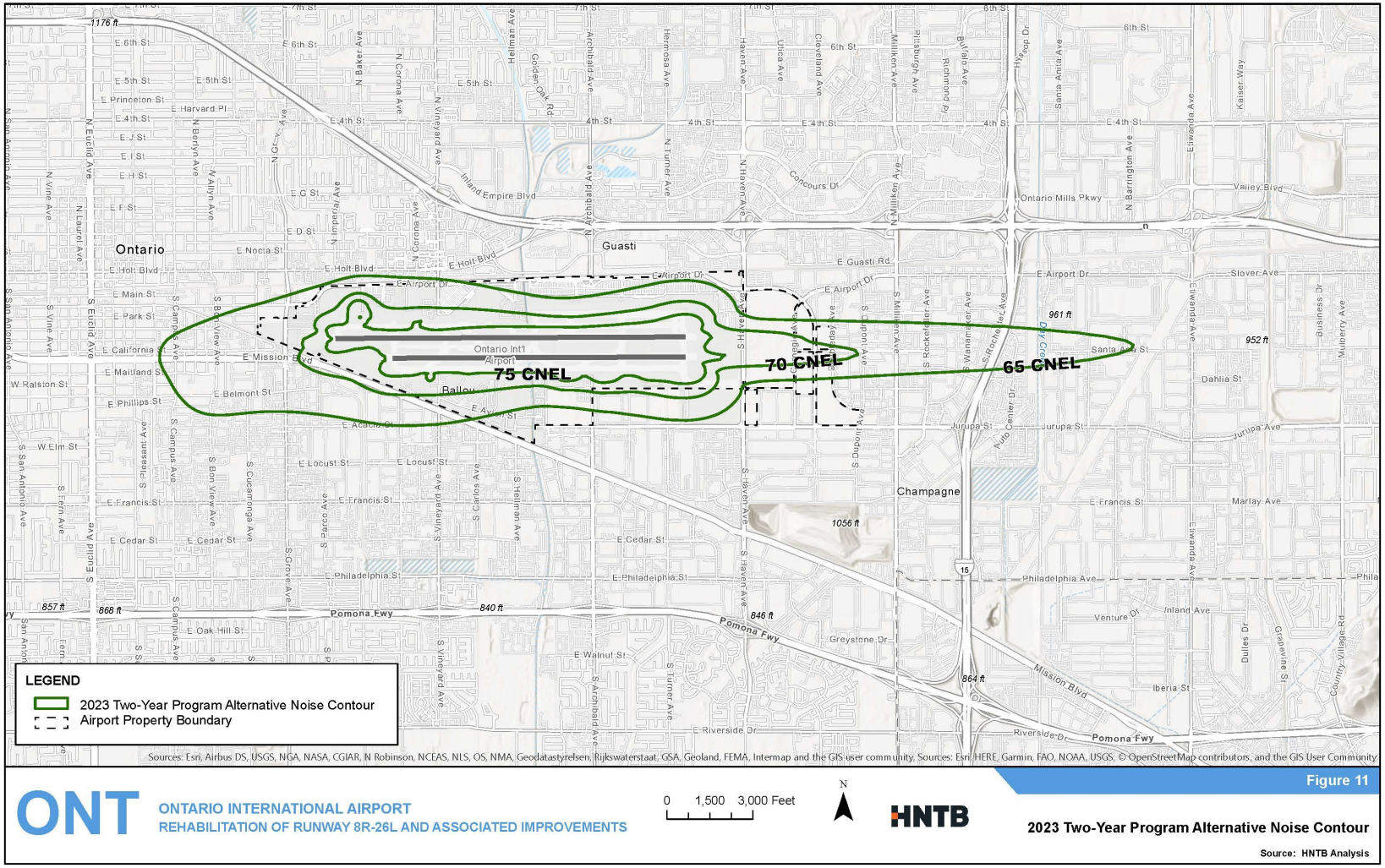


Figure 12: 2023 Two-Year Program Alternative vs. Baseline Conditions Noise Contours

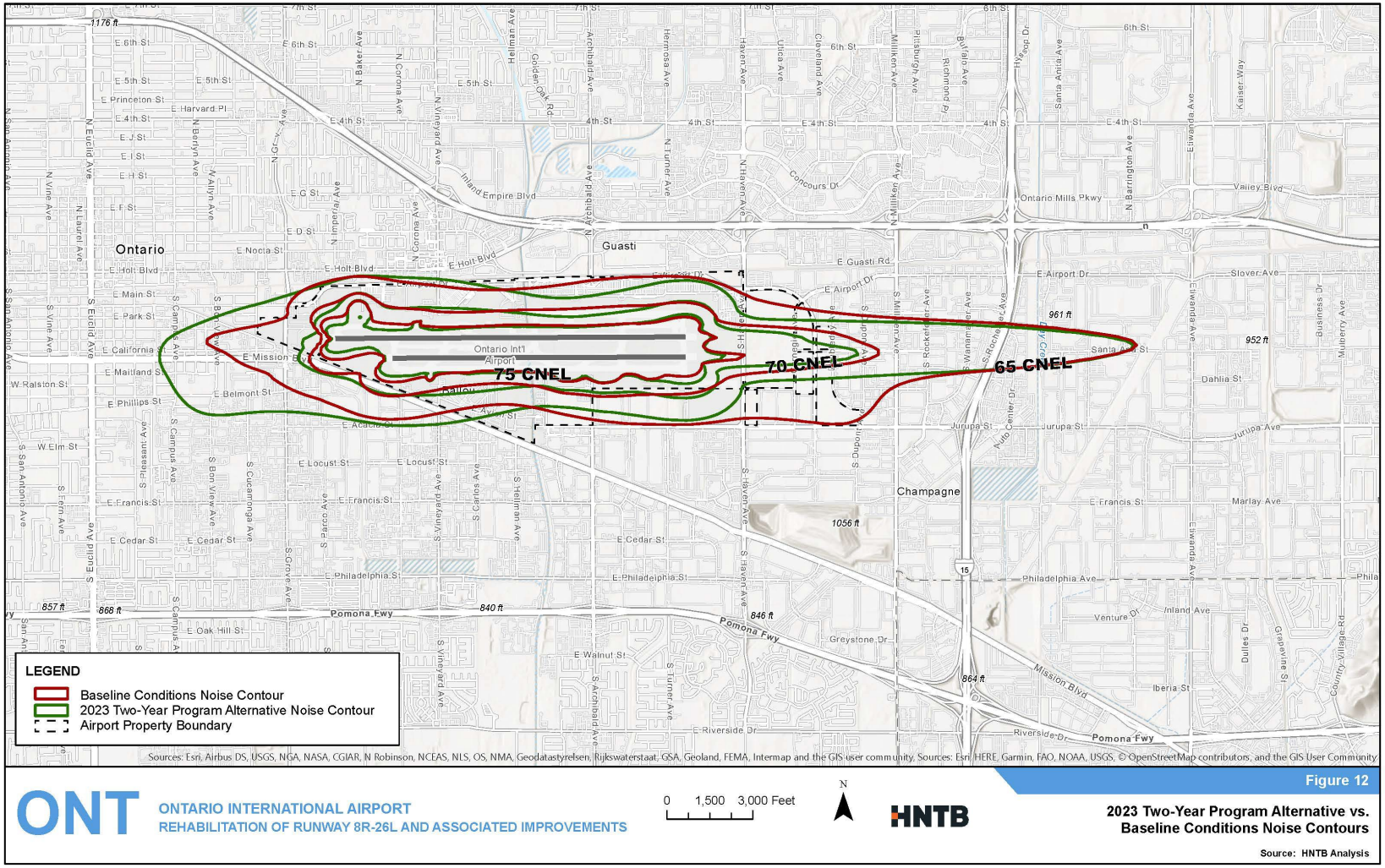
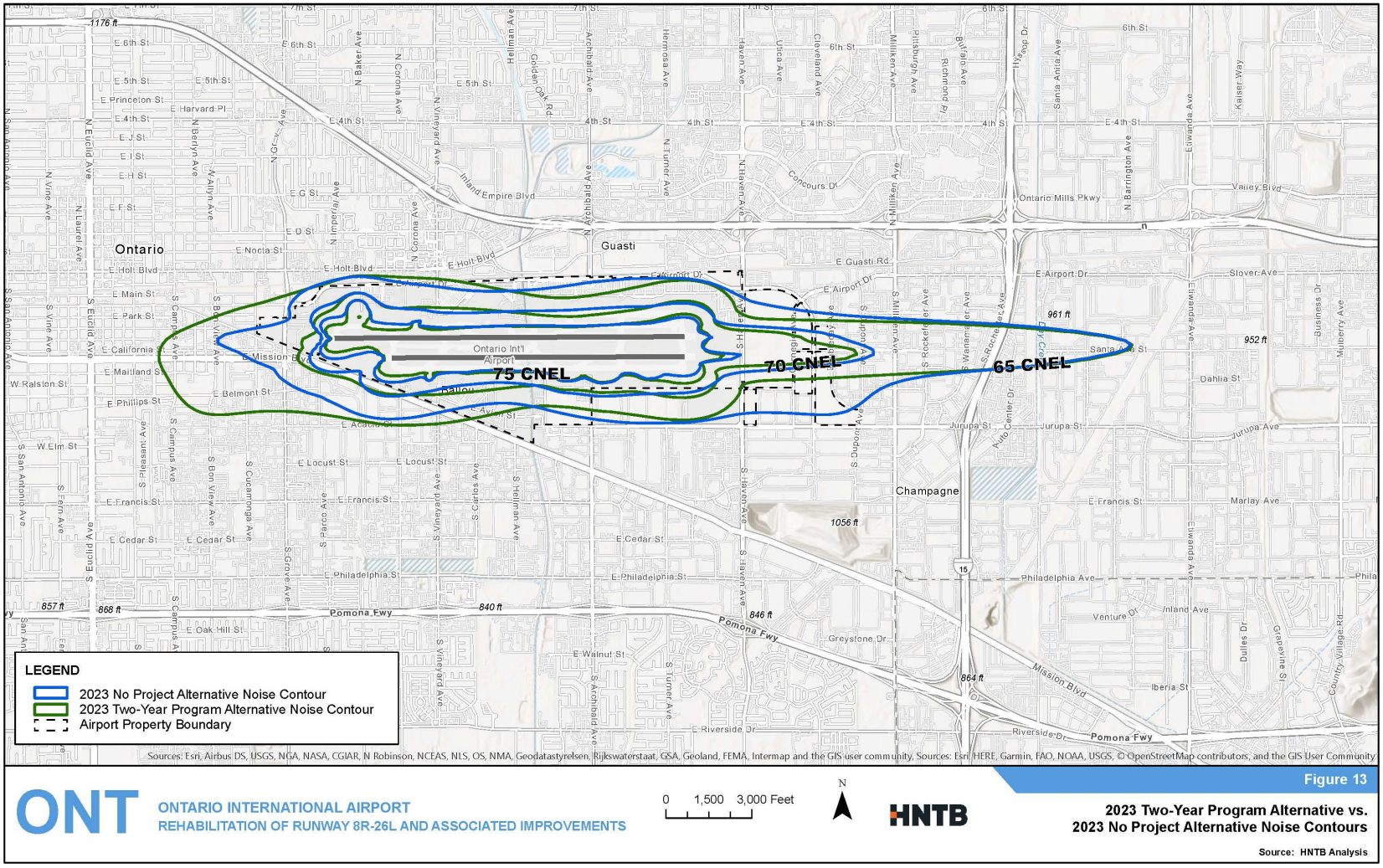


Figure 13: 2023 Two-Year Program Alternative vs. 2023 No Project Alternative Noise Contours



3.4 2024 No Project Alternative

The 2024 No Project Alternative assumes both runways will be open for the full year.

3.4.1 Noise Model Inputs

The 2024 No Project Alternative fleet mix was developed as part of the fleet mix forecast in *Attachment 1, Fleet Mix Development.* Several parameters, such as the facility and runways, stage length, day/evening/night split, weather parameters and terrain were assumed to be the same as the Baseline Conditions. Other inputs are described in the following sections.

3.4.1.1 Runway Use

Runway use changes through AirTOP simulation were applied in the 2024 No Project Alternative as compared with the Baseline Conditions. For aircraft that are new in the fleet mix, their runway uses were assumed to be the same as the aircraft they are expected to replace or similar aircraft types. **Table 12** shows the 2024 No Project Alternative runway use.

Table 12: 2024 No Project Alternative Runway Use

Operation Type	Runway	Day	Evening	Night	Total
Arrival	8L	4.4%	4.7%	6.5%	4.9%
	8R	2.1%	0.9%	1.1%	1.7%
	26L	44.9%	42.6%	47.9%	45.1%
	26R	47.6%	51.3%	43.8%	47.5%
	H01	1.0%	0.4%	0.7%	0.9%
Arrival Total		100.0%	100.0%	100.0%	100.0%
Departure	8L	3.6%	4.5%	33.6%	12.4%
	8R	3.1%	3.1%	37.8%	13.1%
	26L	35.2%	39.0%	13.7%	29.4%
	26R	57.1%	52.6%	14.4%	44.2%
	H01	1.0%	0.9%	0.6%	0.9%
Departure Total		100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

3.4.1.2 Run-up Operations

The aircraft engine maintenance run-up operations in the 2024 No Project Alternative were based on the Baseline Conditions run-up operations with operations adjusted based on growth of each aircraft in the fleet mix from the Baseline Conditions to the 2024 No Project Alternative. **Table 13** depicts the run-up operations applied in the 2024 No Project Alternative.

Table 13: 2024 No Project Alternative Run-up Operations

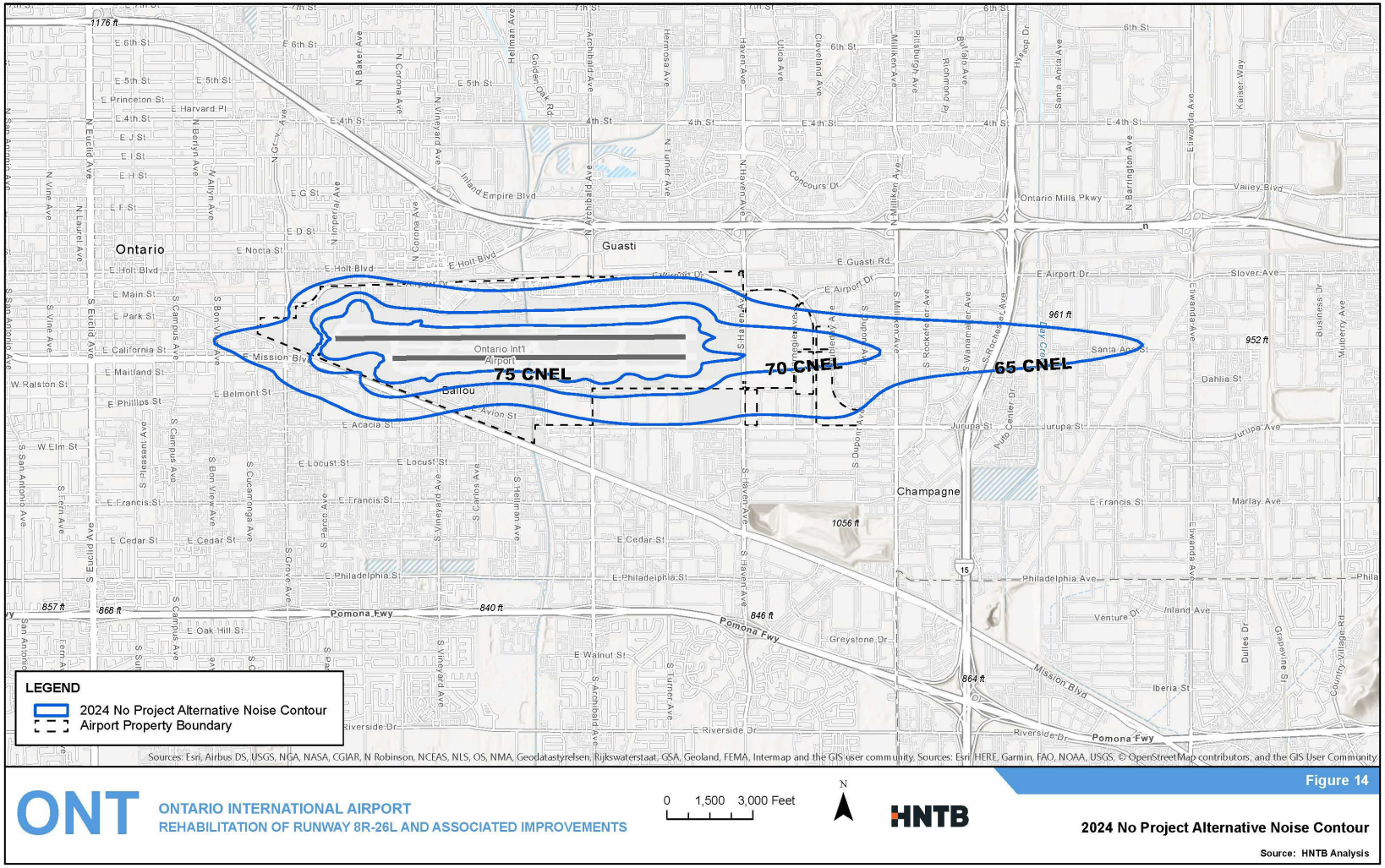
AEDT Aircraft	Operations
737700	1.7
737800	0.3
747400	1.1
727EM2	6.3
757PW	9.0
757RR	8.8
7673ER	55.0
A300-622R	1.5
A320-211	0.4
A320-232	0.9
CNA750	3.5
FAL20	0.4
FAL900EX	2.3
MD11GE	4.4
MD11PW	7.5
Grand Total	**103.2**

Source: 2019 ONT Run-up logs and HNTB analysis, 2022.

3.4.2 Noise Model Outputs

Figure 14 illustrates the 2024 No Project Alternative 65dB, 70dB, and 75dB CNEL noise contours.

Figure 14: 2024 No Project Alternative Noise Contour



3.5 2024 Proposed Project and Two-Year Program Alternative

The 2024 Proposed Project and Two-Year Program Alternative assume Runway 8R-26L will be closed for nine months for rehabilitation from mid-January to mid-October. Since the 2024 Proposed Project and Two-Year Program Alternative are identical, they will be referred to singularly as the 2024 Proposed Project in the following sections of this technical memorandum to reduce duplication of the exact same results.

3.5.1 Noise Model Inputs

The 2024 Proposed Project fleet mix is identical to the 2024 No Project Alternative fleet mix. Most of the noise model input parameters, such as the facility and runways, stage length, day/evening/night split, weather parameters, terrain, track use, and run-up operations were assumed to be the same as the 2024 No Project Alternative.

3.5.1.1 Runway Use

Under the 2024 Proposed Project, it was assumed that Runway 8R-26L will be closed for nine months for rehabilitation from mid-January to mid-October. Both runways would be open for the remaining periods. Therefore, the Airport would operate with a single runway for nine months and two runways for the remaining three months. During runway rehabilitation, Contra Flow would not be implemented, which would impact the runway use and track use.

Table 14 summarizes the runway use in the 2024 Proposed Project, as compared with the Baseline Conditions. **Table 15** compares the runway uses between the 2024 Proposed Project /Two Year Alternative and the 2024 No Project Alternative.

Table 14: 2024 Proposed Project / Two-Year vs. Baseline Conditions Runway Uses

Operation Type	Runway	2024 Proposed Project / Two Year				Baseline Conditions			
		Day	Evening	Night	Total	Day	Evening	Night	Total
Arrival	8L	5.4%	5.5%	6.0%	5.4%	4.6%	4.9%	7.1%	5.2%
	8R	0.5%	0.2%	0.3%	0.5%	2.0%	0.9%	1.1%	1.6%
	26L	11.2%	10.6%	12.0%	11.2%	43.9%	39.4%	45.8%	43.4%
	26R	81.8%	83.2%	81.1%	81.8%	48.5%	54.4%	45.5%	49.0%
	H01	1.0%	0.4%	0.7%	1.0%	1.0%	0.4%	0.6%	0.8%
Arrival Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Departure	8L	5.2%	5.4%	8.4%	5.2%	3.8%	3.6%	35.1%	13.3%
	8R	0.8%	0.8%	9.5%	0.8%	3.1%	3.0%	36.7%	13.3%
	26L	8.8%	9.7%	3.4%	8.8%	35.1%	38.4%	13.4%	28.9%
	26R	84.2%	83.2%	78.2%	84.2%	57.0%	54.2%	14.4%	43.7%
	H01	1.0%	0.9%	0.6%	1.0%	0.9%	0.8%	0.5%	0.8%
Departure Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

Table 15: 2024 Proposed Project vs. 2024 No Project Alternative Runway Uses

Operation Type	Runway	2024 Proposed Project / Two Year				2024 No Project Alternative			
		Day	Evening	Night	Total	Day	Evening	Night	Total
Arrival	8L	5.4%	5.5%	6.0%	5.4%	4.4%	4.7%	6.5%	4.9%
	8R	0.5%	0.2%	0.3%	0.5%	2.1%	0.9%	1.1%	1.7%
	26L	11.2%	10.6%	12.0%	11.2%	44.9%	42.6%	47.9%	45.1%
	26R	81.8%	83.2%	81.1%	81.8%	47.6%	51.3%	43.8%	47.5%
	H01	1.0%	0.4%	0.7%	1.0%	1.0%	0.4%	0.7%	0.9%
Arrival Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Departure	8L	5.2%	5.4%	8.4%	5.2%	3.6%	4.5%	33.6%	12.4%
	8R	0.8%	0.8%	9.5%	0.8%	3.1%	3.1%	37.8%	13.1%
	26L	8.8%	9.7%	3.4%	8.8%	35.2%	39.0%	13.7%	29.4%
	26R	84.2%	83.2%	78.2%	84.2%	57.1%	52.6%	14.4%	44.2%
	H01	1.0%	0.9%	0.6%	1.0%	1.0%	0.9%	0.6%	0.9%
Departure Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

3.5.2 Noise Model Outputs

Figure 15 illustrates the 2024 Proposed Project 65dB, 70dB, and 75dB CNEL noise contours and **Figure 16** compares the 2024 Proposed Project with the Baseline Conditions noise contours.

The 2024 Proposed Project would result in changes in noise exposure as compared to the Baseline Conditions. The change in the 2024 Proposed Project noise conditions compared to the Baseline Conditions is attributable to three factors:

1. Background growth in passenger activity and aircraft operations that is anticipated at ONT with or without the 2024 Proposed Project.

2. Changes in fleet mix projected in future years that can impact overall noise levels. Generally, operations from older and noisier aircraft are expected to decrease in future years.

3. Runway closure periods associated with the 2024 Proposed Project construction that results in ONT operating on a single-runway without Contra Flow for periods in 2024, as compared to the Baseline Conditions where both runways are operational.

Figure 17 compares the 2024 Proposed Project with the No Project Alternative noise contours.

As a result of the Runway 8R-26L closure for rehabilitation, the Proposed Project contours to the east of the Airport are expected to shift slightly to the north as arrivals from the east would only utilize both runways for three months in 2024 and utilize Runway 26R for nine months during the rehabilitation.

During normal operations when both runways are open, jet departures at nighttime would use Runways 8L and 8R for departure as part of the noise abatement measures to the west of the Airport (with Contra Flow). During the runway rehabilitation when there's only one runway open, jet departures would mostly utilize Runway 26R for safety reasons (without Contra Flow). Therefore, the departure noise contour to the southeast of the Airport from Runway 8L and 8R is expected to shift to the southwest of the Airport as Contra Flow would not be implemented for nine months during the runway rehabilitation.

Figure 15: 2024 Proposed Project Noise Contour

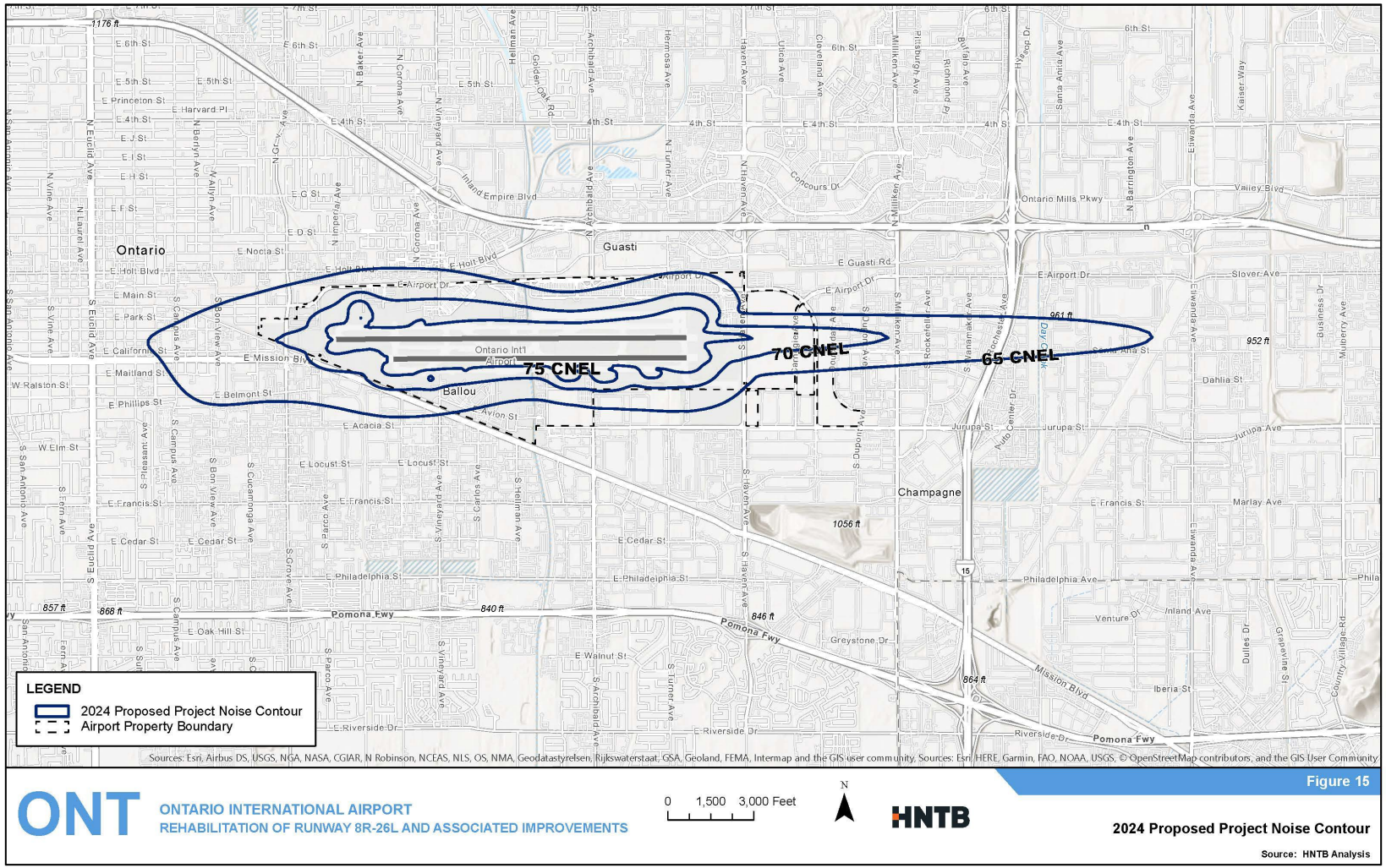


Figure 16: 2024 Proposed Project vs. Baseline Conditions Noise Contours

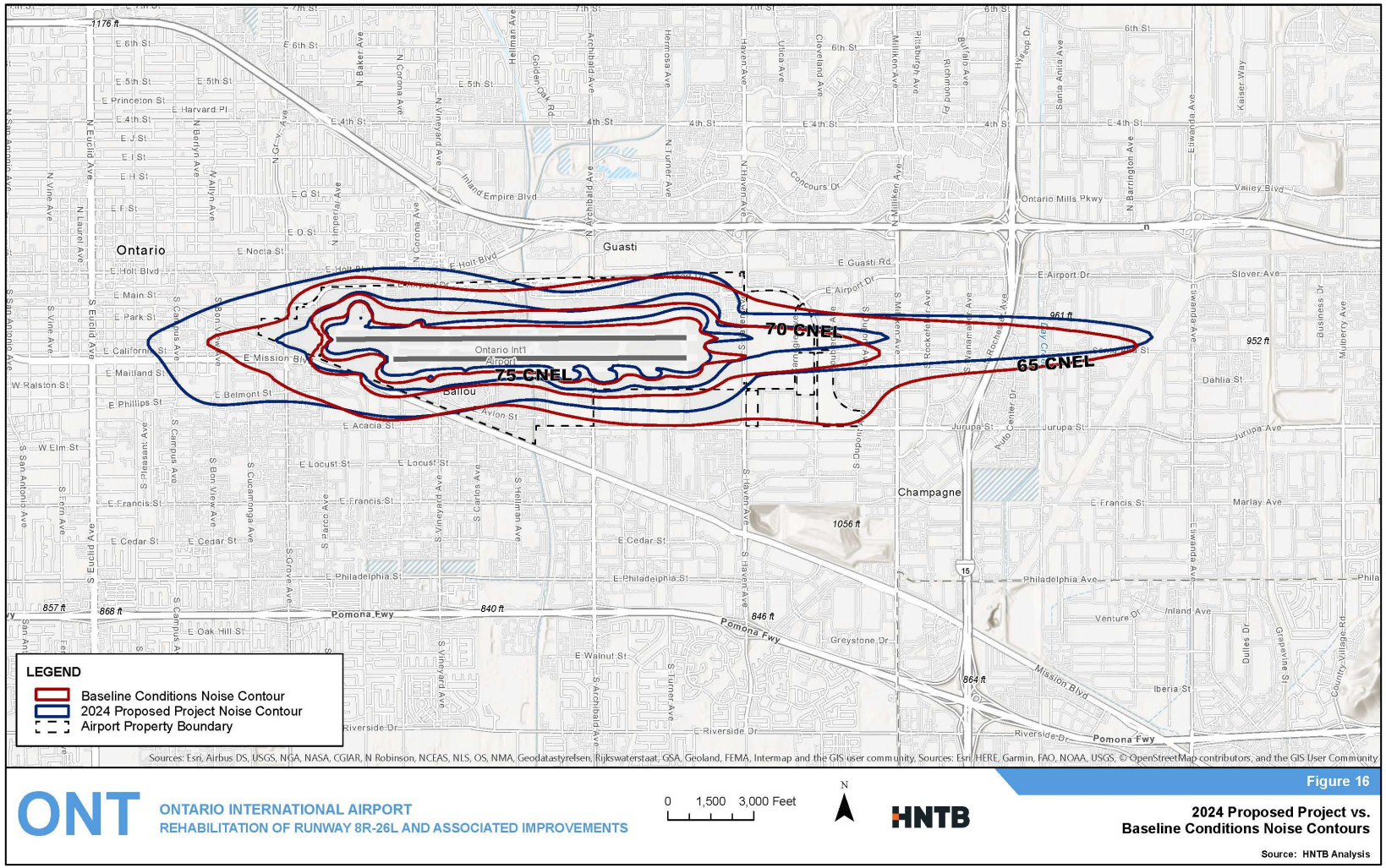
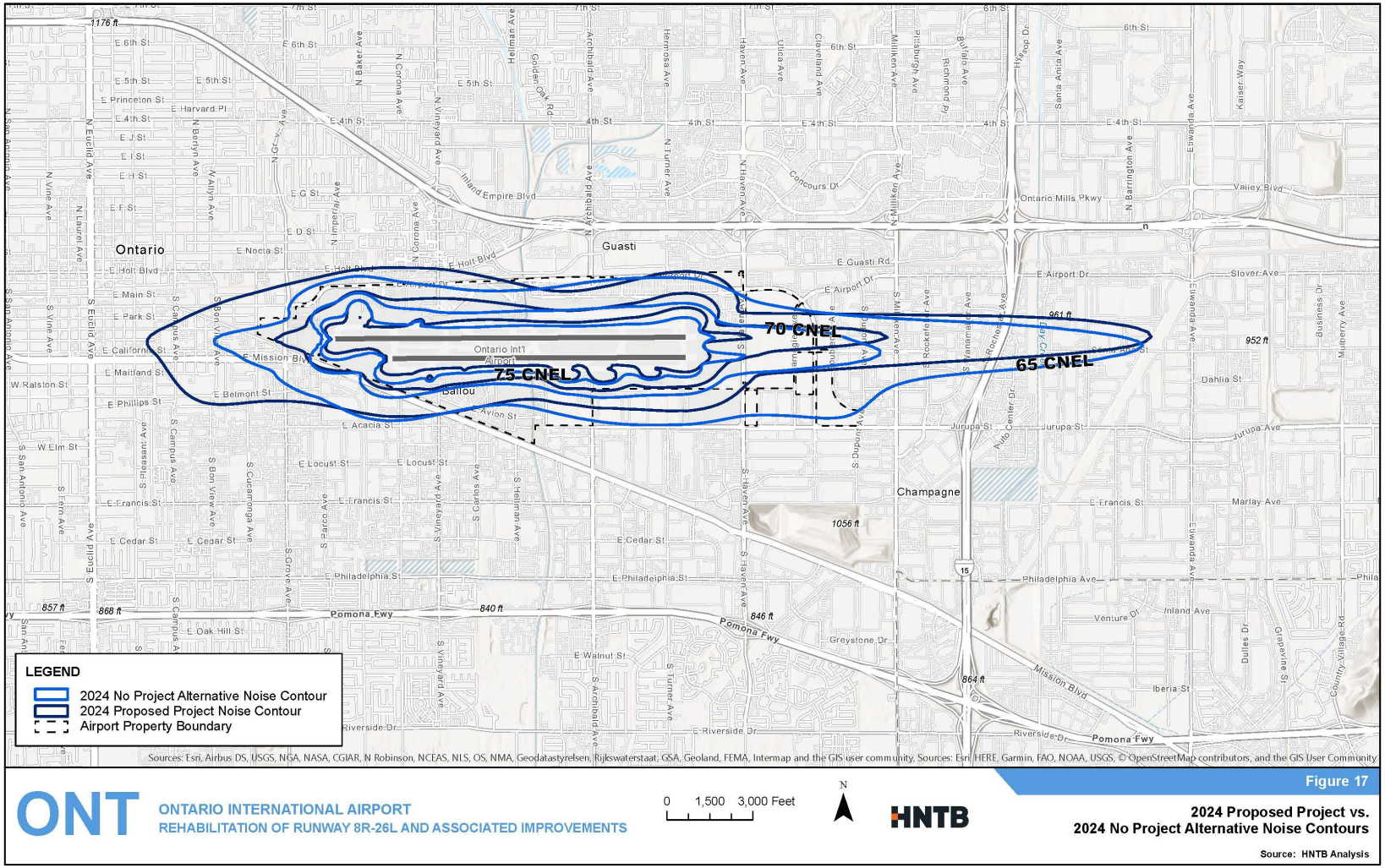


Figure 17: 2024 Proposed Project vs. 2024 No Project Alternative Noise Contours



3.6 2025 No Project Alternative

The 2025 No Project Alternative assumes both runways will be open for the full year.

3.6.1 Noise Model Inputs

The 2025 No Project Alternative fleet mix was developed as part of the fleet mix forecast in *Attachment 1, Fleet Mix Development.* Several parameters, such as the facility and runways, stage length, day/evening/night split, weather parameters and terrain were assumed to be the same as the Baseline Conditions. Other inputs are described in the following sections.

3.6.1.1 Runway Use

Runway use changes through AirTOP simulation were applied in the 2025 No Project Alternative as compared with the Baseline Conditions. For aircraft that are new in the fleet mix, their runway uses were assumed to be the same as the aircraft they are expected to replace or similar aircraft types. **Table 16** shows the 2025 No Project Alternative runway use.

Table 16: 2025 No Project Alternative Runway Use

Operation Type	Runway	Day	Evening	Night	Total
Arrival	8L	4.5%	4.8%	6.6%	4.9%
	8R	2.1%	0.9%	1.1%	1.7%
	26L	44.5%	42.3%	47.8%	44.8%
	26R	47.9%	51.6%	43.9%	47.8%
	H01	1.0%	0.4%	0.6%	0.8%
Arrival Total		100.0%	100.0%	100.0%	100.0%
Departure	8L	3.5%	4.4%	33.4%	12.3%
	8R	3.0%	3.0%	37.8%	13.1%
	26L	34.9%	38.8%	13.7%	29.2%
	26R	57.5%	52.9%	14.6%	44.5%
	H01	1.0%	0.8%	0.5%	0.8%
Departure Total		100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

3.6.1.2 Run-up Operations

The aircraft engine maintenance run-up operations in the 2025 No Project Alternative were based on the Baseline Conditions run-up operations with operations adjusted based on growth of each aircraft in the fleet mix from the Baseline Conditions to the 2025 No Project Alternative. **Table 17** depicts the run-up operations applied in the 2025 No Project Alternative.

Table 17: 2025 No Project Alternative Run-up Operations

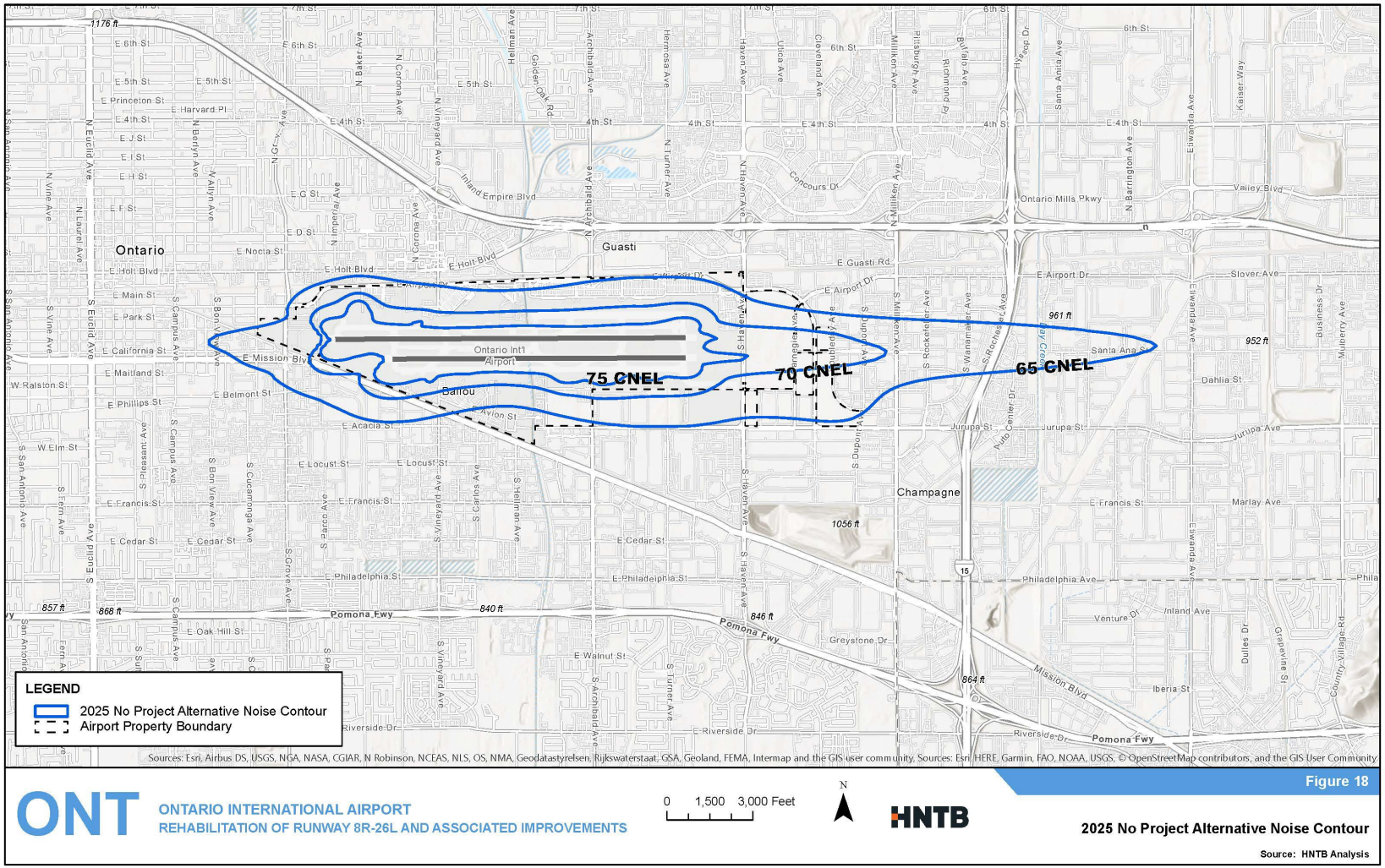
AEDT Aircraft	Operations
737700	1.8
737800	0.3
747400	1.1
727EM2	6.5
757PW	9.4
757RR	9.2
7673ER	57.1
A300-622R	1.6
A320-211	0.4
A320-232	0.9
CNA750	3.6
FAL20	0.4
FAL900EX	2.4
MD11GE	4.6
MD11PW	7.8
Grand Total	**107.2**

Source: 2019 ONT Run-up logs and HNTB analysis, 2022.

3.6.2 Noise Model Outputs

Figure 18 illustrates the 2025 No Project Alternative 65dB, 70dB, and 75dB CNEL noise contours.

Figure 18: 2025 No Project Alternative Noise Contour



3.7 2025 Proposed Project

The 2025 Proposed Project assumes Runway 8L-26R will be closed for five months for rehabilitation from mid-January to mid-June. Note that there would be no runway closures in 2025 with the Two-Year Program Alternative, as closures would be limited to 2023 and 2024.

3.7.1 Noise Model Inputs

The 2025 Proposed Project fleet mix is identical to the 2025 No Project Alternative fleet mix. Most of the noise model input parameters, such as the facility and runways, stage length, day/evening/night split, weather parameters, terrain, track use, and run-up operations were assumed to be the same as the 2025 No Project Alternative.

3.7.1.1 Runway Use

Under the 2025 Proposed Project, it was assumed that Runway 8R-26L will be closed for five months for rehabilitation from mid-January to mid-June. Both runways would be open for the remaining periods. Therefore, the Airport would operate with a single runway for five months and two runways for the remaining seven months. During runway rehabilitation, Contra Flow would not be implemented, which would impact the runway use and track use.

Table 18 summarizes the runway use in the 2025 Proposed Project, as compared with the Baseline Conditions. **Table 19** summarizes the runway use in the 2025 Proposed Project, as compared with the 2025 No Project Alternative.

Table 18: 2025 Proposed Project vs. Baseline Conditions Runway Uses

Operation Type	Runway	2025 Proposed Project				Baseline Conditions			
		Day	Evening	Night	Total	Day	Evening	Night	Total
Arrival	8L	2.6%	2.8%	3.8%	2.9%	4.6%	4.9%	7.1%	5.2%
	8R	3.6%	2.9%	3.0%	3.4%	2.0%	0.9%	1.1%	1.6%
	26L	64.8%	63.8%	66.9%	65.0%	43.9%	39.4%	45.8%	43.4%
	26R	28.0%	30.1%	25.6%	27.9%	48.5%	54.4%	45.5%	49.0%
	H01	1.0%	0.4%	0.6%	0.8%	1.0%	0.4%	0.6%	0.8%
Arrival Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Departure	8L	2.1%	2.6%	19.5%	7.2%	3.8%	3.6%	35.1%	13.3%
	8R	4.2%	4.2%	22.0%	9.4%	3.1%	3.0%	36.7%	13.3%
	26L	59.2%	61.6%	49.4%	56.7%	35.1%	38.4%	13.4%	28.9%
	26R	33.5%	30.8%	8.5%	25.9%	57.0%	54.2%	14.4%	43.7%
	H01	1.0%	0.8%	0.5%	0.8%	0.9%	0.8%	0.5%	0.8%
Departure Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

Table 19: 2025 Proposed Project vs. 2025 No Project Alternative Runway Uses

Operation Type	Runway	2025 Proposed Project				2025 No Project Alternative			
		Day	Evening	Night	Total	Day	Evening	Night	Total
Arrival	8L	2.6%	2.8%	3.8%	2.9%	4.5%	4.8%	6.6%	4.9%
	8R	3.6%	2.9%	3.0%	3.4%	2.1%	0.9%	1.1%	1.7%
	26L	64.8%	63.8%	66.9%	65.0%	44.5%	42.3%	47.8%	44.8%
	26R	28.0%	30.1%	25.6%	27.9%	47.9%	51.6%	43.9%	47.8%
	H01	1.0%	0.4%	0.6%	0.8%	1.0%	0.4%	0.6%	0.8%
Arrival Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Departure	8L	2.1%	2.6%	19.5%	7.2%	3.5%	4.4%	33.4%	12.3%
	8R	4.2%	4.2%	22.0%	9.4%	3.0%	3.0%	37.8%	13.1%
	26L	59.2%	61.6%	49.4%	56.7%	34.9%	38.8%	13.7%	29.2%
	26R	33.5%	30.8%	8.5%	25.9%	57.5%	52.9%	14.6%	44.5%
	H01	1.0%	0.8%	0.5%	0.8%	1.0%	0.8%	0.5%	0.8%
Departure Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: 2019 and 2020 Radar Data and HNTB Analysis, 2022.

3.7.2 Noise Model Outputs

Figure 19 illustrates the 2025 Proposed Project 65dB, 70dB, and 75dB CNEL noise contours and **Figure 20** compares the 2025 Proposed Project with the Baseline Conditions noise contours.

The 2025 Proposed Project would result in changes in noise exposure as compared to the Baseline Conditions. The change in the 2025 Proposed Project noise conditions compared to the Baseline Conditions is attributable to three factors:

1. Background growth in passenger activity and aircraft operations that is anticipated at ONT with or without the 2025 Proposed Project.

2. Changes in fleet mix projected in future years that can impact overall noise levels. Generally, operations from older and noisier aircraft are expected to decrease in future years.

3. Runway closure periods associated with the 2025 Proposed Project construction that results in ONT operating on a single-runway without Contra Flow for periods in 2025, as compared to the Baseline Conditions where both runways are operational.

Figure 21 compares the 2025 Proposed Project with the 2025 No Project Alternative noise contours.

As a result of the Runway 8L-26R closure for rehabilitation, the 2025 Proposed Project contours to the east of the Airport are expected to shift slightly to the south as arrivals from the east would only utilize both runways for seven months in 2025 and utilize Runway 26L for five months during the rehabilitation.

During normal operations when both runways are open, jet departures at nighttime would use Runways 8L and 8R for departure as part of the noise abatement measures to the west of the Airport (with Contra Flow). During the runway rehabilitation when there's only one runway open, jet departures would mostly utilize Runway 26L for safety reasons (without Contra Flow). Therefore, the departure noise contour to the southeast of the Airport from Runway 8L and 8R is expected to shift to the southwest of the Airport as Contra Flow would not be implemented for nine months during the runway rehabilitation.

Figure 19: 2025 Proposed Project Noise Contours

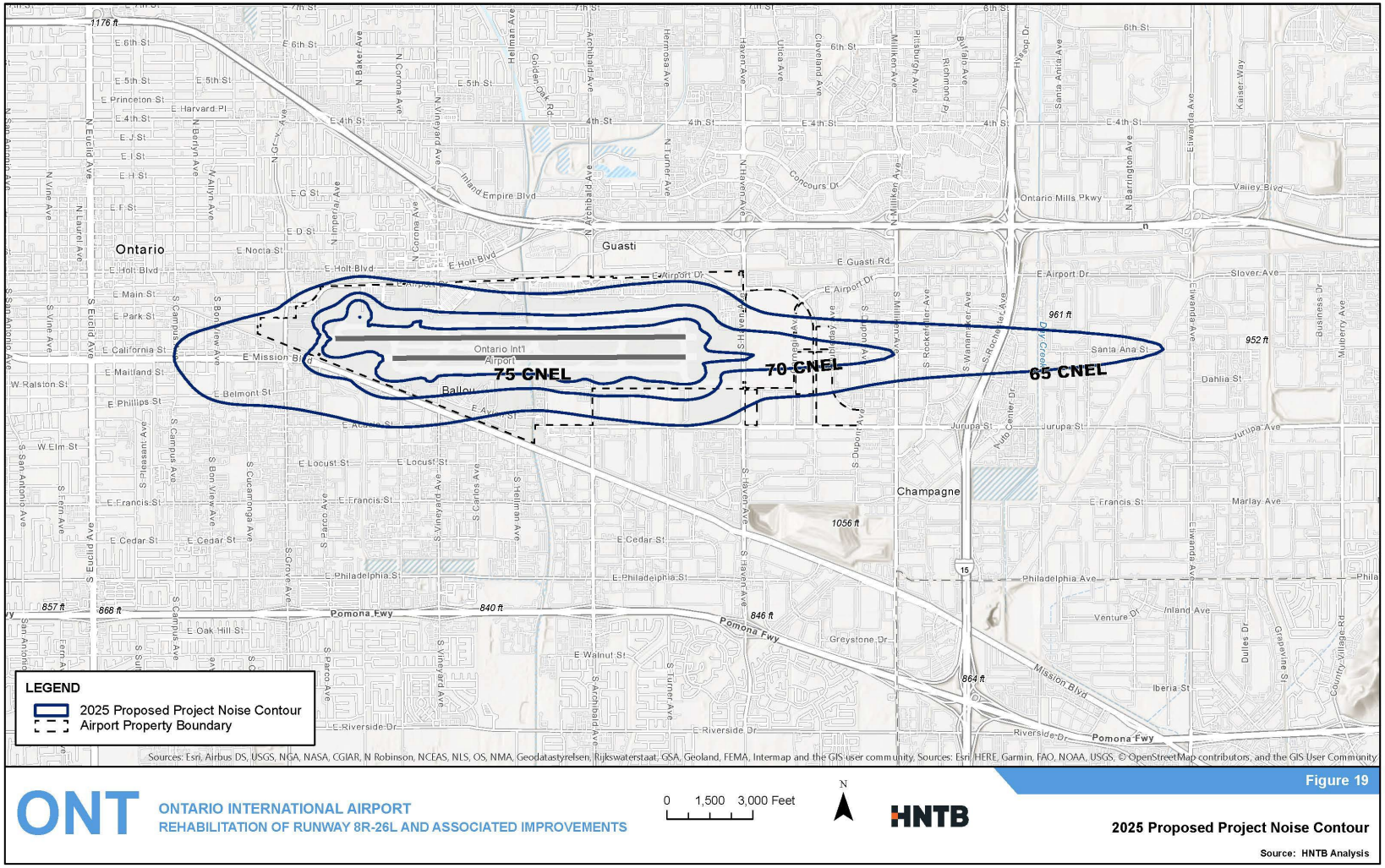


Figure 20: 2025 Proposed Project vs. Baseline Conditions Noise Contours

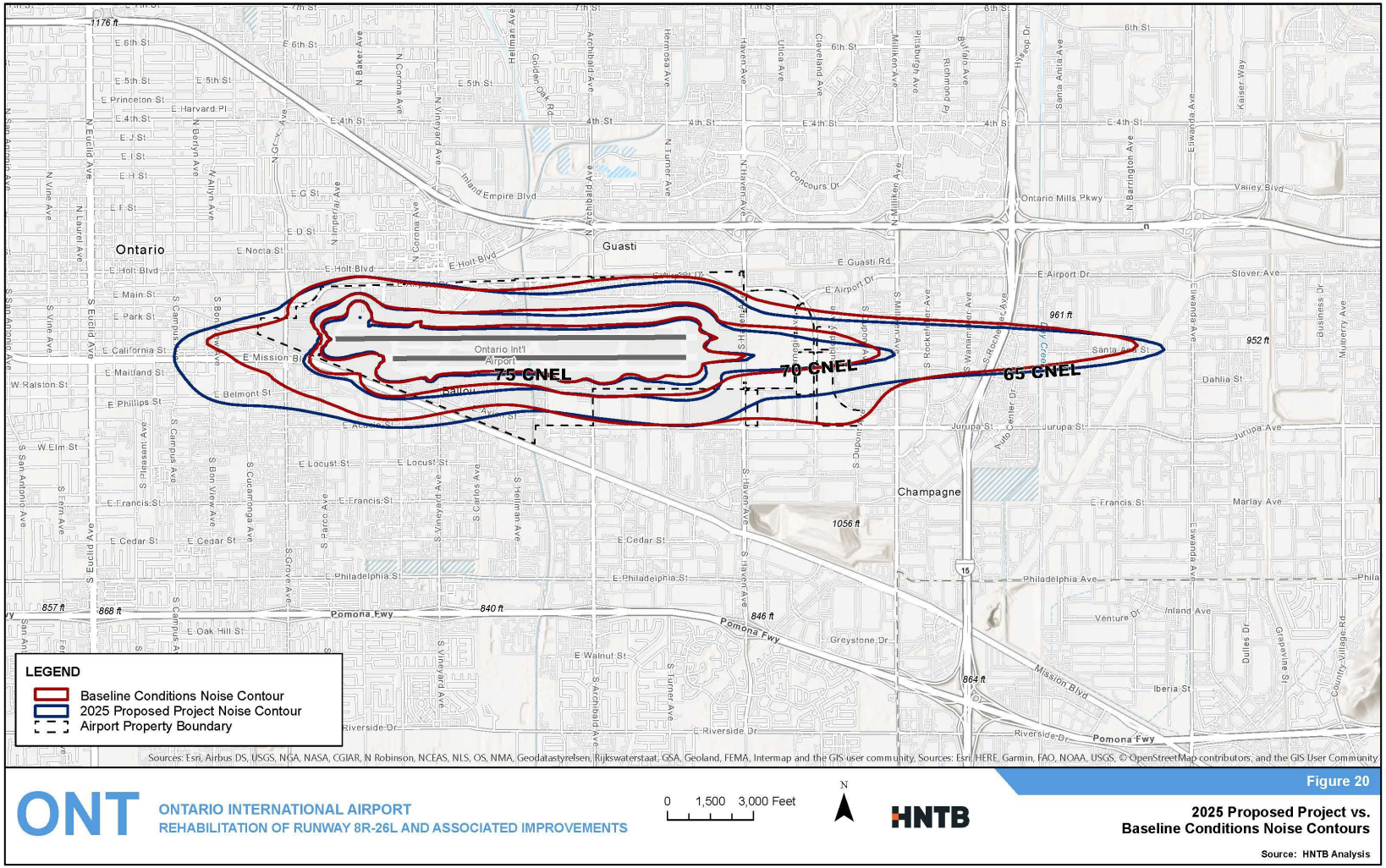
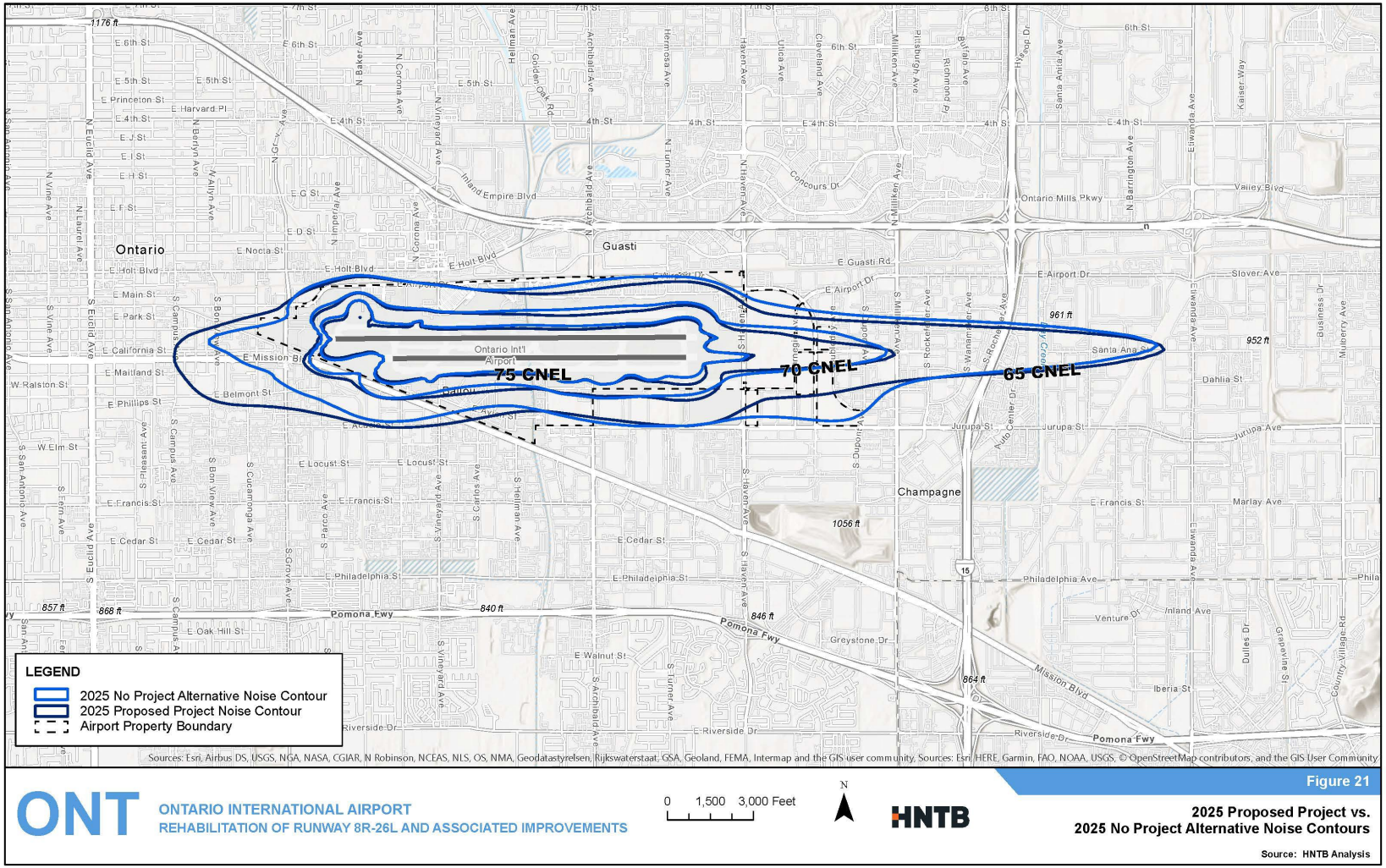


Figure 21: 2025 Proposed Project vs. 2025 No Project Alternative Noise Contours



4 Cumulative Impact Analysis

OIAA issued a Notice of Preparation (NOP) for a proposed South Airport Cargo Center (SACC) project on October 14, 2021. The SACC project includes the proposed relocation of the OIAA Administrative Offices and the South Airport South Secured Area Access Point (SAAP) to other locations at the Airport, demolition of the existing buildings, site improvements on the Project site, and development of an air cargo facility. The Project includes the development of a main cargo building, aircraft apron improvements, parking structure, roadway improvements, and site improvements, including landscaping and utility improvements.

As of March 2022, no environmental documentation beyond the NOP has been prepared. It is anticipated that SACC construction will begin in late 2022-2024, with associated cargo operations scheduled to begin in 2024. This potential timeframe overlaps with the Proposed Project construction in 2023 and 2024. Due to the overlap of proposed SACC operations with the analysis of Proposed Project noise levels in 2024 and 2025, two additional noise analyses were completed to model the combined noise levels of the Proposed Project and SACC operations, herein referred as the “Proposed Project – Cumulative Impact” noise levels. Noise impacts were modeled using the methodology detailed in Section 4.5.1.

The following additional alternatives were modeled:

- 2024 Proposed Project – Cumulative Impact
- 2025 Proposed Project – Cumulative Impact

The following section describes the noise model inputs and outputs for the four additional alternatives.

4.1 Noise Model Inputs

The following section describes the data sources, methodologies, and inputs applied to model the additional alternatives. Other parameters, such as the facility and runways, weather parameters, terrain, and run-up operations were assumed to be the same as the corresponding Proposed Project Alternatives.

4.1.1 Fleet Mix

Based on the proposed schedules provided by the SACC project team, **Table 20** depicts the anticipated SACC cargo operations in 2024 and 2025 with AEDT Airframe ID, engine ID, and stage length inputs to AEDT.

Table 20: Anticipated SACC Cargo Operations in 2024 and 2025

Aircraft ID	AEDT Airframe ID	AEDT Engine ID	Stage Length	Operation Type	2024			2025		
					Day	Evening	Night	Day	Evening	Night
Alice[1]	Raytheon Beech 1900-D	PT67D	1	A	208	-	-	624	-	-
Alice[1]	Raytheon Beech 1900-D	PT67D	1	A	-	104	312	-	312	936
B734	Boeing 737-400 Series Freighter	1CM004	1	A	208	104	104	624	312	312
B734	Boeing 737-400 Series Freighter	1CM004	2	D	208	-	104	624	-	312
B734	Boeing 737-400 Series Freighter	1CM004	3	D	-	-	104	-	-	312
B748	Boeing 747-8F	11GE139	1	A	104	104	-	312	312	-
B748	Boeing 747-8F	11GE139	8	D	104	104	-	312	312	-
B762	Boeing 767-200 Series Freighter	1GE010	1	A	208	-	208	624	-	624
B762	Boeing 767-200 Series Freighter	1GE010	4	D	-	-	208	-	-	624
B763	Boeing 767-300 ER Freighter	2GE054	1	A	104	-	208	312	-	624
B763	Boeing 767-300 ER Freighter	2GE054	1	D	-	-	104	-	-	312
B763	Boeing 767-300 ER Freighter	2GE054	2	D	-	-	104	-	-	312
B763	Boeing 767-300 ER Freighter	2GE054	3	D	104	-	-	312	-	-
B772	Boeing 777 Freighter	01P21GE216	1	A	-	-	728	-	-	2,184
B772	Boeing 777 Freighter	01P21GE216	4	D	208	-	104	624	-	312
B772	Boeing 777 Freighter	01P21GE216	5	D	-	-	104	-	-	312
B772	Boeing 777 Freighter	01P21GE216	7	D	104	-	-	312	-	-
B772	Boeing 777 Freighter	01P21GE216	8	D	-	-	104	-	-	312
B772	Boeing 777 Freighter	01P21GE216	9	D	104	-	-	312	-	-
Total					1,664	416	2,496	4,992	1,248	7,488

[1]: Alice represents an electric aircraft under development by Eviation, whose noise signature is not included in the AEDT database. The Raytheon Beech 1900-D was used as a substitute aircraft based on takeoff weight and engine thrusts.

Source: SACC and HNTB analysis, 2022.

4.1.2 Runway Use and Track Use

It was assumed that the SACC cargo operations would predominately utilize the south runway, Runway 8R-26L, due to its proximity to the proposed SACC site. It was also assumed that the SACC operations would utilize the same model flight tracks and the same pattern as other cargo operations. More specifically, the SACC jet operations would utilize model flight tracks and the same pattern as other cargo jet aircraft, and the SACC Eviation Alice operations would utilize model flight tracks and the same pattern as other cargo propeller aircraft.

4.2 Noise Model Outputs

Figure 22 compares the 2024 and 2025 Proposed Project - Cumulative Impact 65dB, 70dB, and 75dB CNEL noise contours with the Baseline Conditions noise contour.

Figure 23 compares the 2024 and 2025 Proposed Project - Cumulative Impact 65dB, 70dB, and 75dB CNEL noise contours with the No Project 2024 and 2025 noise contours.

Figure 22: 2024 / 2025 Proposed Project – Cumulative Impact vs. Baseline Conditions Noise Contours

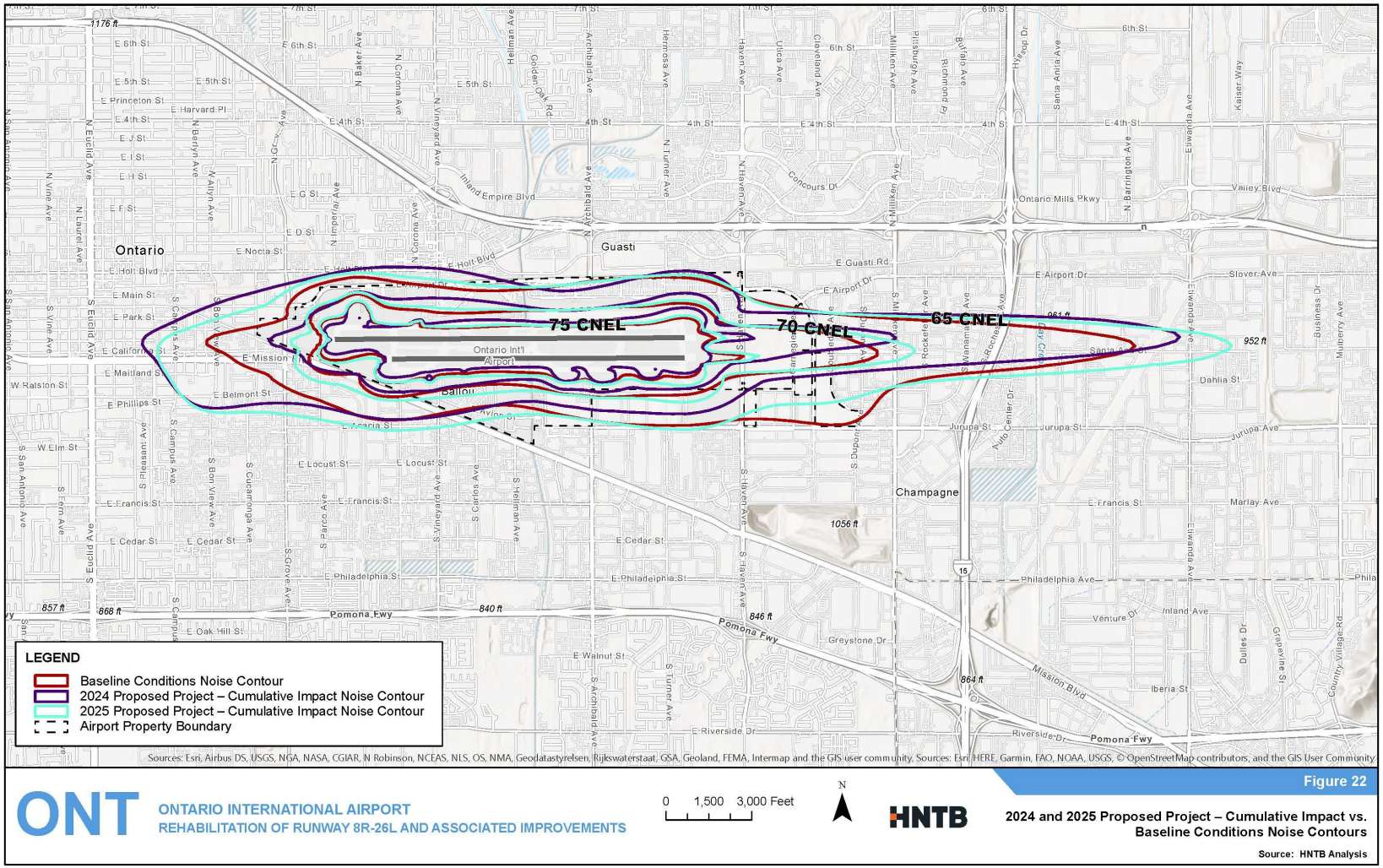
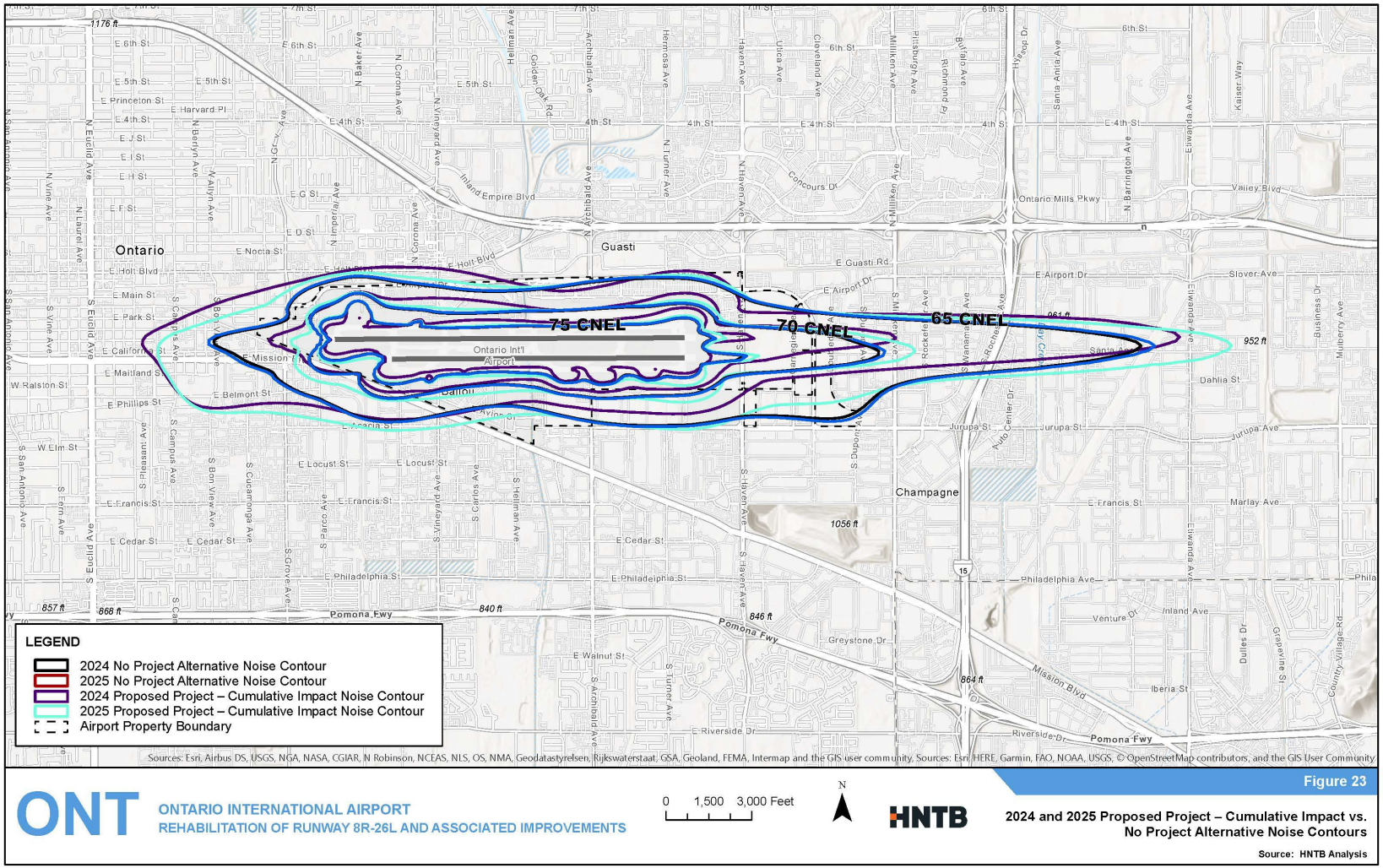


Figure 23: 2024 / 2025 Proposed Project – Cumulative Impact vs. No Project Noise Contours



5 Summary

As part of the Supplemental EIR for the Rehabilitation of Runway 8R-26L and Associated Improvements at ONT, noise contours were modeled for the following alternatives:

- Baseline Conditions (represents the 2019/2020 hybrid fleet mix)
- 2023 No Project Alternative
- 2023 Proposed Project
- 2023 Two-Year Program Alternative
- 2024 No Project Alternative
- 2024 Proposed Project Alternative (identical to Two-Year Program Alternative)
- 2025 No Project Alternative
- 2025 Proposed Project
- 2024 Proposed Project – Cumulative Impact
- 2025 Proposed Project – Cumulative Impact

Table 21 depicts operation inputs and noise contour outputs of the noise models for the alternatives listed above.

Table 21: Noise Inputs and Outputs for Baseline Conditions, No Project, Proposed Project, and Two-Year Program Alternatives

Alternatives	Aircraft Operations	Run-up Operations	Runway Closure	65 CNEL Noise Contour Area (acres)
Baseline Conditions	106,026	95.0	No closure	2,485
2023 No Project	110,368	99.5	No closure	2,371
2023 Proposed Project	110,368	99.5	8L-26R – 4 months 8R-26L – 5 months	2,472
2023 Two-Year Program	110,368	99.5	8L-26R – 6 months 8R-26L – 3 months	2,468
2024 No Project	113,826	103.2	No closure	2,439
2024 Proposed Project / 2024 Two-Year Program	113,826	103.2	8R-26L – 9 months	2,497
2025 No Project	117,625	107.2	No closure	2,513
2025 Proposed Project	117,625	107.2	8L-26R – 5 months	2,548
2024 Proposed Project / 2024 Two-Year Program – Cumulative Impact	118,402	103.2	8R-26L – 9 months	2,637
2025 Proposed Project – Cumulative Impact	131,353	107.2	8L-26R – 5 months	2,971

Source: HNTB analysis, 2022.

As compared to the Baseline Conditions contour, the Proposed Project contour areas range from 0.5% smaller (2023 Proposed Project) to 19.6% larger (2025 Proposed Project – Cumulative Impact).

Since Contra Flow would not be implemented during the runway rehabilitations there will be a higher percentage of nighttime jet departures from Runways 26L and 26R which is expected to temporarily increase the area of noise exposure to the west of the Airport. The proposed SACC operations are expected to result in additional cumulative noise impacts both east and west of the Airport.

Attachment 1
Fleet Mix Development

MEMORANDUM

HNTB

To
Nicole Walker, MPP
Environmental Planning Manager

Ontario International Airport

From
Yue Xu, HNTB

Kim Hughes, HNTB

Cc
Michelle Brantley, Ontario International Airport

Subject
Fleet Mixes for Use in Rehabilitation of Runway 8R-26L and Associated Improvements EIR

Date
October 5, 2021

HNTB is tasked with assisting the Ontario International Airport Authority (OIAA) to prepare a Supplemental Environmental Impact Report (EIR) which evaluates the potential environmental effects associated with the proposed rehabilitation of Runway 8R-26L and associated airfield improvements at Ontario International Airport (ONT).

This memorandum summarizes the methodologies and assumptions applied in developing the hybrid base year (2019/2020) and the future years (2023/2024/2025) scenario fleet mixes for the ONT Supplemental EIR. The fleet mix for the year 2024 was selected for analysis of potential noise and air quality impacts, as it will be the final year of construction for this multi-year rehabilitation program. The 2023 and 2025 fleet mixes were developed based on the Draft 2020 TAF growth factors as compared with 2024. These fleet mixes will be used in upcoming noise modeling efforts.

The hybrid base year (2019/2020) fleet mix was based on the ONT Airport Noise Monitoring System (ANOMS) radar data from 2019 and 2020, and FAA's Traffic Flow Management System Count (TFMSC). Passenger air carriers, air taxi, and General Aviation (GA) operations were obtained from the 2019 ANOMS data and the all-cargo operations were obtained from the 2020 ANOMS data. The military operations were obtained from the FAA TFMSC data. This approach represents a hybrid base year fleet mix which recognizes the reduction in passenger carrier and air taxi operations, and the increase in all-cargo operations, attributable to the COVID-19 pandemic. The future scenario (2024) fleet mix was based on the hybrid base year fleet mix and supplemented with announced airline aircraft replacement and retirement

plans. The 2024 forecast of operations and enplanements in the 2020 Draft Terminal Area Forecast (TAF) were used as the future scenario's (2024) operations and enplanements numbers. Aircraft operations were adjusted to match both the projected 2024 operation and enplanement growth. There may be more entries into the ONT market prior to construction of the project but these entries would not be expected to significantly change the fleet mix or operations. The fleet mix was developed based on industry information available through September 2021. The 2023 and 2025 fleet mixes were based on the 2024 fleet mix and was developed by extrapolating and interpolating the 2024 fleet mix based on the Draft 2020 TAF growth factors by operation category (air carrier, air taxi, GA, and military).

In addition, operations were categorized by the time of operation (day/evening/night split), including day (7:00am – 6:59pm), evening (7:00pm – 9:59pm), and nighttime (10:00pm – 6:59am). In the noise model, penalties will be applied to evening and nighttime operation to account for additional annoyance experienced when the ambient noise level is low, and people are at rest.

The following section describes the methodologies and assumptions applied in developing the hybrid base year (2019/2020) fleet mix, followed by the methodologies and assumptions for the future scenario (2023/2024/2025) fleet mixes. Detailed fleet mixes are included in **Appendices A** through **C**.

Hybrid Base Year (2019/2020) Fleet Mix

General

- The total 2019 and 2020 ANOMS operations were scaled up to match the 2019 and 2020 FAA OPSNET operations by category (Air Carrier and Air Taxi, General Aviation, and Military).

Passenger Air Carriers, All-Cargo, and Air Taxi

- Fleet mix and day/evening/night split by airline and aircraft type were obtained from ANOMS.
- ANOMS data were adjusted so that arrivals and departures by airline and aircraft type were balanced. Imbalances between arrivals and departures were corrected by using the lower number scaled to match the higher number.

General Aviation and Military

- Fleet mix and day/evening/night split by airline and aircraft type were obtained from ANOMS.
- ANOMS data were adjusted so that arrivals and departures by aircraft type were balanced. If there was an imbalance between arrivals and departures, the lower number was scaled upwards to match the higher number.
- Military operations were obtained from the FAA TFMSC data because the ANOMS data does not identify military operations whereas the FAA TFMSC does.

Future Scenario (2024) Fleet Mix

General

- The 2024 fiscal year operations forecast in the 2020 Draft TAF were converted to calendar year operations. The converted 2024 forecasted operations and enplanements were used as the future scenario (2024) forecast of operations and enplanements.
- The fleet mix was developed based on the hybrid base year (2019/2020) fleet mix and published fleet plans by the airlines serving ONT. It was subsequently adjusted to match both the 2020 Draft TAF aircraft operations and enplanements forecasts.
- The 2020 Draft TAF projects that enplanements will grow at a faster pace than operations, which implies a general aircraft up-gauging trend. Therefore, it was assumed that larger aircraft would replace some operations by smaller aircraft to accommodate additional passenger demand. Airline-specific up-gauging assumptions are listed below.
- Generally, operations in the existing fleet mix were assumed to grow at the same rate as the 2020 Draft TAF operation forecast from 2019 to 2024.
- Operations of four recent entrant airlines, including Hawaiian Airlines, Avianca, Norse Atlantic Airways, and Aha! were added to the fleet mix forecast. Their operations were considered to be in addition to the operations forecasted in the 2020 Draft TAF. No further new entrants were considered.
- The day/evening/night split by aircraft for scheduled passenger carriers was assumed to be the same as in 2019.
- The 2023 and 2025 fleet mixes were developed based on the Draft 2020 TAF growth factors as compared with 2024 by operation category (air carrier, air taxi, GA, and military).

Passenger Air Carriers

- American Airlines:
  - Retirement of the entire Boeing 757-200 fleet.
    - To be replaced by Airbus A321neo.
  - Some of the Boeing 737-800 operations are to be replaced by Boeing 737 MAX 8.
  - Some of the Airbus A321 operations to be replaced by Airbus A321neo.
  - Airbus A321 to be converted to 190-seat configuration by Spring 2022.
- Alaska Airlines:
  - Retirement of the entire Airbus A320 fleet.
    - To be replaced by Boeing 737 MAX 9.
  - Some of the Boeing 737-900 operations are to be replaced by Airbus A321neo and Boeing 737 MAX 9.
- Avianca:
  - Three flights each week using Airbus A319.
  - Future flights to follow the current schedule (11:30pm arrival and 1:15am departure).
- Mesa Airlines:
  - Retirement of the entire Bombardier CRJ-200 fleet.
    - To be replaced by Bombardier CRJ-900 and Embraer ERJ-175.

    - Some of the Bombardier CRJ-900 operations, as part of American Eagle, to be replaced by Airbus A319 in the American Airlines fleet.
    - Some of the Embraer ERJ-175 operations, as part of United Express, to be replaced by Airbus A319 in the United Airlines fleet.
- Delta Air Lines:
    - Boeing 717-200 to be phased out by 2025. Their operations are to be replaced by Airbus A220-100.
    - Introduction of some Airbus A321neos that are on order. They are expected to replace some of the Airbus A319, A320, and A321 operations.
    - Some of the Airbus A319 operations are to be replaced by Airbus A220-300.
    - Some of the Boeing 737-800 operations are to be replaced by Boeing 737-900 and Airbus A321neo.
    - Retirement of Boeing 767-300.
        - To be replaced by Airbus A330-900.
- Aha!:
    - As announced, Aha! will operate three flights per week using Embraer ERJ-145.
    - All flights were assumed to occur during daytime hours.
- Frontier Airlines:
    - Minimal Airbus A319 operations are to be replaced by Airbus A320neo operations.
    - Addition of Airbus A321neo operations to replace the Airbus A321 and A320 operations.
- Hawaiian Airlines:
    - Five flights each week during off-peak season.
    - Daily flights during peak season (between Memorial Day and Labor Day).
    - Future flights to follow the current schedule (9:35pm arrival and 9:05am departure).
- JetBlue:
    - Some of the Airbus A320 operations are to be replaced by the Airbus A321 and A321neo aircraft to accommodate additional passenger demand.
    - Some of the Airbus A321 operations are to be replaced by the Airbus A321neo aircraft.
- Norse Atlantic Airways
    - Detailed flight frequency from Oslo to ONT had not been released as of September 2021. It was assumed that the frequency, arrival, and departure times would be the same as the discontinued Norwegian Air Shuttle flights between Oslo Airport and Los Angeles International Airport.
        - Norse Atlantic Airways will operate two flights per week with a Boeing 787.
    - Arrivals were assumed to occur during daytime hours and departures were assumed to occur during evening hours.
- Skywest Airlines:
    - Transition of some Bombardier CRJ-200 operations to Bombardier CRJ-700, Bombardier CRJ-900, and Embraer ERJ-175.
- Southwest Airlines:
    - Some of the Boeing 737-700 operations are to be replaced by Boeing 737 MAX 8 operations.
- United Airlines:
    - Boeing 757-200 is to be replaced by Airbus A321XLR but not until 2025. Therefore, their operations remain in the 2024 forecast.

    - Some of the Airbus A319 operations are to be replaced by Boeing 737 MAX 9 operations.
    - Low Boeing 737-700 operations are to be replaced by Boeing 737-800 operations.
- Volaris:
    - Airbus A320neo aircraft to replace some of the Airbus A320 operations.
    - Minimal Airbus A319 operations are to be replaced by Airbus A320neo operations.

All-Cargo Carriers

- FedEx:
    - Decrease of Airbus A300-600RF operations.
        - Operations are to be replaced by Boeing 767-300ERF.
    - Decrease of Boeing MD-11F operations.
        - Operations are to be replaced by Boeing 767-300ERF.
    - Retirement of the entire Boeing MD-10 fleet.
        - To be replaced by Boeing 767-300ERF and Boeing 777F.
    - Retirement of the entire Airbus A310 fleet.
        - To be replaced by Boeing 767-300ERF.
- UPS:
    - Decrease of Boeing MD-11F operations.
        - Operations are to be replaced by Boeing 767-300F.

Air Taxi

- Operations were adjusted with the air carrier and air taxi growth factors forecast in the 2020 Draft TAF from 2019 to 2024.
- Total operations (along with passenger carriers and all-cargo) were scaled up on a prorated basis to match the total 2024 projected air carrier and air taxi operations in the 2020 Draft TAF.

General Aviation and Military

- GA operations were adjusted by the specific aircraft model production duration and rate, as well as the FAA's 2021-2041 Aerospace Forecast on flight hours by categories which include single engine pistons, multiple engine pistons, turboprops, helicopters, and jets.
- Military operations were adjusted with the military operations growth factors forecasted in the 2020 Draft TAF from 2019 to 2024.
- The total number of operations was adjusted on a prorated basis to sum to the total 2024 projected GA and military operations in the 2020 Draft TAF.

Summary

Table A-1 in **Appendix A** shows the detailed 2019/2020 hybrid base year fleet mix. **Tables B-1** in **Appendices B** shows the 2023, 2024, and 2025 fleet mixes. HNTB requests a review of the fleet mix development methodologies and assumptions. If you have any questions, please do not hesitate to reach me by email yxu@hntb.com.

Best Regards,

Yue Xu, Ph.D., P.E.
Aviation Environmental Planner
HNTB Corporation

Appendix A
Hybrid Base Year (2019/2020)
Fleet Mix

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
Passenger Carrier	AAL	American Airlines	A21N	Airbus A321NEO Series	2	-	-	2	1	1	-	2
	AAL	American Airlines	A319	Airbus A319 series	226	239	40	504	217	57	231	504
	AAL	American Airlines	A320	Airbus A320 series	276	4	1	280	269	6	6	280
	AAL	American Airlines	A321	Airbus A321 series	25	118	86	229	30	10	189	229
	AAL	American Airlines	B38M	Boeing 737 MAX 8	1	-	-	1	1	-	-	1
	AAL	American Airlines	B738	Boeing 737-800	1,677	418	363	2,458	1,746	25	688	2,458
	AAL	American Airlines	B752	Boeing 757-200	1	-	-	1	-	1	-	1
	AAL Total				2,208	778	490	3,476	2,264	99	1,114	3,476
	ASA	Alaska Airlines	A21N	Airbus A321NEO Series	1	-	-	1	1	-	-	1
	ASA	Alaska Airlines	A320	Airbus A320 series	6	-	-	6	4	2	-	6
	ASA	Alaska Airlines	B737	Boeing 737-700	2	-	4	6	2	-	4	6
	ASA	Alaska Airlines	B738	Boeing 737-800	62	12	22	96	69	3	24	96
	ASA	Alaska Airlines	B739	Boeing 737-900	579	63	247	889	597	61	230	889
	ASA Total				650	75	273	998	674	66	258	998
	ASH	Mesa Airlines/American Eagle	CRJ2	Bombardier CRJ 200 Regional Jet	14	4	3	20	11	6	3	20
	ASH	Mesa Airlines/American Eagle	CRJ9	Bombardier CRJ 900 Regional Jet	724	62	3	789	481	303	5	789
	ASH	Mesa Airlines/United Express	E170	Embraer ERJ-170	1	42	102	144	12	-	133	144
	ASH	Mesa Airlines/United Express	E75L	Embraer ERJ-175	1	28	55	83	8	-	75	83
	ASH Total				740	135	162	1,037	512	309	216	1,037
	CAL	China Airlines	A359	Airbus A350-900	274	-	-	274	3	-	271	274
	CAL	China Airlines	B77W	Boeing 777-300ER	61	-	-	61	-	-	61	61
	CAL Total				335	-	-	335	3	-	332	335

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
	DAL	Delta Air Lines	A319	Airbus A319 series	7	4	8	19	10	-	9	19
	DAL	Delta Air Lines	A320	Airbus A320 series	-	1	-	1	1	-	-	1
	DAL	Delta Air Lines	A321	Airbus A321 series	1	1	-	2	1	-	1	2
	DAL	Delta Air Lines	B712	Boeing 717-200 / Extended Range	-	5	22	27	4	-	23	27
	DAL	Delta Air Lines	B738	Boeing 737-800	205	188	286	679	212	-	467	679
	DAL	Delta Air Lines	B739	Boeing 737-900	59	18	2	79	60	-	18	79
	DAL	Delta Air Lines	B752	Boeing 757-200	1	-	6	6	2	-	5	6
	DAL	Delta Air Lines	B763	Boeing 767-300	2	2	6	9	1	-	8	9
	DAL Total				276	218	330	823	291	-	532	823
	FFT	Frontier Airlines	A20N	Airbus A320NEO Series	109	166	157	432	106	152	174	432
	FFT	Frontier Airlines	A319	Airbus A319 series	35	-	2	37	36	-	1	37
	FFT	Frontier Airlines	A320	Airbus A320 series	95	130	159	384	76	102	206	384
	FFT	Frontier Airlines	A321	Airbus A321 series	5	1	2	7	-	5	2	7
	FFT Total				244	296	320	861	219	260	383	861
	JBU	JetBlue Airways	A320	Airbus A320 series	4	208	181	393	5	1	388	393
	JBU	JetBlue Airways	A321	Airbus A321 series	6	15	2	22	6	-	16	22
	JBU Total				9	223	183	416	11	1	404	416
	QXE	Horizon Air	E75L	Embraer ERJ-175	319	139	72	530	257	206	68	530
	QXE Total				319	139	72	530	257	206	68	530
	SKW	SkyWest Airlines	CRJ2	Bombardier CRJ 200 Regional Jet	963	176	64	1,202	869	291	43	1,202
	SKW	SkyWest Airlines	CRJ7	Bombardier CRJ 700 Regional Jet	145	6	-	151	143	6	2	151
	SKW	SkyWest Airlines	CRJ9	Bombardier CRJ 900 Regional Jet	243	6	1	250	222	27	1	250
	SKW	SkyWest Airlines	E75L	Embraer ERJ-175	563	31	15	609	550	36	23	609

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
	SKW Total				1,913	219	80	2,212	1,784	360	69	2,212
	SWA	Southwest Airlines	B38M	Boeing 737 MAX 8	21	11	18	50	35	-	15	50
	SWA	Southwest Airlines	B737	Boeing 737-700	7,312	1,839	1,505	10,656	7,336	1,623	1,697	10,656
	SWA	Southwest Airlines	B738	Boeing 737-800	780	461	483	1,724	1,143	203	378	1,724
	SWA Total				8,113	2,311	2,006	12,430	8,514	1,826	2,090	12,430
	UAL	United Airlines	A319	Airbus A319 series	28	55	103	185	48	1	136	185
	UAL	United Airlines	A320	Airbus A320 series	165	105	56	326	178	3	145	326
	UAL	United Airlines	B737	Boeing 737-700	1	-	-	1	1	-	-	1
	UAL	United Airlines	B738	Boeing 737-800	76	35	61	172	97	1	74	172
	UAL	United Airlines	B739	Boeing 737-900	62	222	38	322	143	-	179	322
	UAL	United Airlines	B752	Boeing 757-200	1	-	-	1	1	-	-	1
	UAL Total				332	417	258	1,007	468	5	533	1,007
	VOI	Volaris	A20N	Airbus A320NEO Series	-	-	20	20	-	-	20	20
	VOI	Volaris	A319	Airbus A319 series	-	-	3	3	-	-	3	3
	VOI	Volaris	A320	Airbus A320 series	2	3	319	324	1	-	323	324
	VOI Total				2	3	342	347	1	-	346	347
Passenger Carrier Total					15,142	4,814	4,516	24,472	14,997	3,130	6,344	24,472
All Cargo Carrier	AAH	Aloha Air Cargo	B733	Boeing 737-300	108	21	3	131	92	-	40	131
	AAH Total				108	21	3	131	92	-	40	131
	ABX	ABX Air	B762	Boeing 767-200	170	221	658	1,049	825	3	222	1,049
	ABX	ABX Air	B763	Boeing 767-300	-	10	-	10	-	-	10	10
	ABX Total				170	231	658	1,059	825	3	232	1,059
	AIP	Alpine Air Express	B190	Beechcraft 1900D	219	3	-	223	223	-	-	223
	AIP Total				219	3	-	223	223	-	-	223
	AJT	Amerijet International	B763	Boeing 767-300	5	45	3	53	43	-	10	53
	AJT Total				5	45	3	53	43	-	10	53

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
	AMF	Ameriflight	BE99	Beechcraft Airliner Model 99	891	89	25	1,005	612	33	359	1,005
	AMF	Ameriflight	E120	Embraer EMB-120 Brasilia	240	1	3	244	242	-	2	244
	AMF	Ameriflight	PA31	Piper PA-31 Navajo	97	132	26	255	165	12	78	255
	AMF	Ameriflight	SW4	SA227 Metroliner	43	26	6	75	72	2	1	75
	AMF Total				1,272	248	59	1,579	1,091	48	441	1,579
	ATN	Air Transport International	B762	Boeing 767-200	68	1	-	69	-	1	68	69
	ATN	Air Transport International	B763	Boeing 767-300	611	407	70	1,088	133	326	629	1,088
	ATN Total				679	408	70	1,157	133	327	696	1,157
	CFS	Empire Airlines	AT43	Avions de Transport Régional ATR-43	261	1	-	262	244	-	17	262
	CFS Total				261	1	-	262	244	-	17	262
	CKS	Kalitta Air	B742	Boeing 747-200	4	2	1	7	3	-	4	7
	CKS	Kalitta Air	B744	Boeing 747-400	25	7	6	38	19	7	11	38
	CKS Total				29	9	7	45	23	7	15	45
	FDX	FedEx	A306	Airbus A300-600/622R	43	32	170	245	138	7	99	245
	FDX	FedEx	A30B	Airbus A300B4-600 Series	-	1	4	5	4	-	1	5
	FDX	FedEx	A310	Airbus A310 Series	106	18	30	154	103	18	33	154
	FDX	FedEx	B752	Boeing 757-200	209	66	117	392	78	222	92	392
	FDX	FedEx	B763	Boeing 767-300	426	93	225	744	139	267	337	744
	FDX	FedEx	B77L	Boeing 777F	5	1	127	133	35	4	94	133
	FDX	FedEx	DC10	McDonnell Douglas DC-10	247	13	267	527	75	191	261	527
	FDX	FedEx	MD11	McDonnell Douglas MD-11 (Mixed)	262	27	369	657	211	239	208	657
	FDX Total				1,298	250	1,309	2,857	784	949	1,125	2,857
	GTI	Atlas Air	B744	Boeing 747-400	3	1	29	33	23	-	10	33

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
	GTI	Atlas Air	B763	Boeing 767-300	120	544	563	1,227	491	45	691	1,227
	GTI Total				123	545	592	1,259	513	45	701	1,259
	PCM	West Air	C208	Cessna 208 Caravan I	2,405	7	1	2,413	1,704	1	709	2,413
	PCM Total				2,405	7	1	2,413	1,704	1	709	2,413
	SCX	Sun Country Airlines	B737	Boeing 737-700	1	-	-	1	1	-	-	1
	SCX	Sun Country Airlines	B738	Boeing 737-800	300	39	71	410	262	69	80	410
	SCX Total				301	39	71	411	263	69	80	411
	SOO	Southern Air	B738	Boeing 737-800	12	42	31	85	1	35	49	85
	SOO Total				12	42	31	85	1	35	49	85
	SWQ	IAero Airways	B733	Boeing 737-300	25	6	1	32	30	-	2	32
	SWQ	IAero Airways	B734	Boeing 737-400	1	-	-	1	1	-	-	1
	SWQ	IAero Airways	B738	Boeing 737-800	1	-	-	1	1	-	-	1
	SWQ Total				27	6	1	34	32	-	2	34
	UPS	UPS	A306	Airbus A300-600/622R	1,190	665	639	2,493	994	255	1,245	2,493
	UPS	UPS	B744	Boeing 747-400	53	153	56	263	42	9	211	263
	UPS	UPS	B748	Boeing 747-800	28	305	68	400	30	7	363	400
	UPS	UPS	B752	Boeing 757-200	649	529	415	1,594	988	37	569	1,594
	UPS	UPS	B763	Boeing 767-300	1,094	533	1,102	2,729	695	610	1,424	2,729
	UPS	UPS	MD11	McDonnell Douglas MD-11 (Mixed)	804	290	729	1,824	348	350	1,126	1,824
	UPS Total				3,818	2,475	3,009	9,303	3,097	1,268	4,938	9,303
	WGN	Western Global Airlines	B744	Boeing 747-400	8	-	-	8	8	-	-	8
	WGN	Western Global Airlines	MD11	McDonnell Douglas MD-11 (Mixed)	75	6	15	96	59	5	32	96
	WGN Total				84	6	15	105	68	5	32	105
All Cargo Carrier Total					10,811	4,337	5,830	20,978	9,133	2,757	9,087	20,978

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
Air Taxi	Air Taxi	Miscellaneous	A306	Airbus A300-600/622R	-	-	6	6	-	-	6	6
	Air Taxi	Miscellaneous	A319	Airbus A319 series	3	2	8	13	4	-	9	13
	Air Taxi	Miscellaneous	A320	Airbus A320 series	7	3	11	21	5	2	14	21
	Air Taxi	Miscellaneous	A321	Airbus A321 series	-	1	-	1	-	1	-	1
	Air Taxi	Miscellaneous	B38M	Boeing 737 MAX 8	1	2	-	3	3	-	-	3
	Air Taxi	Miscellaneous	B722	Boeing 727-200	7	0	1	8	7	1	-	8
	Air Taxi	Miscellaneous	B733	Boeing 737-300	6	-	-	6	6	-	-	6
	Air Taxi	Miscellaneous	B734	Boeing 737-400	14	-	-	14	13	-	1	14
	Air Taxi	Miscellaneous	B737	Boeing 737-700	39	12	6	56	56	-	-	56
	Air Taxi	Miscellaneous	B738	Boeing 737-800	19	10	12	42	33	-	8	42
	Air Taxi	Miscellaneous	B739	Boeing 737-900	5	2	-	6	5	2	-	6
	Air Taxi	Miscellaneous	B744	Boeing 747-400	11	2	1	14	4	3	7	14
	Air Taxi	Miscellaneous	B748	Boeing 747-800	-	-	1	1	1	-	-	1
	Air Taxi	Miscellaneous	B752	Boeing 757-200	16	17	19	51	24	8	19	51
	Air Taxi	Miscellaneous	B762	Boeing 767-200	5	7	2	14	3	2	8	14
	Air Taxi	Miscellaneous	B763	Boeing 767-300	20	10	9	39	24	5	10	39
	Air Taxi	Miscellaneous	B77L	Boeing 777-200LR	-	-	1	1	1	-	-	1
	Air Taxi	Miscellaneous	BE40	Beechcraft Beechjet 400	3	1	1	5	3	2	-	5
	Air Taxi	Miscellaneous	C56X	Cessna 560XL Citation Excel	22	3	-	25	24	1	-	25
	Air Taxi	Miscellaneous	C680	Cessna 680 Citation Sovereign	12	2	3	17	16	1	-	17
	Air Taxi	Miscellaneous	C68A	Cessna Citation Latitude	14	4	-	18	14	3	1	18
	Air Taxi	Miscellaneous	C750	Cessna 750 series/Citation X	10	2	-	12	11	1	-	12
	Air Taxi	Miscellaneous	CL30	Bombardier Challenger 300	40	8	-	48	46	-	2	48
	Air Taxi	Miscellaneous	CL35	Bombardier Challenger 350	15	3	1	19	18	1	-	19

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
	Air Taxi	Miscellaneous	CL60	Canadair Bombardier CL600/610 Challenger Twin Jet	2	1	-	3	3	-	-	3
	Air Taxi	Miscellaneous	CRJ9	Bombardier CRJ 900 Regional Jet	14	1	-	15	14	1	-	15
	Air Taxi	Miscellaneous	E550	Embraer EMB550 Phenom 300	3	-	-	3	3	-	-	3
	Air Taxi	Miscellaneous	E55P	Embraer EMB550 Phenom 300	23	4	3	30	25	4	1	30
	Air Taxi	Miscellaneous	F2TH	Dassault Falcon 2000	1	-	-	1	1	-	-	1
	Air Taxi	Miscellaneous	GALX	IAI 1126 Astra Galaxy/Gulfstream 200	5	-	-	5	3	-	1	5
	Air Taxi	Miscellaneous	GL5T	Bombardier Global 5000 BD-700	11	1	1	13	12	-	1	13
	Air Taxi	Miscellaneous	GLEX	Bombardier BD-700 Global Express	6	3	2	10	8	-	2	10
	Air Taxi	Miscellaneous	GLF4	Gulfstream IV	9	2	1	11	11	-	-	11
	Air Taxi	Miscellaneous	MD11	McDonnell Douglas MD-11 (Mixed)	10	-	4	15	13	-	2	15
Air Taxi Total					350	101	91	542	411	37	94	542
General Aviation	GA	Miscellaneous	A109	Agusta / AgustaWestland A-109	9	2	-	11	8	-	3	11
	GA	Miscellaneous	A169	AgustaWestland AW169	2	-	-	2	2	-	-	2
	GA	Miscellaneous	AS50	Eurocopter AS-350	122	15	12	149	112	18	20	149
	GA	Miscellaneous	B350	Beechcraft Super King Air 350/300B	134	13	2	149	134	9	7	149
	GA	Miscellaneous	B407	Bell Helicopter 407	33	-	4	37	29	-	8	37
	GA	Miscellaneous	B412	Bell Helicopter 412 Sentinel	2	-	-	2	2	-	-	2
	GA	Miscellaneous	B505	Bell 505 Jet Ranger X	4	-	-	4	4	-	-	4

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
	GA	Miscellaneous	BE20	Beechcraft Model 200 (Super) King Air 200	110	4	7	121	110	7	4	121
	GA	Miscellaneous	BE30	Beechcraft Super King Air 300	29	-	2	31	31	-	-	31
	GA	Miscellaneous	BE35	Beechcraft Model 35 Bonanza	31	2	-	33	26	5	2	33
	GA	Miscellaneous	BE40	Beechcraft Beechjet 400	46	-	2	48	46	2	-	48
	GA	Miscellaneous	BE99	Beechcraft Airliner Model 99	4	-	-	4	2	-	2	4
	GA	Miscellaneous	BE9L	Beechcraft Model 90 King Air	55	-	9	64	43	13	8	64
	GA	Miscellaneous	C150	Cessna 150 Single Engine SEPF	22	4	9	35	19	3	13	35
	GA	Miscellaneous	C152	Cessna 152 Single Engine SEPF	42	35	11	88	41	19	28	88
	GA	Miscellaneous	C172	Cessna 172 Single Engine SEPF	527	305	85	917	554	249	113	917
	GA	Miscellaneous	C180	Cessna 180 Skywagon	96	-	22	118	68	18	33	118
	GA	Miscellaneous	C182	Cessna 182 Skylane	90	7	2	99	76	18	5	99
	GA	Miscellaneous	C206	Cessna 206 Stationair	173	15	-	189	164	25	-	189
	GA	Miscellaneous	C208	Cessna 208 Caravan I	53	7	4	64	50	-	13	64
	GA	Miscellaneous	C210	Cessna 210 Centurion	136	-	-	136	136	-	-	136
	GA	Miscellaneous	C25A	Cessna CitationJet CJ2, 525A	26	2	4	33	33	-	-	33
	GA	Miscellaneous	C25B	Cessna CitationJet CJ3, 525B	105	9	11	125	116	2	7	125
	GA	Miscellaneous	C25C	Cessna CitationJet CJ4, 525C	99	7	-	105	91	5	9	105
	GA	Miscellaneous	C425	Cessna 425 (Corsair/Conquest)	31	-	2	33	31	2	-	33
	GA	Miscellaneous	C525	Cessna CitationJet CJ1, 525	206	4	9	219	217	3	-	219
	GA	Miscellaneous	C550	Cessna Citation 550 Citation II	109	20	7	136	114	11	11	136

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
	GA	Miscellaneous	C560	Cessna 560 Citation V, Ultra & Ultra Encore	96	11	-	107	97	3	8	107
	GA	Miscellaneous	C56X	Cessna 560XL Citation Excel	191	50	20	261	232	16	13	261
	GA	Miscellaneous	C680	Cessna 680 Citation Sovereign	53	2	-	55	55	-	-	55
	GA	Miscellaneous	C68A	Cessna Citation Latitude	4	-	-	4	4	-	-	4
	GA	Miscellaneous	C750	Cessna 750 series/Citation X	134	61	7	202	185	10	7	202
	GA	Miscellaneous	CL30	Bombardier Challenger 300	202	11	42	254	194	5	56	254
	GA	Miscellaneous	CL35	Bombardier Challenger 350	22	-	-	22	22	-	-	22
	GA	Miscellaneous	CL60	Canadair Bombardier CL600/610 Challenger Twin Jet	224	26	29	278	237	19	23	278
	GA	Miscellaneous	CRJ2	Bombardier CRJ 200 Regional Jet	33	15	-	48	26	16	6	48
	GA	Miscellaneous	CRJ7	Bombardier CRJ 700 Regional Jet	59	-	-	59	59	-	-	59
	GA	Miscellaneous	DA40	Diamond DA40 SEPF	15	18	9	42	18	13	10	42
	GA	Miscellaneous	E145	Embraer ERJ-145	37	-	-	37	37	-	-	37
	GA	Miscellaneous	E170	Embraer ERJ-170	-	2	-	2	-	2	-	2
	GA	Miscellaneous	E190	Embraer ERJ-190-100 /-200	39	7	-	46	36	7	2	46
	GA	Miscellaneous	E50P	Embraer EMB500 Phenom 100	39	2	2	44	37	7	-	44
	GA	Miscellaneous	E550	Embraer EMB550 Phenom 300	44	4	-	48	39	9	-	48
	GA	Miscellaneous	E55P	Embraer EMB550 Phenom 300	43	11	2	57	50	4	2	57
	GA	Miscellaneous	E75L	Embraer ERJ-175	24	11	-	35	35	-	-	35
	GA	Miscellaneous	EC35	Eurocopter EC-135 COM & MIL	4	-	7	11	4	2	4	11

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
	GA	Miscellaneous	F2TH	Dassault Falcon 2000	105	9	2	116	106	10	-	116
	GA	Miscellaneous	F900	Dassault Falcon 900	158	24	7	189	176	8	5	189
	GA	Miscellaneous	FA20	Dassault Falcon 20 Mystere 20 /200	72	-	-	72	72	-	-	72
	GA	Miscellaneous	FA50	Dassault Falcon 50	224	15	11	250	219	18	13	250
	GA	Miscellaneous	G280	Gulfstream G280	31	4	-	35	35	-	-	35
	GA	Miscellaneous	GALX	IAI 1126 Astra Galaxy/Gulfstream 200	18	-	-	18	18	-	-	18
	GA	Miscellaneous	GL5T	Bombardier Global 5000 BD-700	9	4	-	13	10	3	-	13
	GA	Miscellaneous	GLEX	Bombardier BD-700 Global Express	15	-	2	18	18	-	-	18
	GA	Miscellaneous	GLF4	Gulfstream IV	73	15	15	103	77	10	15	103
	GA	Miscellaneous	GLF5	Gulfstream V	63	13	11	88	62	11	15	88
	GA	Miscellaneous	H25B	Hawker 800/800 XP/850 XP Twin Turbojet	112	15	4	132	117	10	5	132
	GA	Miscellaneous	H500	MD Helicopters MD 500	4	4	-	9	9	-	-	9
	GA	Miscellaneous	HELO	Unknown Helicopter	59	9	20	88	57	9	22	88
	GA	Miscellaneous	LJ35	Learjet 35 Twin Jet	21	2	6	29	16	4	8	29
	GA	Miscellaneous	LJ45	Learjet 45 Twin Jet	68	7	-	75	64	11	-	75
	GA	Miscellaneous	LJ60	Learjet 60 Twin Jet	94	4	4	103	92	2	9	103
	GA	Miscellaneous	M20P	Mooney Mark 20 Series	44	2	-	46	40	6	-	46
	GA	Miscellaneous	P28A	Piper PA-28-140/150/160/180 Cherokee	78	35	19	132	77	27	27	132
	GA	Miscellaneous	P46T	Piper PA-46-500TP Malibu Meridian	37	-	-	37	35	2	-	37
	GA	Miscellaneous	PA24	Piper PA-24 Comanche	55	4	-	59	57	2	-	59
	GA	Miscellaneous	PA28	Piper PA-28-151 Cherokee Warrior	15	13	15	44	15	15	15	44

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
	GA	Miscellaneous	PA44	Piper PA-44 Seminole	4	22	9	35	-	27	8	35
	GA	Miscellaneous	PC12	Pilatus PC-12	118	7	2	127	113	7	7	127
	GA	Miscellaneous	PRM1	Raytheon 390 Premier	184	61	11	257	221	14	21	257
	GA	Miscellaneous	R22	Robinson R22B w/Lycoming 0320	35	13	18	66	26	22	18	66
	GA	Miscellaneous	R44	Robinson R44 Clipper/Raven Helicopter	9	-	-	9	7	2	-	9
	GA	Miscellaneous	S76	Sikorsky S-76	2	-	-	2	2	-	-	2
	GA	Miscellaneous	SR20	Cirrus SR20	26	2	-	29	23	5	-	29
	GA	Miscellaneous	SR22	Cirrus SR22	118	4	2	125	121	4	-	125
General Aviation Total					5,414	974	479	6,868	5,509	750	609	6,868
Military	Military	Miscellaneous	AC95	Gulfstream Jetprop Commander 1000	36	-	-	36	36	-	-	36
	Military	Miscellaneous	B350	Beech Super King Air 350	3	-	-	3	3	-	-	3
	Military	Miscellaneous	B703	Boeing 707	7	-	-	7	7	-	-	7
	Military	Miscellaneous	B722	Boeing 727-200	32	-	-	32	32	-	-	32
	Military	Miscellaneous	B763	Boeing 767-300	1	-	-	1	1	-	-	1
	Military	Miscellaneous	C130	Lockheed C-130 Hercules	1	-	-	1	1	-	-	1
	Military	Miscellaneous	C17	Boeing Globemaster 3	1	-	-	1	1	-	-	1
	Military	Miscellaneous	C172	Cessna Skyhawk 172/Cutlass	3	-	-	3	3	-	-	3
	Military	Miscellaneous	C206	Cessna 206 Stationair	1	-	-	1	1	-	-	1
	Military	Miscellaneous	C30J	C-130J Hercules	1	-	-	1	1	-	-	1
	Military	Miscellaneous	DC10	Boeing (Douglas) DC 10-10/30	4	-	-	4	4	-	-	4
	Military	Miscellaneous	EC45	Eurocopter EC-145	3	-	-	3	3	-	-	3
	Military	Miscellaneous	EXP	Meyers MAC-145	1	-	-	1	1	-	-	1
	Military	Miscellaneous	F18S	F18 Hornet	1	-	-	1	1	-	-	1

Table A-1: Base Year Fleet Mix

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival				Departure			
					Day	Evening	Night	Total	Day	Evening	Night	Total
	Military	Miscellaneous	F22	Boeing Raptor F22	3	-	-	3	3	-	-	3
	Military	Miscellaneous	F4	McDonnell Douglas F-4 Phantom II	1	-	-	1	1	-	-	1
	Military	Miscellaneous	GA8	Gippsland GA-8 Airvan	1	-	-	1	1	-	-	1
	Military	Miscellaneous	GLF3	Gulfstream III/G300	7	-	-	7	7	-	-	7
	Military	Miscellaneous	GLF4	Gulfstream IV/G400	1	-	-	1	1	-	-	1
	Military	Miscellaneous	GLF5	Gulfstream V/G500	7	-	-	7	7	-	-	7
	Military	Miscellaneous	H25B	BAe HS 125/700/800 Hawker	1	-	-	1	1	-	-	1
	Military	Miscellaneous	H60	Sikorsky SH-60 Seahawk	15	-	-	15	15	-	-	15
	Military	Miscellaneous	K35R	Boeing KC-135 Stratotanker	1	-	-	1	1	-	-	1
	Military	Miscellaneous	LJ35	Bombardier Learjet 35/36	2	-	-	2	2	-	-	2
	Military	Miscellaneous	LJ60	Bombardier Learjet 60	1	-	-	1	1	-	-	1
	Military	Miscellaneous	MD11	Boeing (Douglas) MD 11	1	-	-	1	1	-	-	1
	Military	Miscellaneous	P28A	Piper Cherokee	4	-	-	4	4	-	-	4
	Military	Miscellaneous	P3	Lockheed P-3C Orion	1	-	-	1	1	-	-	1
	Military	Miscellaneous	PA32	Piper Cherokee Six	1	-	-	1	1	-	-	1
	Military	Miscellaneous	SW4	Swearingen Merlin 4/4A Metro2	2	-	-	2	2	-	-	2
	Military	Miscellaneous	T38	Northrop T-38 Talon	3	-	-	3	3	-	-	3
	Military	Miscellaneous	TEX2	Raytheon Texan 2	1	-	-	1	1	-	-	1
	Military	Miscellaneous	UH1	Bell UH-1 Iroquois	1	-	-	1	1	-	-	1
Military Total					154	-	-	154	154	-	-	154
Grand Total					31,870	10,227	10,916	53,013	30,204	6,674	16,135	53,013

Source: ANOMS Radar Data, FAA Draft 2020 TAF, FAA FTMSC Data, and HNTB Analysis, 2022.

Appendix B

Future Scenario (2023/2024/2025) Fleet Mixes

Table B-1: Future Scenario (2023/2024/2025) Fleet Mixes

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival			Departure		
					2023	2024	2025	2023	2024	2025
Passenger Carrier	AAL	American Airlines	A21N	Airbus A321NEO Series	95	99	103	95	99	103
	AAL	American Airlines	A319	Airbus A319 series	543	563	585	543	563	585
	AAL	American Airlines	A320	Airbus A320 series	283	294	305	283	294	305
	AAL	American Airlines	A321	Airbus A321 series	139	144	149	139	144	149
	AAL	American Airlines	B38M	Boeing 737 MAX 8	1,863	1,932	2,009	1,863	1,932	2,009
	AAL	American Airlines	B738	Boeing 737-800	621	644	669	621	644	669
	AAL Total				3,543	3,675	3,820	3,543	3,675	3,820
	ASA	Alaska Airlines	A21N	Airbus A321NEO Series	539	559	581	539	559	581
	ASA	Alaska Airlines	B39M	Boeing 737 MAX 9	186	193	201	186	193	201
	ASA	Alaska Airlines	B737	Boeing 737-700	6	6	6	6	6	6
	ASA	Alaska Airlines	B738	Boeing 737-800	97	101	105	97	101	105
	ASA	Alaska Airlines	B739	Boeing 737-900	179	186	193	179	186	193
	ASA Total				1,008	1,045	1,086	1,008	1,045	1,086
	ASH	Mesa Airlines/American Eagle	CRJ9	Bombardier CRJ 900 Regional Jet	637	660	686	637	660	686
	ASH	Mesa Airlines/United Express	E75L	Embraer ERJ-175	172	178	185	172	178	185
	ASH Total				808	838	871	808	838	871
	AVA	Avianca	A319	Airbus A319 series	156	156	156	156	156	156
	AVA Total				156	156	156	156	156	156
	CAL	China Airlines	A359	Airbus A350-900	166	172	179	166	172	179
	CAL	China Airlines	B77W	Boeing 777-300ER	172	179	186	172	179	186
	CAL Total				338	351	365	338	351	365
	DAL	Delta Air Lines	A21N	Airbus A321NEO Series	98	102	106	98	102	106
	DAL	Delta Air Lines	A220	Airbus A220	37	38	40	37	38	40
	DAL	Delta Air Lines	A339	Airbus A330-900	9	10	10	9	10	10
	DAL	Delta Air Lines	B738	Boeing 737-800	515	534	555	515	534	555
	DAL	Delta Air Lines	B739	Boeing 737-900	165	171	178	165	171	178

Table B-1: Future Scenario (2023/2024/2025) Fleet Mixes

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival			Departure		
					2023	2024	2025	2023	2024	2025
	DAL	Delta Air Lines	B752	Boeing 757-200	7	7	7	7	7	7
	DAL Total				831	862	896	831	862	896
	FFT	Frontier Airlines	A20N	Airbus A320NEO Series	474	492	511	474	492	511
	FFT	Frontier Airlines	A21N	Airbus A321NEO Series	318	330	343	318	330	343
	FFT	Frontier Airlines	A320	Airbus A320 series	78	80	84	78	80	84
	FFT Total				869	902	937	869	902	937
	HAL	Hawaiian Airlines	A21N	Airbus A321NEO Series	289	289	289	289	289	289
	HAL Total				289	289	289	289	289	289
	JBU	JetBlue Airways	A21N	Airbus A321NEO Series	60	62	64	60	62	64
	JBU	JetBlue Airways	A320	Airbus A320 series	318	330	343	318	330	343
	JBU	JetBlue Airways	A321	Airbus A321 series	42	44	46	42	44	46
	JBU Total				420	435	452	420	435	452
	QXE	Horizon Air	E75L	Embraer ERJ-175	281	292	303	281	292	303
	QXE Total				281	292	303	281	292	303
	SKW	SkyWest Airlines	CRJ2	Bombardier CRJ 200 Regional Jet	742	770	800	742	770	800
	SKW	SkyWest Airlines	CRJ7	Bombardier CRJ 700 Regional Jet	210	217	226	210	217	226
	SKW	SkyWest Airlines	CRJ9	Bombardier CRJ 900 Regional Jet	292	302	314	292	302	314
	SKW	SkyWest Airlines	E75L	Embraer ERJ-175	589	611	635	589	611	635
	SKW Total				1,832	1,900	1,976	1,832	1,900	1,976
	SWA	Southwest Airlines	B38M	Boeing 737 MAX 8	1,912	1,983	2,061	1,912	1,983	2,061
	SWA	Southwest Airlines	B737	Boeing 737-700	8,898	9,230	9,594	8,898	9,230	9,594
	SWA	Southwest Airlines	B738	Boeing 737-800	1,741	1,806	1,877	1,741	1,806	1,877
	SWA Total				12,551	13,019	13,533	12,551	13,019	13,533
	UAL	United Airlines	A319	Airbus A319 series	82	85	89	82	85	89
	UAL	United Airlines	A320	Airbus A320 series	329	341	355	329	341	355
	UAL	United Airlines	B39M	Boeing 737 MAX 9	122	126	131	122	126	131

Table B-1: Future Scenario (2023/2024/2025) Fleet Mixes

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival			Departure		
					2023	2024	2025	2023	2024	2025
	UAL	United Airlines	B738	Boeing 737-800	175	181	188	175	181	188
	UAL	United Airlines	B739	Boeing 737-900	325	337	351	325	337	351
	UAL	United Airlines	B752	Boeing 757-200	1	1	1	1	1	1
	UAL Total				1,034	1,072	1,115	1,034	1,072	1,115
	VOI	Volaris	A20N	Airbus A320NEO Series	184	191	199	184	191	199
	VOI	Volaris	A320	Airbus A320 series	164	170	176	164	170	176
	VOI Total				348	361	375	348	361	375
	AHA	Aha!	E145	Embraer ERJ-145	317	317	317	317	317	317
	AHA Total				317	317	317	317	317	317
	TBA	Nores Atlantic Airways	B787	Boeing 787 Series	112	112	112	112	112	112
	TBA Total				112	112	112	112	112	112
Passenger Carrier Total					24,738	25,627	26,605	24,738	25,627	26,605
All Cargo Carrier	AAH	Aloha Air Cargo	B733	Boeing 737-300	133	138	143	133	138	143
	AAH Total				133	138	143	133	138	143
	ABX	ABX Air	B762	Boeing 767-200	1,062	1,102	1,145	1,062	1,102	1,145
	ABX	ABX Air	B763	Boeing 767-300	10	11	11	10	11	11
	ABX Total				1,073	1,113	1,157	1,073	1,113	1,157
	AIP	Alpine Air Express	B190	Beechcraft 1900D	225	234	243	225	234	243
	AIP Total				225	234	243	225	234	243
	AJT	Amerijet International	B763	Boeing 767-300	54	56	58	54	56	58
	AJT Total				54	56	58	54	56	58
	AMF	Ameriflight	BE99	Beechcraft Airliner Model 99	1,018	1,056	1,097	1,018	1,056	1,097
	AMF	Ameriflight	E120	Embraer EMB-120 Brasilia	247	256	266	247	256	266
	AMF	Ameriflight	PA31	Piper PA-31 Navajo	259	268	279	259	268	279
	AMF	Ameriflight	SW4	SA227 Metroliner	76	79	82	76	79	82
	AMF Total				1,599	1,659	1,724	1,599	1,659	1,724

Table B-1: Future Scenario (2023/2024/2025) Fleet Mixes

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival			Departure		
					2023	2024	2025	2023	2024	2025
	ATN	Air Transport International	B762	Boeing 767-200	70	72	75	70	72	75
	ATN	Air Transport International	B763	Boeing 767-300	1,102	1,143	1,188	1,102	1,143	1,188
	ATN Total				1,171	1,215	1,263	1,171	1,215	1,263
	CFS	Empire Airlines	AT43	Avions de Transport Régional ATR-43	265	275	286	265	275	286
	CFS Total				265	275	286	265	275	286
	CKS	Kalitta Air	B742	Boeing 747-200	7	8	8	7	8	8
	CKS	Kalitta Air	B744	Boeing 747-400	38	40	41	38	40	41
	CKS Total				46	47	49	46	47	49
	FDX	FedEx	A306	Airbus A300-600/622R	186	193	201	186	193	201
	FDX	FedEx	A30B	Airbus A300B4-600 Series	4	4	4	4	4	4
	FDX	FedEx	B752	Boeing 757-200	397	411	428	397	411	428
	FDX	FedEx	B763	Boeing 767-300	1,405	1,458	1,515	1,405	1,458	1,515
	FDX	FedEx	B77L	Boeing 777F	402	417	433	402	417	433
	FDX	FedEx	MD11	McDonnell Douglas MD-11 (Mixed)	499	518	538	499	518	538
	FDX Total				2,893	3,001	3,120	2,893	3,001	3,120
	GTI	Atlas Air	B744	Boeing 747-400	33	34	36	33	34	36
	GTI	Atlas Air	B763	Boeing 767-300	1,242	1,288	1,339	1,242	1,288	1,339
	GTI Total				1,275	1,323	1,375	1,275	1,323	1,375
	PCM	West Air	C208	Cessna 208 Caravan I	2,444	2,535	2,635	2,444	2,535	2,635
	PCM Total				2,444	2,535	2,635	2,444	2,535	2,635
	SCX	Sun Country Airlines	B737	Boeing 737-700	1	1	1	1	1	1
	SCX	Sun Country Airlines	B738	Boeing 737-800	415	431	448	415	431	448
	SCX Total				416	432	449	416	432	449
	SOO	Southern Air	B738	Boeing 737-800	86	89	93	86	89	93
	SOO Total				86	89	93	86	89	93
	SWQ	IAero Airways	B733	Boeing 737-300	32	33	35	32	33	35

Table B-1: Future Scenario (2023/2024/2025) Fleet Mixes

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival			Departure		
					2023	2024	2025	2023	2024	2025
	SWQ	IAero Airways	B734	Boeing 737-400	1	1	1	1	1	1
	SWQ	IAero Airways	B738	Boeing 737-800	1	1	1	1	1	1
	SWQ Total				34	36	37	34	36	37
	UPS	UPS	A306	Airbus A300-600/622R	2,525	2,619	2,722	2,525	2,619	2,722
	UPS	UPS	B744	Boeing 747-400	266	276	287	266	276	287
	UPS	UPS	B748	Boeing 747-800	405	420	437	405	420	437
	UPS	UPS	B752	Boeing 757-200	1,614	1,674	1,740	1,614	1,674	1,740
	UPS	UPS	B763	Boeing 767-300	3,502	3,632	3,776	3,502	3,632	3,776
	UPS	UPS	MD11	McDonnell Douglas MD-11 (Mixed)	1,108	1,149	1,195	1,108	1,149	1,195
	UPS Total				9,419	9,770	10,156	9,419	9,770	10,156
	WGN	Western Global Airlines	B744	Boeing 747-400	8	9	9	8	9	9
	WGN	Western Global Airlines	MD11	McDonnell Douglas MD-11 (Mixed)	98	101	105	98	101	105
	WGN Total				106	110	114	106	110	114
All Cargo Carrier Total					21,240	22,031	22,902	21,240	22,031	22,902
Air Taxi	Air Taxi	Miscellaneous	A306	Airbus A300-600/622R	6	6	6	6	6	6
	Air Taxi	Miscellaneous	A319	Airbus A319 series	13	14	14	13	14	14
	Air Taxi	Miscellaneous	A320	Airbus A320 series	21	22	23	21	22	23
	Air Taxi	Miscellaneous	A321	Airbus A321 series	1	1	1	1	1	1
	Air Taxi	Miscellaneous	B38M	Boeing 737 MAX 8	3	3	3	3	3	3
	Air Taxi	Miscellaneous	B722	Boeing 727-200	8	9	9	8	9	9
	Air Taxi	Miscellaneous	B733	Boeing 737-300	6	6	6	6	6	6
	Air Taxi	Miscellaneous	B734	Boeing 737-400	14	15	15	14	15	15
	Air Taxi	Miscellaneous	B737	Boeing 737-700	57	59	61	57	59	61
	Air Taxi	Miscellaneous	B738	Boeing 737-800	42	44	45	42	44	45
	Air Taxi	Miscellaneous	B739	Boeing 737-900	7	7	7	7	7	7
	Air Taxi	Miscellaneous	B744	Boeing 747-400	14	15	15	14	15	15

Table B-1: Future Scenario (2023/2024/2025) Fleet Mixes

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival			Departure		
					2023	2024	2025	2023	2024	2025
	Air Taxi	Miscellaneous	B748	Boeing 747-800	1	1	1	1	1	1
	Air Taxi	Miscellaneous	B752	Boeing 757-200	51	53	55	51	53	55
	Air Taxi	Miscellaneous	B762	Boeing 767-200	14	15	15	14	15	15
	Air Taxi	Miscellaneous	B763	Boeing 767-300	39	41	42	39	41	42
	Air Taxi	Miscellaneous	B77L	Boeing 777-200LR	1	1	1	1	1	1
	Air Taxi	Miscellaneous	BE40	Beechcraft Beechjet 400	4	4	4	4	4	4
	Air Taxi	Miscellaneous	C56X	Cessna 560XL Citation Excel	21	21	22	21	21	22
	Air Taxi	Miscellaneous	C680	Cessna 680 Citation Sovereign	14	14	15	14	14	15
	Air Taxi	Miscellaneous	C68A	Cessna Citation Latitude	15	15	16	15	15	16
	Air Taxi	Miscellaneous	C750	Cessna 750 series/Citation X	10	10	11	10	10	11
	Air Taxi	Miscellaneous	CL30	Bombardier Challenger 300	40	41	43	40	41	43
	Air Taxi	Miscellaneous	CL35	Bombardier Challenger 350	15	16	17	15	16	17
	Air Taxi	Miscellaneous	CL60	Canadair Bombardier CL600/610 Challenger Twin Jet	2	2	2	2	2	2
	Air Taxi	Miscellaneous	CRJ9	Bombardier CRJ 900 Regional Jet	12	13	13	12	13	13
	Air Taxi	Miscellaneous	E550	Embraer EMB550 Phenom 300	2	2	2	2	2	2
	Air Taxi	Miscellaneous	E55P	Embraer EMB550 Phenom 300	25	25	26	25	25	26
	Air Taxi	Miscellaneous	F2TH	Dassault Falcon 2000	1	1	1	1	1	1
	Air Taxi	Miscellaneous	GALX	IAI 1126 Astra Galaxy/Gulfstream 200	4	4	4	4	4	4
	Air Taxi	Miscellaneous	GL5T	Bombardier Global 5000 BD-700	11	11	12	11	11	12
	Air Taxi	Miscellaneous	GLEX	Bombardier BD-700 Global Express	8	9	9	8	9	9
	Air Taxi	Miscellaneous	GLF4	Gulfstream IV	9	10	10	9	10	10
	Air Taxi	Miscellaneous	MD11	McDonnell Douglas MD-11 (Mixed)	15	16	16	15	16	16
Air Taxi Total					506	524	545	506	524	545
General Aviation	GA	Miscellaneous	A109	Agusta / AgustaWestland A-109	11	11	11	11	11	11
	GA	Miscellaneous	A169	AgustaWestland AW169	4	4	4	4	4	4
	GA	Miscellaneous	AS50	Eurocopter AS-350	148	148	149	148	148	149

Table B-1: Future Scenario (2023/2024/2025) Fleet Mixes

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival			Departure		
					2023	2024	2025	2023	2024	2025
	GA	Miscellaneous	B350	Beechcraft Super King Air 350/300B	202	203	204	202	203	204
	GA	Miscellaneous	B407	Bell Helicopter 407	56	56	56	56	56	56
	GA	Miscellaneous	B412	Bell Helicopter 412 Sentinel	2	2	2	2	2	2
	GA	Miscellaneous	B505	Bell 505 Jet Ranger X	11	11	11	11	11	11
	GA	Miscellaneous	BE20	Beechcraft Model 200 (Super) King Air 200	122	123	123	122	123	123
	GA	Miscellaneous	BE30	Beechcraft Super King Air 300	35	35	35	35	35	35
	GA	Miscellaneous	BE35	Beechcraft Model 35 Bonanza	30	30	30	30	30	30
	GA	Miscellaneous	BE40	Beechcraft Beechjet 400	38	38	38	38	38	38
	GA	Miscellaneous	BE99	Beechcraft Airliner Model 99	6	6	6	6	6	6
	GA	Miscellaneous	BE9L	Beechcraft Model 90 King Air	83	83	83	83	83	83
	GA	Miscellaneous	C150	Cessna 150 Single Engine SEPF	33	33	33	33	33	33
	GA	Miscellaneous	C152	Cessna 152 Single Engine SEPF	89	89	89	89	89	89
	GA	Miscellaneous	C172	Cessna 172 Single Engine SEPF	1,076	1,080	1,084	1,076	1,080	1,084
	GA	Miscellaneous	C180	Cessna 180 Skywagon	110	110	111	110	110	111
	GA	Miscellaneous	C182	Cessna 182 Skylane	116	116	117	116	116	117
	GA	Miscellaneous	C206	Cessna 206 Stationair	207	208	209	207	208	209
	GA	Miscellaneous	C208	Cessna 208 Caravan I	73	73	73	73	73	73
	GA	Miscellaneous	C210	Cessna 210 Centurion	135	135	136	135	135	136
	GA	Miscellaneous	C25A	Cessna CitationJet CJ2, 525A	35	35	35	35	35	35
	GA	Miscellaneous	C25B	Cessna CitationJet CJ3, 525B	212	213	214	212	213	214
	GA	Miscellaneous	C25C	Cessna CitationJet CJ4, 525C	200	201	202	200	201	202
	GA	Miscellaneous	C425	Cessna 425 (Corsair/Conquest)	38	38	38	38	38	38
	GA	Miscellaneous	C525	Cessna CitationJet CJ1, 525	300	301	303	300	301	303
	GA	Miscellaneous	C550	Cessna Citation 550 Citation II	161	162	162	161	162	162
	GA	Miscellaneous	C560	Cessna 560 Citation V, Ultra & Ultra Encore	127	128	128	127	128	128

Table B-1: Future Scenario (2023/2024/2025) Fleet Mixes

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival			Departure		
					2023	2024	2025	2023	2024	2025
	GA	Miscellaneous	C56X	Cessna 560XL Citation Excel	395	397	398	395	397	398
	GA	Miscellaneous	C680	Cessna 680 Citation Sovereign	93	93	94	93	93	94
	GA	Miscellaneous	C68A	Cessna Citation Latitude	10	10	11	10	10	11
	GA	Miscellaneous	C750	Cessna 750 series/Citation X	292	293	294	292	293	294
	GA	Miscellaneous	CL30	Bombardier Challenger 300	432	433	435	432	433	435
	GA	Miscellaneous	CL35	Bombardier Challenger 350	52	52	53	52	52	53
	GA	Miscellaneous	CL60	Canadair Bombardier CL600/610 Challenger Twin Jet	271	272	273	271	272	273
	GA	Miscellaneous	CRJ2	Bombardier CRJ 200 Regional Jet	38	38	38	38	38	38
	GA	Miscellaneous	CRJ7	Bombardier CRJ 700 Regional Jet	70	70	70	70	70	70
	GA	Miscellaneous	DA40	Diamond DA40 SEPF	60	60	60	60	60	60
	GA	Miscellaneous	E145	Embraer ERJ-145	59	59	59	59	59	59
	GA	Miscellaneous	E170	Embraer ERJ-170	3	3	3	3	3	3
	GA	Miscellaneous	E190	Embraer ERJ-190-100 /-200	81	81	82	81	81	82
	GA	Miscellaneous	E50P	Embraer EMB500 Phenom 100	45	45	45	45	45	45
	GA	Miscellaneous	E550	Embraer EMB550 Phenom 300	60	60	61	60	60	61
	GA	Miscellaneous	E55P	Embraer EMB550 Phenom 300	105	105	105	105	105	105
	GA	Miscellaneous	E75L	Embraer ERJ-175	60	60	60	60	60	60
	GA	Miscellaneous	EC35	Eurocopter EC-135 COM & MIL	17	17	17	17	17	17
	GA	Miscellaneous	F2TH	Dassault Falcon 2000	160	161	161	160	161	161
	GA	Miscellaneous	F900	Dassault Falcon 900	210	211	212	210	211	212
	GA	Miscellaneous	FA20	Dassault Falcon 20 Mystere 20 /200	85	86	86	85	86	86
	GA	Miscellaneous	FA50	Dassault Falcon 50	269	270	271	269	270	271
	GA	Miscellaneous	G280	Gulfstream G280	74	74	74	74	74	74
	GA	Miscellaneous	GALX	IAI 1126 Astra Galaxy/Gulfstream 200	16	16	16	16	16	16
	GA	Miscellaneous	GL5T	Bombardier Global 5000 BD-700	22	22	22	22	22	22
	GA	Miscellaneous	GLEX	Bombardier BD-700 Global Express	26	26	27	26	26	27

Table B-1: Future Scenario (2023/2024/2025) Fleet Mixes

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival			Departure		
					2023	2024	2025	2023	2024	2025
	GA	Miscellaneous	GLF4	Gulfstream IV	122	122	122	122	122	122
	GA	Miscellaneous	GLF5	Gulfstream V	149	149	150	149	149	150
	GA	Miscellaneous	H25B	Hawker 800/800 XP/850 XP Twin Turbojet	129	130	130	129	130	130
	GA	Miscellaneous	H500	MD Helicopters MD 500	9	9	9	9	9	9
	GA	Miscellaneous	HELO	Unknown Helicopter	126	127	127	126	127	127
	GA	Miscellaneous	LJ35	Learjet 35 Twin Jet	31	31	31	31	31	31
	GA	Miscellaneous	LJ45	Learjet 45 Twin Jet	113	113	114	113	113	114
	GA	Miscellaneous	LJ60	Learjet 60 Twin Jet	83	83	83	83	83	83
	GA	Miscellaneous	M20P	Mooney Mark 20 Series	44	45	45	44	45	45
	GA	Miscellaneous	P28A	Piper PA-28-140/150/160/180 Cherokee	112	112	112	112	112	112
	GA	Miscellaneous	P46T	Piper PA-46-500TP Malibu Meridian	64	65	65	64	65	65
	GA	Miscellaneous	PA24	Piper PA-24 Comanche	54	54	54	54	54	54
	GA	Miscellaneous	PA28	Piper PA-28-151 Cherokee Warrior	41	41	41	41	41	41
	GA	Miscellaneous	PA44	Piper PA-44 Seminole	40	40	40	40	40	40
	GA	Miscellaneous	PC12	Pilatus PC-12	190	191	192	190	191	192
	GA	Miscellaneous	PRM1	Raytheon 390 Premier	262	263	264	262	263	264
	GA	Miscellaneous	R22	Robinson R22B w/Lycoming 0320	67	67	67	67	67	67
	GA	Miscellaneous	R44	Robinson R44 Clipper/Raven Helicopter	13	13	13	13	13	13
	GA	Miscellaneous	S76	Sikorsky S-76	2	2	2	2	2	2
	GA	Miscellaneous	SR20	Cirrus SR20	40	40	41	40	40	41
	GA	Miscellaneous	SR22	Cirrus SR22	183	184	185	183	184	185
GA Total					8,541	8,570	8,600	8,541	8,570	8,600
Military	MIL	Miscellaneous	AC95	Gulfstream Jetprop Commander 1000	37	37	37	37	37	37
	MIL	Miscellaneous	B350	Beech Super King Air 350	4	4	4	4	4	4

Table B-1: Future Scenario (2023/2024/2025) Fleet Mixes

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival			Departure		
					2023	2024	2025	2023	2024	2025
	MIL	Miscellaneous	B703	Boeing 707	7	7	7	7	7	7
	MIL	Miscellaneous	B722	Boeing 727-200	34	34	34	34	34	34
	MIL	Miscellaneous	B763	Boeing 767-300	1	1	1	1	1	1
	MIL	Miscellaneous	C130	Lockheed C-130 Hercules	1	1	1	1	1	1
	MIL	Miscellaneous	C17	Boeing Globemaster 3	1	1	1	1	1	1
	MIL	Miscellaneous	C172	Cessna Skyhawk 172/Cutlass	4	4	4	4	4	4
	MIL	Miscellaneous	C206	Cessna 206 Stationair	1	1	1	1	1	1
	MIL	Miscellaneous	C30J	C-130J Hercules	1	1	1	1	1	1
	MIL	Miscellaneous	DC10	Boeing (Douglas) DC 10-10/30	5	5	5	5	5	5
	MIL	Miscellaneous	EC45	Eurocopter EC-145	4	4	4	4	4	4
	MIL	Miscellaneous	EXP	Meyers MAC-145	1	1	1	1	1	1
	MIL	Miscellaneous	F18S	F18 Hornet	1	1	1	1	1	1
	MIL	Miscellaneous	F22	Boeing Raptor F22	4	4	4	4	4	4
	MIL	Miscellaneous	F4	McDonnell Douglas F-4 Phantom II	1	1	1	1	1	1
	MIL	Miscellaneous	GA8	Gippsland GA-8 Airvan	1	1	1	1	1	1
	MIL	Miscellaneous	GLF3	Gulfstream III/G300	7	7	7	7	7	7
	MIL	Miscellaneous	GLF4	Gulfstream IV/G400	1	1	1	1	1	1
	MIL	Miscellaneous	GLF5	Gulfstream V/G500	7	7	7	7	7	7
	MIL	Miscellaneous	H25B	BAe HS 125/700/800 Hawker	1	1	1	1	1	1
	MIL	Miscellaneous	H60	Sikorsky SH-60 Seahawk	15	15	15	15	15	15
	MIL	Miscellaneous	K35R	Boeing KC-135 Stratotanker	1	1	1	1	1	1
	MIL	Miscellaneous	LJ35	Bombardier Learjet 35/36	2	2	2	2	2	2
	MIL	Miscellaneous	LJ60	Bombardier Learjet 60	1	1	1	1	1	1
	MIL	Miscellaneous	MD11	Boeing (Douglas) MD 11	1	1	1	1	1	1
	MIL	Miscellaneous	P28A	Piper Cherokee	5	5	5	5	5	5
	MIL	Miscellaneous	P3	Lockheed P-3C Orion	1	1	1	1	1	1

Table B-1: Future Scenario (2023/2024/2025) Fleet Mixes

Operation Type	Airline ID	Airline Description	Aircraft ID	Aircraft Description	Arrival			Departure		
					2023	2024	2025	2023	2024	2025
	MIL	Miscellaneous	PA32	Piper Cherokee Six	1	1	1	1	1	1
	MIL	Miscellaneous	SW4	Swearingen Merlin 4/4A Metro2	2	2	2	2	2	2
	MIL	Miscellaneous	T38	Northrop T-38 Talon	4	4	4	4	4	4
	MIL	Miscellaneous	TEX2	Raytheon Texan 2	1	1	1	1	1	1
	MIL	Miscellaneous	UH1	Bell UH-1 Iroquois	1	1	1	1	1	1
Military Total					161	161	161	161	161	161
Grand Total					55,184	56,913	58,812	55,184	56,913	58,812

Source: ANOMS Radar Data, FAA Draft 2020 TAF, FAA TFMSC, FAA OPSNET, and HNTB Analysis, 2022.

Attachment 2
Flight Track Development

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
Passenger	Jet	Arrival	8L	A08LPJE1	29.6%
				A08LPJN1	11.6%
				A08LPJN2	1.0%
				A08LPJN3	2.0%
				A08LPJN4	5.5%
				A08LPJN6	6.5%
				A08LPJN7	24.1%
				A08LPJN8	17.6%
				A08LPJS1	2.0%
			8R	A08RPJE1	31.9%
				A08RPJE3	19.4%
				A08RPJN1	5.6%
				A08RPJN2	12.5%
				A08RPJN3	25.0%
				A08RPJN4	5.6%
			26L	A26LPJE2	1.5%
				A26LPJE3	34.1%
				A26LPJN1	1.8%
				A26LPJN2	1.5%
				A26LPJN3	3.7%
				A26LPJN4	18.1%
				A26LPJN5	0.7%
				A26LPJN6	1.2%
				A26LPJN7	5.7%
				A26LPJN8	18.8%
				A26LPJS1	0.8%
				A26LPJS2	2.2%
				A26LPJS3	2.2%
				A26LPJS4	1.2%
				A26LPJW2	2.2%
				A26LPJW3	4.5%
			26R	A26PJE4	0.9%
				A26RPJE1	0.2%
				A26RPJE2	0.2%
				A26RPJE3	2.8%
				A26RPJE4	0.2%
				A26RPJE5	0.2%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				A26RPJE6	1.6%
				A26RPJE7	2.1%
				A26RPJE8	12.7%
				A26RPJE9	1.1%
				A26RPJN1	2.1%
				A26RPJN2	2.8%
				A26RPJN3	0.4%
				A26RPJN4	2.0%
				A26RPJN5	0.2%
				A26RPJN8	0.5%
				A26RPJN9	0.2%
				A26RPJS1	34.1%
				A26RPJW1	1.3%
				A26RPJW2	26.0%
				A26RPJW3	8.5%
		Departure	8L	D08LPJN1	0.5%
				D08LPJN2	3.0%
				D08LPJN3	5.9%
				D08LPJN4	8.2%
				D08LPJS1	3.5%
				D08LPJS2	3.7%
				D08LPJS3	35.1%
				D08LPJW1	17.3%
				D08LPJW2	19.0%
				D08LPJW4	3.7%
			8R	D08RPJE1	37.0%
				D08RPJN1	5.5%
				D08RPJN2	11.0%
				D08RPJW1	20.5%
				D08RPJW2	26.0%
			26L	D26LPJE1	42.1%
				D26LPJE2	2.3%
				D26LPJN1	4.1%
				D26LPJN2	6.4%
				D26LPJN4	2.3%
				D26LPJS2	3.4%
				D26LPJW1	16.5%
				D26LPJW2	22.9%
			26R	D26RPJE1	0.4%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				D26RPJE2	0.5%
				D26RPJE3	0.6%
				D26RPJE4	15.1%
				D26RPJE5	16.9%
				D26RPJN1	1.1%
				D26RPJN2	3.4%
				D26RPJN3	4.5%
				D26RPJN4	7.4%
				D26RPJN5	0.9%
				D26RPJS2	1.5%
				D26RPJW1	25.5%
				D26RPJW2	20.6%
				D26RPJW3	1.6%
				D26RPJW4	0.0%
Cargo	Jet	Arrival	8L	A08CJN1	33.0%
				A08LCJE1	25.2%
				A08LCJN2	13.0%
				A08LCJN3	16.5%
				A08LCJN4	5.2%
				A08LCJS1	7.0%
			8R	A08RCJE1	25.0%
				A08RCJN2	7.4%
				A08RCJN3	9.3%
				A08RCJN4	13.0%
				A08RCJN5	4.6%
				A08RCJN7	5.6%
				A08RCJS1	3.7%
				A08RCJN1	31.5%
			26L	A26LCJE1	31.8%
				A26LCJE2	0.4%
				A26LCJE3	0.7%
				A26LCJE4	0.9%
				A26LCJE5	5.4%
				A26LCJN1	0.2%
				A26LCJN2	0.1%
				A26LCJN3	15.3%
				A26LCJN4	1.0%
				A26LCJN5	14.4%
				A26LCJN6	0.2%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				A26LCJN7	17.4%
				A26LCJN8	1.9%
				A26LCJN9	3.0%
				A26LCJS1	1.2%
				A26LCJS2	2.9%
				A26LCJS3	1.3%
				A26LCJW1	0.7%
				A26LCJW3	1.3%
			26R	A26RCJE1	19.4%
				A26RCJN1	14.7%
				A26RCJN2	1.0%
				A26RCJN3	3.7%
				A26RCJN4	9.0%
				A26RCJN6	2.4%
				A26RCJN7	13.9%
				A26RCJS1	6.3%
				A26RCJS3	0.4%
				A26RCJW1	17.3%
				A26RCJW2	6.5%
				A26RCJW3	2.4%
				A26RCJW4	1.2%
				A26RCJW5	1.6%
		Departure	8L	D08LCJE1	17.3%
				D08LCJN1	5.1%
				D08LCJN2	3.1%
				D08LCJN3	14.3%
				D08LCJN4	4.1%
				D08LCJS1	35.7%
				D08LCJS2	17.3%
				D08LCJW1	3.1%
			8R	D08RCJE1	2.2%
				D08RCJE2	37.0%
				D08RCJE3	6.6%
				D08RCJE5	3.4%
				D08RCJN1	2.9%
				D08RCJN2	3.4%
				D08RCJN3	5.6%
				D08RCJN4	2.5%
				D08RCJN5	2.2%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				D08RCJS1	2.9%
				D08RCJS2	2.7%
				D08RCJW1	4.7%
				D08RCJW2	16.9%
				D08RCJW3	6.9%
			26L	D26LCJE1	6.6%
				D26LCJE2	47.9%
				D26LCJE3	1.4%
				D26LCJE4	1.2%
				D26LCJN1	3.3%
				D26LCJN2	0.7%
				D26LCJN3	3.4%
				D26LCJN4	3.2%
				D26LCJN5	2.2%
				D26LCJN6	1.6%
				D26LCJS1	0.7%
				D26LCJS2	2.1%
				D26LCJS3	2.1%
				D26LCJS4	1.1%
				D26LCJW1	5.5%
				D26LCJW2	3.6%
				D26LCJW3	10.5%
				D26LCJW4	3.1%
			26R	D26RCJE1	10.1%
				D26RCJE2	46.5%
				D26RCJE3	8.8%
				D26RCJN1	10.5%
				D26RCJN2	1.7%
				D26RCJN3	10.3%
				D26RCJN4	7.1%
				D26RCJW1	2.7%
				D26RCJW2	2.3%
	Propeller	Arrival	8L	A08LCPN1	23.1%
				A08LCPW1	76.9%
			8R	A08RCJS1	9.8%
				A08RCPN1	14.6%
				A08RCPS2	9.8%
				A08RCPW1	2.4%
				A08RCPW2	14.6%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				A08RCPW3	17.1%
				A08RCPW4	24.4%
				A08RCPW5	7.3%
			26L	A26LCPE3	3.9%
				A26LCPE4	3.1%
				A26LCPN1	5.5%
				A26LCPN2	3.9%
				A26LCPN3	1.9%
				A26LCPN4	1.2%
				A26LCPN5	3.4%
				A26LCPN6	3.3%
				A26LCPN7	1.2%
				A26LCPS1	5.3%
				A26LCPS2	4.6%
				A26LCPS3	2.9%
				A26LCPS4	0.3%
				A26LCPW1	0.5%
				A26LCPW2	10.3%
				A26LCPW3	14.4%
				A26LCPW4	16.6%
				A26LCPW5	1.0%
				A26LCPW7	15.1%
				A26RCPN7	0.7%
				A26RCPW2	0.7%
			26R	A26RCPE1	5.6%
				A26RCPN1	7.4%
				A26RCPN2	7.4%
				A26RCPN3	3.7%
				A26RCPN4	9.3%
				A26RCPN5	6.5%
				A26RCPN6	3.7%
				A26RCPN7	1.9%
				A26RCPN8	3.7%
				A26RCPS1	5.6%
				A26RCPS2	5.6%
				A26RCPW1	5.6%
				A26RCPW2	7.4%
				A26RCPW3	14.8%
				A26RCPW4	12.0%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
		Departure	8L	D08LCPN1	12.5%
				D08LCPW1	37.5%
				D08LCPW2	50.0%
			8R	D08RCPN1	11.1%
				D08RCPS1	5.6%
				D08RCPS2	13.0%
				D08RCPW1	18.5%
				D08RCPW2	22.2%
				D08RCPW3	11.1%
				D08RCPW4	14.8%
				D08RCPW5	3.7%
			26L	D26LCPE2	0.8%
				D26LCPE4	2.2%
				D26LCPN1	4.9%
				D26LCPN2	9.1%
				D26LCPN3	5.9%
				D26LCPN4	5.1%
				D26LCPN5	2.6%
				D26LCPN6	3.4%
				D26LCPN7	3.9%
				D26LCPS1	8.1%
				D26LCPS2	3.9%
				D26LCPS4	7.3%
				D26LCPW1	0.2%
				D26LCPW2	19.5%
				D26LCPW3	10.8%
				D26LCPW4	6.5%
				D26LCPW5	5.7%
			26R	D26RCPE1	4.6%
				D26RCPN1	5.2%
				D26RCPN2	9.2%
				D26RCPN3	9.2%
				D26RCPN4	12.1%
				D26RCPN5	5.7%
				D26RCPN6	4.6%
				D26RCPN7	6.9%
				D26RCPS1	4.6%
				D26RCPS2	4.6%
				D26RCPW1	17.2%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				D26RCPW2	1.1%
				D26RCPW3	14.9%
Air Taxi	Jet	Arrival	8L	A08LPJE1	29.6%
				A08LPJN1	11.6%
				A08LPJN2	1.0%
				A08LPJN3	2.0%
				A08LPJN4	5.5%
				A08LPJN6	6.5%
				A08LPJN7	24.1%
				A08LPJN8	17.6%
				A08LPJS1	2.0%
			8R	A08RPJE1	31.9%
				A08RPJE3	19.4%
				A08RPJN1	5.6%
				A08RPJN2	12.5%
				A08RPJN3	25.0%
				A08RPJN4	5.6%
			26L	A26LPJE2	1.5%
				A26LPJE3	34.1%
				A26LPJN1	1.8%
				A26LPJN2	1.5%
				A26LPJN3	3.7%
				A26LPJN4	18.1%
				A26LPJN5	0.7%
				A26LPJN6	1.2%
				A26LPJN7	5.7%
				A26LPJN8	18.8%
				A26LPJS1	0.8%
				A26LPJS2	2.2%
				A26LPJS3	2.2%
				A26LPJS4	1.2%
				A26LPJW2	2.2%
				A26LPJW3	4.5%
			26R	A26PJE4	0.9%
				A26RPJE1	0.2%
				A26RPJE2	0.2%
				A26RPJE3	2.8%
				A26RPJE4	0.2%
				A26RPJE5	0.2%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				A26RPJE6	1.6%
				A26RPJE7	2.1%
				A26RPJE8	12.7%
				A26RPJE9	1.1%
				A26RPJN1	2.1%
				A26RPJN2	2.8%
				A26RPJN3	0.4%
				A26RPJN4	2.0%
				A26RPJN5	0.2%
				A26RPJN8	0.5%
				A26RPJN9	0.2%
				A26RPJS1	34.1%
				A26RPJW1	1.3%
				A26RPJW2	26.0%
				A26RPJW3	8.5%
		Departure	8L	D08LPJN1	0.5%
				D08LPJN2	3.0%
				D08LPJN3	5.9%
				D08LPJN4	8.2%
				D08LPJS1	3.5%
				D08LPJS2	3.7%
				D08LPJS3	35.1%
				D08LPJW1	17.3%
				D08LPJW2	19.0%
				D08LPJW4	3.7%
			8R	D08RPJE1	37.0%
				D08RPJN1	5.5%
				D08RPJN2	11.0%
				D08RPJW1	20.5%
				D08RPJW2	26.0%
			26L	D26LPJE1	42.1%
				D26LPJE2	2.3%
				D26LPJN1	4.1%
				D26LPJN2	6.4%
				D26LPJN4	2.3%
				D26LPJS2	3.4%
				D26LPJW1	16.5%
				D26LPJW2	22.9%
			26R	D26RPJE1	0.4%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				D26RPJE2	0.5%
				D26RPJE3	0.6%
				D26RPJE4	15.1%
				D26RPJE5	16.9%
				D26RPJN1	1.1%
				D26RPJN2	3.4%
				D26RPJN3	4.5%
				D26RPJN4	7.4%
				D26RPJN5	0.9%
				D26RPJS2	1.5%
				D26RPJW1	25.5%
				D26RPJW2	20.6%
				D26RPJW3	1.6%
				D26RPJW4	0.0%
General Aviation	Jet	Arrival	8L	A08LGJW1	100.0%
			8R	A08RGJE2	42.9%
				A08RGJE3	28.6%
				A08RGJN1	28.6%
			26L	A26LGJE1	27.8%
				A26LGJE2	0.9%
				A26LGJN1	14.8%
				A26LGJN2	7.6%
				A26LGJN3	0.9%
				A26LGJS1	9.0%
				A26LGJS2	6.3%
				A26LGJW1	4.0%
				A26LGJW2	7.6%
				A26LGJW3	21.1%
			26R	A26RGJE1	30.0%
				A26RGJN1	26.0%
				A26RGJN2	18.0%
				A26RGJS1	16.0%
				A26RGJW3	10.0%
		Departure	8L	D08LGJ1	100.0%
			8R	D08RGJE1	38.5%
				D08RGJN1	61.5%
			26L	D26LGJN1	6.5%
				D26LGJN2	5.4%
				D26LGJN3	2.2%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				D26LGJN4	3.8%
				D26LGJS1	9.7%
				D26LGJS2	4.3%
				D26LGJS3	27.4%
				D26LGJS4	9.7%
				D26LGJW1	11.3%
				D26LGJW2	19.9%
			26R	D26RGJE1	33.3%
				D26RGJE3	1.7%
				D26RGJN1	11.7%
				D26RGJN2	11.7%
				D26RGJW1	15.0%
				D26RGJW3	26.7%
	Propeller	Arrival	8L	A08LGPW1	100.0%
			8R	A08RGPN5	100.0%
			26L	A26LGPE2	8.2%
				A26LGPE3	26.2%
				A26LGPE4	18.0%
				A26LGPS2	13.1%
				A26LGPW1	27.9%
				A26LGPW2	4.9%
				A26RGPE1	1.6%
			26R	A26RGPE1	5.1%
				A26RGPE2	53.8%
				A26RGPN1	7.7%
				A26RGPS1	10.3%
				A26RGPW1	12.8%
				A26RGPW2	10.3%
		Departure	8L	D08LGP1	100.0%
			8R	D08RGPS1	100.0%
			26L	D26LGPE1	9.8%
				D26LGPN1	9.8%
				D26LGPN2	9.8%
				D26LGPS1	29.3%
				D26LGPS2	7.6%
				D26LGPW1	8.7%
				D26LGPW2	2.2%
				D26LGPW4	5.4%
				D26LGPW5	12.0%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				D26LGPW6	5.4%
			26R	D26RGPE2	44.1%
				D26RGPN1	8.8%
				D26RGPN2	11.8%
				D26RGPW1	29.4%
				D26RGPW2	5.9%
	Helicopter	Arrival	H01	AHELOE1	12.5%
				AHELOE2	12.5%
				AHELOS1	12.5%
				AHELOS2	12.5%
				AHELOW1	12.5%
				AHELOW2	12.5%
				AHELOW3	12.5%
				AHELOW4	12.5%
		Departure	H01	DHELON1	14.3%
				DHELON2	14.3%
				DHELOS1	14.3%
				DHELOS2	14.3%
				DHELOW1	14.3%
				DHELOW2	14.3%
				DHELOW3	14.3%
Military	Jet	Arrival	8L	A08LGJW1	100.0%
			8R	A08RGJE2	42.9%
				A08RGJE3	28.6%
				A08RGJN1	28.6%
			26L	A26LGJE1	27.8%
				A26LGJE2	0.9%
				A26LGJN1	14.8%
				A26LGJN2	7.6%
				A26LGJN3	0.9%
				A26LGJS1	9.0%
				A26LGJS2	6.3%
				A26LGJW1	4.0%
				A26LGJW2	7.6%
				A26LGJW3	21.1%
			26R	A26RGJE1	30.0%
				A26RGJN1	26.0%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				A26RGJN2	18.0%
				A26RGJS1	16.0%
				A26RGJW3	10.0%
		Departure	8L	D08LGJ1	100.0%
			8R	D08RGJE1	38.5%
				D08RGJN1	61.5%
			26L	D26LGJN1	6.5%
				D26LGJN2	5.4%
				D26LGJN3	2.2%
				D26LGJN4	3.8%
				D26LGJS1	9.7%
				D26LGJS2	4.3%
				D26LGJS3	27.4%
				D26LGJS4	9.7%
				D26LGJW1	11.3%
				D26LGJW2	19.9%
			26R	D26RGJE1	33.3%
				D26RGJE3	1.7%
				D26RGJN1	11.7%
				D26RGJN2	11.7%
				D26RGJW1	15.0%
				D26RGJW3	26.7%
	Propeller	Arrival	8L	A08LGPW1	100.0%
			8R	A08RGPN5	100.0%
			26L	A26LGPE2	8.2%
				A26LGPE3	26.2%
				A26LGPE4	18.0%
				A26LGPS2	13.1%
				A26LGPW1	27.9%
				A26LGPW2	4.9%
				A26RGPE1	1.6%
			26R	A26RGPE1	5.1%
				A26RGPE2	53.8%
				A26RGPN1	7.7%
				A26RGPS1	10.3%

Table B-1 Track Use Percentage

Category	Aircraft Type	Operation Type	Runway	Track	Percent
				A26RGPW1	12.8%
				A26RGPW2	10.3%
		Departure	8L	D08LGP1	100.0%
			8R	D08RGPS1	100.0%
			26L	D26LGPE1	9.8%
				D26LGPN1	9.8%
				D26LGPN2	9.8%
				D26LGPS1	29.3%
				D26LGPS2	7.6%
				D26LGPW1	8.7%
				D26LGPW2	2.2%
				D26LGPW4	5.4%
				D26LGPW5	12.0%
				D26LGPW6	5.4%
			26R	D26RGPE2	44.1%
				D26RGPN1	8.8%
				D26RGPN2	11.8%
				D26RGPW1	29.4%
				D26RGPW2	5.9%
	Helicopter	Arrival	H01	AHELOE1	12.5%
				AHELOE2	12.5%
				AHELOS1	12.5%
				AHELOS2	12.5%
				AHELOW1	12.5%
				AHELOW2	12.5%
				AHELOW3	12.5%
				AHELOW4	12.5%
		Departure	H01	DHELON1	14.3%
				DHELON2	14.3%
				DHELOS1	14.3%
				DHELOS2	14.3%
				DHELOW1	14.3%
				DHELOW2	14.3%
				DHELOW3	14.3%

Source: 2019 and 2020 radar data and HNTB analysis, 2022.

Appendix I

Health Risk Assessment

HELIX Environmental Planning

Ontario International Airport Rehabilitation of Runway 8R-26L and Associated Improvements

Health Risk Assessment

April 2022 | 00343.00023.001

Prepared for:

HNTB Corporation
6033 West Century Boulevard, Suite 1050
Los Angeles, CA 90045

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

This page intentionally left blank

TABLE OF CONTENTS

Section **Page**

EXECUTIVE SUMMARY ES-1

1.0 INTRODUCTION 1

1.1 Project Location 1
1.2 Project Description 1
1.2.1 Proposed Project Implementation Schedule 1
1.2.2 Two-Year Program Alternative Implementation Schedule 2

2.0 AIR QUALITY SETTING 2

2.1 Toxic Air Contaminants and Project-Related Sources 2
2.1.1 Jet/Turbine Emissions 2
2.1.2 Piston-Powered Aircraft Emissions 3
2.1.3 Diesel Particulate Matter 4
2.1.4 Concrete Batch Plants 4
2.2 Sensitive Receptors 5

3.0 METHODOLOGY 6

3.1 Dispersion Modeling 6
3.1.1 Source Parameters 6
3.1.2 Meteorological Data 8
3.1.3 Terrain Data 9
3.1.4 Modeled Receptors 9
3.2 TAC Emissions 9
3.3 Risk Determination 10
3.4 Significance Criteria 11

4.0 HEALTH RISK IMPACT ANALYSIS 11

4.1 MEIR and MEIW 11
4.2 Sensitive Receptor Health Risks 13
4.3 Cancer Burden 15
4.4 Cumulative Health Risks 15
4.5 Impact Conclusion 16

5.0 LIST OF PREPARERS 16

6.0 REFERENCES 17

LIST OF APPENDICES

A Dispersion Modeling Input
B Risk Modeling Input/Output

TABLE OF CONTENTS (cont.)

LIST OF FIGURES

No.	Title	Follows Page
1	Regional Location	2
2	Site Plan	2
3	Receptor Locations	6

LIST OF TABLES

No.	Title	Page
1	Turbine Engine Exhaust Toxic Air Contaminants	2
2	Concrete Batch Plant Toxic Air Contaminants	4
3	Aircraft Movement Volume Line Sources	7
4	Aircraft Turbine Exhaust TAC Mass Fractions	9
5	Maximally Exposed Individual Resident Incremental Health Risk	12
6	Maximally Exposed Individual Worker Incremental Health Risk	12
7	Discrete Sensitive Receptor Incremental Cancer Risk	13
8	Discrete Sensitive Receptor Incremental Chronic Risk	14
9	Discrete Sensitive Receptor Incremental Acute Risk	15

ACRONYMS AND ABBREVIATIONS

ADMRT	Air Dispersion Modeling and Risk Tool
AEDT	Aviation Environmental Design Tool
AERMAP	AERMOD terrain preprocessor
AERMOD	USEPA gaussian plume air dispersion model
ATC	Air Traffic Control
avgas	aviation gasoline
BACTs	best available control technologies
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CNS	Central Nervous System
DPM	Diesel Participate Matter
°F	Fahrenheit
FAA	Federal Aviation Administration
HAPs	hazardous air pollutants
HARP	Hotspots Analysis and Reporting Program
HI	hazard index
HRA	health risk assessment
IARC	International Agency on Research for Cancer
JPA	joint powers authority
LTO	landing – takeoff cycle
MATES	Multiple Air Toxics Exposure Study
MEIR	maximally exposed individual resident
MEIW	maximally exposed individual worker
NED	National Elevation Dataset
OEHHA	Office of Environmental Health Hazard Assessment
ONT	Ontario International Airport
PM_{10}	particulate matter with 10 micron or smaller particle diameter
PMI	point of maximum impact
REL	Recommended Exposure Limit
ROFA	Runway Object Free Area
RSA	Runway Safety Area

ACRONYMS AND ABBREVIATIONS (cont.)

SCAB	South Coast Air Basin
SCAQMD	South Coast Metropolitan Air Quality Management District
SEIR	Supplemental Environmental Impact Report
TACs	toxic air contaminants
TOG	total organic gases
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator

EXECUTIVE SUMMARY

This report presents an assessment of potential increased cancer, non-cancer chronic, and acute health risks associated with implementation of the Ontario International Airport Rehabilitation of Runway 8R-26L and Associated Improvements Project (Project). Emissions of toxic air contaminants (TACs) were estimated for aircraft jet/turbine engine exhaust, aircraft piston engine exhaust, diesel particulate matter emissions from construction equipment exhaust, and dust emissions from the proposed concrete batch plant. Air dispersion modeling and health risk analysis was completed for four consolidated aircraft approach paths and nine consolidated aircraft departure paths, aircraft ground movement paths, construction equipment locations, and a concrete batch plant. The risk analysis considered the change in health risks to receptors around the airport during implementation of: (i) the Proposed Project, and (ii) a Two-Year Program Alternative that is being considered in the Supplemental Environmental Impact Report (SEIR) as an alternative to the Proposed Project. The increased cancer risk, non-cancer chronic hazard indices, and acute hazard indices for the maximally exposed individual resident, maximally exposed individual worker, and the closest sensitive receptor to the airport and off-site worker would be below their respective thresholds for both the Proposed Project and Two-Year Program Alternative. The Proposed Project would not result in changes to community health risks after Project implementation. The Project impact related to exposure of sensitive receptors to substantial concentrations of TACs would be less than significant.

This page intentionally left blank

1.0 INTRODUCTION

This report presents an assessment of potential temporary increases in community health risk associated with the proposed Ontario International Airport Rehabilitation of Runway 8R-26L and Associated Improvements Project (Project).

1.1 PROJECT LOCATION

The Project site is located at the Ontario International Airport (ONT) at 2500 East Airport Drive, within the City of Ontario, California. The airport is owned/operated by the Ontario International Airport Authority under a joint powers authority (JPA) enacted by City of Ontario and County of San Bernardino. See Figure 1, *Regional Location*. The Project site is within the San Bernardino County portion of the South Coast Air Basin (SCAB). Air quality in the Project area is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

1.2 PROJECT DESCRIPTION

The Project would consist of rehabilitation and improvements at ONT to meet current Federal Aviation Administration (FAA) standards, improve safety, and enhance airfield efficiency. Connector taxiways would be reconstructed to align more closely with current FAA standards, as well as to improve pavement conditions for air traffic throughout the airfield. The proposed pavement sections would be designed for a 20-year life for all shoulder pavements, blast pad pavement, and for the new taxiway pavement. ONT has two parallel runways, the approximately 12,200-foot (2.3-mile) Runway 8L-26R and the approximately 10,200-foot (1.9-mile) Runway 8R-26L. Runway 8R-26L was built in 1979 and has exceeded the intended design service life of 20-years. The Project would include rehabilitation and reconstruction of Runway 8R-26L. Additionally, objects located within the Runway Safety Area (RSA) and Runway Object Free Area (ROFA) would be relocated to meet FAA standards, and the south electrical vault would be relocated. See Figure 2, *Site Plan*.

The proposed improvements would not result in increased runway capacity. During runway closure periods for Project implementation, all operations would occur on a single runway. Due to the two runways being parallel and closely spaced, temporarily operating on a single runway would not significantly alter flight patterns. A change in flight patterns during temporary runway closure periods may result from FAA Air Traffic Control (ATC) imposed restrictions on contra-flow operations (a noise mitigation strategy to minimize noise over residential areas at night). Depending on wind conditions, current contra-flow operations shift aircraft departures to the east at night. Restricting contra-flow operations would result in more aircraft departure to the west where residential areas are closer to the airport. Runway use and flight patterns would not be impacted after Project implementation.

1.2.1 Proposed Project Implementation Schedule

Proposed Project implementation is anticipated to occur over a three-year period, starting in January 2023 and completing in June 2025. Activities in 2023 are anticipated to last approximately 10 months and would include relocation of the south electrical vault and various taxiway pavement demolition and reconstruction. Activities in 2024 are anticipated to last approximately 10 months and would include rehabilitation of Runway 8R-26L, various taxiway pavement demolition and reconstruction, and

relocation of objects within the RSA and ROFA. Activities in 2025 are anticipated to last approximately 6 months and would include various taxiway pavement demolition and reconstruction.

1.2.2 Two-Year Program Alternative Implementation Schedule

Impacts resulting from a Two-Year Program Alternative implementation schedule were also analyzed in this report. The Two-Year Program Alternative would comprise the same proposed rehabilitation/ improvement activities described above but with a modified and compressed schedule. Specifically, activities would commence in January 2023 and be completed in October 2024, with 10 months of rehabilitation/improvements in each year. See *Chapter 8.0, Section 8.1.1 Two-Year Program Alternative* of the SEIR for details on the Two-Year Program Alternative.

2.0 AIR QUALITY SETTING

2.1 TOXIC AIR CONTAMINANTS AND PROJECT-RELATED SOURCES

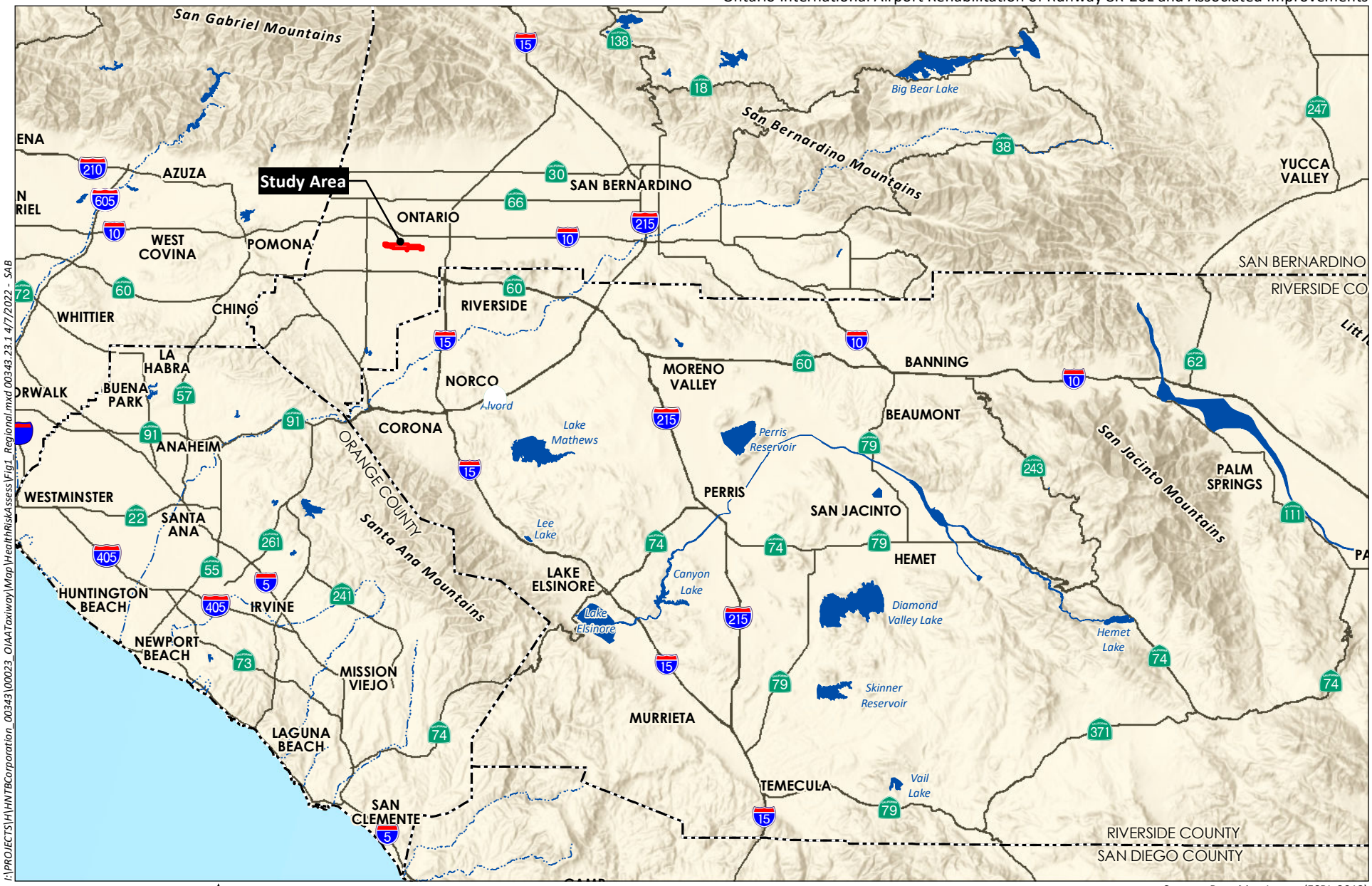
Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or in serious illness or that may pose a present or potential hazard to human health. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage, or short-term acute effects such as eye watering, respiratory irritation (a cough), runny nose, throat pain, and headaches. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For carcinogenic TACs, there is no level of exposure that is considered safe, and impacts are evaluated in terms of overall relative risk expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

2.1.1 Jet/Turbine Emissions

Exhaust from aircraft equipped with turbofan, turbojet and turboprop engines contains small amounts of organic compounds which have been classified as TACs by the California Air Resources Board (CARB), and as hazardous air pollutants (HAPs) by the U.S. Environmental Protection Agency ([USEPA] USEPA 2009a). Table 1, *Turbine Engine Exhaust Toxic Air Contaminants*, lists the TACs identified in jet/turbine engine exhaust and their health effects.

Table 1
TURBINE ENGINE EXHAUST TOXIC AIR CONTAMINANTS

Pollutant	Health Effects
1,3-Butadiene	Classified as a human carcinogen due to an association with occurrences of leukemia. Acute (short-term) exposure may result in irritation of the eyes, nasal passages, throat, and lungs. Neurological effects, such as blurred vision, fatigue, headache, and vertigo, have also been reported at very high exposure levels.[1]
Acetaldehyde	Acute exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism. Considered a probable human carcinogen.[2]



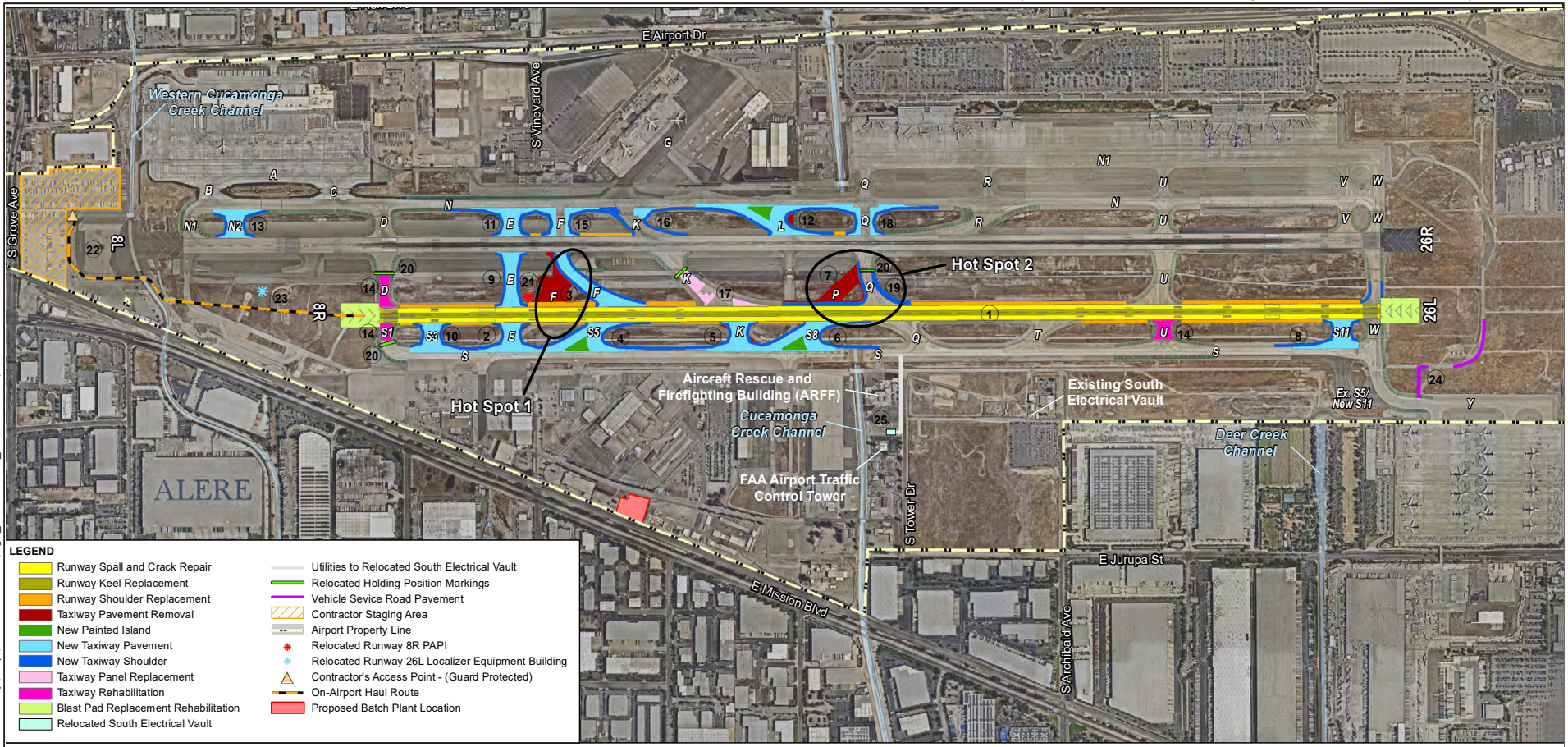
Source: Base Map Layers (ESRI, 2013)

I:\PROJECTS\H\HNTBCorporation_00343\00023_OIAATaxiway\Map\HealthRiskAssess\Fig1_Regional.mxd 00343.23.1 4/7/2022 - SAB

HELIX Environmental Planning

Regional Location

Figure 1



LEGEND

- Runway Spall and Crack Repair
- Runway Keel Replacement
- Runway Shoulder Replacement
- Taxiway Pavement Removal
- New Painted Island
- New Taxiway Pavement
- New Taxiway Shoulder
- Taxiway Panel Replacement
- Taxiway Rehabilitation
- Blast Pad Replacement Rehabilitation
- Relocated South Electrical Vault
- Utilities to Relocated South Electrical Vault
- Relocated Holding Position Markings
- Vehicle Sevice Road Pavement
- Contractor Staging Area
- Airport Property Line
- Relocated Runway 8R PAPI
- Relocated Runway 26L Localizer Equipment Building
- Contractor's Access Point - (Guard Protected)
- On-Airport Haul Route
- Proposed Batch Plant Location

PROPOSED PROJECT ELEMENTS

(1) REHABILITATE RUNWAY 8R-26L
(2) MODIFY EXISTING CONNECTOR TAXIWAY F AND REDESIGNATE AS TAXIWAY E
(3) REMOVE EXISTING TAXIWAY F BETWEEN RUNWAYS 8L-26R AND 8R-26L AND CONSTRUCT NEW EXIT TAXIWAY F
(4) CONSTRUCT EXIT TAXIWAY S5
(5) RECONSTRUCT EXISTING EXIT TAXIWAY K
(6) RECONSTRUCT EXISTING EXIT TAXIWAY P TO A HIGH-SPEED EXIT AND REDESIGNATE AS TAXIWAY S8
(7) REMOVE EXISTING TAXIWAY P BETWEEN RUNWAYS 8L-26R AND 8R-26L
(8) CONSTRUCT BYPASS TAXIWAY S11
(9) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8R-26L AND 8L-26R
(10) CONSTRUCT BYPASS TAXIWAY S3
(11) CONSTRUCT CROSSING TAXIWAY E BETWEEN RUNWAYS 8L-26R AND TAXIWAY N
(12) RECONSTRUCT EXISTING TAXIWAY L AS A HIGH-SPEED EXIT TAXIWAY
(13) CONSTRUCT BYPASS TAXIWAY N2
(14) RESURFACE TAXIWAY D, TAXIWAY S1 AND TAXIWAY U PAVEMENT
(15) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY F BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(16) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY K BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(17) REPLACE/REHABILITATE PANELS ON TAXIWAY K BETWEEN RUNWAYS
(18) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAY 8L-26R AND TAXIWAY N
(19) CONSTRUCT FILLET MODIFICATIONS ON TAXIWAY Q BETWEEN RUNWAYS
(20) RELOCATE HOLDING POSITION MARKINGS*
(21) RELOCATE RUNWAY 8R PAPI
(22) RELOCATE PERIMETER FENCE AND REMOVE OBJECTS WITHIN ROFA
(23) RELOCATE RUNWAY 26L (8R END) LOCALIZER EQUIPMENT BUILDING
(24) MODIFY EXISTING VEHICLE SERVICE ROAD
(25) RELOCATE SOUTH ELECTRICAL VAULT

* DEPICTED IN MULTIPLE LOCATIONS

Figure 2 5 December 2021

ONT ONTARIO INTERNATIONAL AIRPORT
REHABILITATION OF RUNWAY 8R-26L AND ASSOCIATED IMPROVEMENTS
SUPPLEMENTAL EIR

0 250 500 1,000 Feet

N

HNTB

Proposed Project

Source:HNTB, 2021

I:\PROJECTS\H\HNTBCorporation_00343\00023_OIAATaxiway\Map\HealthRiskAssess\Fig2_SitePlan.indd_ 00343.23.1 4/7/2022 - SAB

HELIX Environmental Planning

Site Plan

Figure 2

Pollutant	Health Effects
Acrolein	Acute inhalation exposure may result in upper respiratory tract irritation and congestion. No information is available on its reproductive, developmental, or carcinogenic effects in humans.[3]
Benzene	Acute inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic inhalation exposure has caused various disorders in the blood. Classified as a known human carcinogen for all routes of exposure.[4]
Ethylbenzene	Acute exposure to ethylbenzene in humans results in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and neurological effects such as dizziness.[5]
Formaldehyde	Acute and chronic inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer.[6]
Methanol	Acute or chronic exposure of humans to methanol by inhalation or ingestion may result in blurred vision, headache, dizziness, and nausea.[7]
Xylenes	Acute inhalation exposure to mixed xylenes in humans results in irritation of the eyes, nose, and throat, gastrointestinal effects, eye irritation, and neurological effects. Chronic inhalation exposure of humans to mixed xylenes results primarily in central nervous system (CNS) effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and kidney effects have also been reported.[8]
Naphthalene	Acute exposure of humans to naphthalene by inhalation, ingestion, and dermal contact is associated with hemolytic anemia, damage to the liver, and neurological damage. Chronic exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Classified as a possible human carcinogen.[9]
Phenol	Phenol is highly irritating to the skin, eyes, and mucous membranes in humans after acute inhalation or dermal exposures. Phenol is considered to be quite toxic to humans via oral exposure.[10]
Propionaldehyde	Limited information is available on the health effects of propionaldehyde. No information is available on the acute, chronic, reproductive, developmental or carcinogenic effects of propionaldehyde in humans.[11]
Styrene	Acute exposure to styrene in humans results in mucous membrane and eye irritation, and gastrointestinal effects. Chronic exposure to styrene in humans results in effects on the CNS, such as headache, fatigue, weakness, and depression, CNS dysfunction, hearing loss, and peripheral neuropathy.[12]
Toluene	The CNS is the primary target organ for toluene toxicity in both humans and animals for acute and chronic exposures. CNS dysfunction and narcosis have been frequently observed in humans acutely exposed to elevated airborne levels of toluene; symptoms include fatigue, sleepiness, headaches, and nausea. Chronic inhalation exposure of humans to toluene also causes irritation of the upper respiratory tract and eyes, sore throat, dizziness, and headache.[13]

Source: [1] USEPA 2009b; [2] USEPA 2000a; [3] USEPA 2009c; [4] USEPA 2012a; [5] USEPA 2000b; [6] USEPA 2000c; [7] USEPA 2000d; [8] USEPA 2000e; [9] USEPA 2000f; [10] USEPA 2000g; [11] USEPA 2000h; [12] USEPA 2000i; [13] USEPA 2012b.

2.1.2 Piston-Powered Aircraft Emissions

Aviation gasoline (avgas) is the only remaining lead-containing transportation fuel in the United States. Lead in avgas prevents damaging engine knock, or detonation, that can result in a sudden engine failure. Lead particulate matter is emitted into the atmosphere in the exhaust from piston aircraft engines burning leaded avgas. Lead is a naturally occurring metallic element that is found in small amounts in the earth's crust. In addition to its status as a criteria pollutant, lead is listed as a TAC because,

depending on the level and duration of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. There is also a probable link between lead exposure and kidney cancer, brain cancer (gliomas), and lung cancer (USEPA 2021a).

2.1.3 Diesel Particulate Matter

Diesel engines, including those associated with construction equipment, emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is known as diesel particulate matter (DPM). Almost all DPM is 10 microns or less in diameter and 90 percent of DPM is less than 2.5 microns in diameter (CARB 2021). Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung. In 1998, CARB identified DPM as a TAC based on published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects. DPM has a significant impact on California's population—it is estimated that about 70 percent of total known cancer risk related to air toxics in California is attributable to DPM (CARB 2021).

2.1.4 Concrete Batch Plants

A concrete batching plant is a combination of equipment that brings together water, air, cementitious mixtures, and other aggregate materials to produce concrete. Fugitive dust released during the transfer and mixing of the dry constituents in concrete can contain metallic compounds that have been classified as TACs (USEPA 2006). Table 2, *Concrete Batch Plant Toxic Air Contaminants*, lists the TACs identified in concrete batch plant dust emissions, and their health effects. Lead is also a potential contaminant emitted at concrete batch plants. The health effects of lead are discussed above.

Table 2
CONCRETE BATCH PLANT TOXIC AIR CONTAMINANTS

Pollutant	Health Effects
Arsenic	Acute (short-term), high-level inhalation exposure to inorganic arsenic has resulted in respiratory effects (cough, dyspnea, chest pain), gastrointestinal effects (nausea, diarrhea, abdominal pain), and central and peripheral nervous system effects. Chronic (long-term) inhalation exposure to inorganic arsenic in humans is associated with skin, cardiovascular, and neurological effects. Inorganic arsenic is classified as a human carcinogen.[1]
Beryllium	Acute inhalation exposure to high levels of beryllium has been observed to cause inflammation of the lungs or acute pneumonitis (reddening and swelling of the lungs) in humans; after exposure ends, these symptoms may be reversible. Chronic inhalation exposure of humans to beryllium has been reported to cause chronic beryllium disease (berylliosis). Classified as a probable human carcinogen.[2]
Cadmium	The acute effects of cadmium in humans through inhalation exposure consist mainly of effects on the lung, such as pulmonary irritation. Chronic inhalation or oral exposure to cadmium leads to a build-up of cadmium in the kidneys that can cause kidney disease. Animal studies have demonstrated an increase in lung cancer from long-term inhalation exposure to cadmium. Classified as a probable human carcinogen.[3]

Pollutant	Health Effects
Chromium	Chromium occurs in the environment primarily in two valence states, trivalent chromium (Cr III) and hexavalent chromium (Cr VI). Cr III is much less toxic than Cr VI. The respiratory tract is the major target organ for Cr VI toxicity, for acute and chronic inhalation exposures. Shortness of breath, coughing, and wheezing were reported from a case of acute exposure to Cr VI, while perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, and other respiratory effects have been noted from chronic exposure. Human studies have clearly established that inhaled Cr VI is a human carcinogen, resulting in an increased risk of lung cancer.[4]
Manganese	Manganese is essential for normal physiologic functioning in humans and animals, and exposure to low levels of manganese in the diet is considered to be nutritionally essential in humans. Chronic exposure to high levels of manganese by inhalation in humans may result in CNS effects.[5]
Nickel	Nickel is an essential element in some animal species, and it has been suggested it may be essential for human nutrition. Nickel dermatitis, consisting of itching of the fingers, hands, and forearms, is the most common effect in humans from chronic skin contact with nickel. The EPA has classified nickel refinery dust and nickel subsulfide as a human carcinogen, and nickel carbonyl as a probable human carcinogen.[6]
Selenium	Selenium is a naturally occurring substance that is toxic at high concentrations but is also a nutritionally essential element. Hydrogen selenide is the most acutely toxic selenium compound. Acute exposure to elemental selenium, hydrogen selenide, and selenium dioxide by inhalation results primarily in respiratory effects, such as irritation of the mucous membranes, pulmonary edema, severe bronchitis, and bronchial pneumonia. Epidemiological studies of humans chronically exposed to high levels of selenium in food and water have reported discoloration of the skin, pathological deformation and loss of nails, loss of hair, excessive tooth decay and discoloration, lack of mental alertness, and listlessness. Selenium sulfide is classified as a probable human carcinogen.[7]

Source: [1] USEPA 2021b; [2] USEPA 2000j; [3] USEPA 2000k; [4] USEPA 2000l; [5] USEPA 2016; [6] USEPA 2000m; [7] USEPA 2000n.

2.2 SENSITIVE RECEPTORS

CARB and the Office of Environmental Health Hazard Assessment (OEHHA) have identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, infants (including in utero in the third trimester of pregnancy), and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis (CARB 2005; OEHHA 2015). Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved and are referred to as sensitive receptors. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. For health risk assessments, the health impacts are analyzed for individual residents assumed to be standing in their primary outdoor spaces closest to the source of TACs and for individual off-site workers assumed to be standing outside of a commercial or industrial building.

Land uses surrounding ONT are primarily industrial/commercial. Distances from the ONT boundary to residential zoned areas are approximately 1,200 feet (0.23 miles) to the northwest, 1,300 feet (0.25 miles) to the southwest, 2,800 feet (0.53 miles) to the north, 3,600 feet (0.68 miles) to the west, and 6,500 feet (1.2 miles) to the south. However, there also are some residences located within the industrial/commercial areas to the west and south. The closest existing sensitive receptor to the Project is a single-family residence on South Grove Avenue, approximately 200 feet north of the airport boundary (approximately 2,000 feet northwest of Runway 8L-26R). The closest school to ONT is the Mariposa Elementary School, approximately 2,000 feet (0.38 miles) north of the airport boundary. The

closest hospital to ONT is the Kaiser Permanente Ontario Vineyard hospital approximately 5,300 feet (1 mile) south of the airport boundary. See Figure 3, *Receptor Locations.*

3.0 METHODOLOGY

Potential temporary changes in health risks to nearby sensitive receptors from the emission of TACs during implementation of the Project were analyzed in accordance with applicable portions of the OEHHA *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2015) and the SCAQMD *Modeling Guidance for AERMOD* (SCAQMD 2022a).

3.1 DISPERSION MODELING

Localized concentrations of pollutants were modeled using Lakes AERMOD View version 10.2.1. The Lakes program utilizes the USEPA's AERMOD gaussian air dispersion model version 21112. Plot files from AERMOD using unitized emissions (one gram per second) for each TAC source were imported into CARB's Hotspots Analysis and Reporting Program (HARP), Air Dispersion Modeling and Risk Tool (ADMRT) version 21081. Using the AERMOD plot files and the emissions inventory, the ADMRT calculates ground-level concentrations of TACs. TACs sources were modeled for those aircraft movement paths that have the potential to result in shifts of emission dispersion during Project implementation, including taxi-out, takeoff roll, climb, approach, landing roll, and taxi-in. In addition, emissions from diesel-powered construction equipment used at ONT during Project implementation and emissions from the concrete batch plant were modeled.

Note that the air quality and GHG emissions analysis prepared for the SEIR addresses those aircraft movement paths that would experience changes in mass emissions (taxi-out and taxi-in) as a result of the Project, specifically attributable to changes in aircraft taxiing times resulting from temporary runway closures and suspension of Contra Flow. The mass emissions attributable to other aircraft movement paths (takeoff roll, climb, approach, and landing roll) would not be impacted by Project implementation, however the dispersion pattern would change due to shifts in aircraft flight locations during temporary runway closures and suspension of Contra Flow. Therefore, this HRA considers the full landing-takeoff cycle for purposes of dispersion modeling.

Operational emissions sources at ONT which are not anticipated to change substantially during Project implementation (including helicopter operations, ground support equipment, and on-road vehicles) were not included in the modeling.

3.1.1 Source Parameters

3.1.1.1 Aircraft Movements

The locations and altitudes of aircraft flight paths approaching and departing ONT can vary greatly depending on ATC instruction and weather conditions. HNTB Corporation (HNTB), the engineering firm contracted for Project design and Project environmental analysis, provided data for 338 approach and departure paths extending up to 75 miles from ONT. Due to the impracticality of dispersion modeling for all flight paths, approach and departure paths were consolidated to four (4) representative approach and nine (9) representative departure paths. Selection of the consolidated paths considered the annual volumes of all paths and location relative to the closest sensitive receptors to ONT. This consolidation of

Airport Property
Modeled Receptor
Modeled Receptor - Maximally Exposed Individual Resident (MEIR)
Modeled Receptor - Maximally Exposed Individual Worker (MEIW)/Point of Maximum Impact (PMI)

Sensitive Areas

Hospital
Residence
School

S4
S5
R19
R17
R18
R16
R15
R14
R13
R12
R11
R22
R21
R20
MEIW/PMI (Chronic & Acute)
R10/MEIR (Cancer)
R9/MEIR (Chronic & Acute)
R8
R7
S3
S1
S2
R6
R5
H1
MEIW/PMI (Cancer)
R1
R4
R3
R2
E. HOLT BLVD
S. VINEYARD AVE
S. GROVE AVE
E. AIRPORT DR
S. TOWER DR
JURUPA ST
MISSION BLVD
S. ARCHIBALD AVE
HWY 60
ALERE

0 2,200 Feet

Source: Aerial (HNTB, 2022)

I:\PROJECTS\H\HNTBCorporation_00343\00023_OIAATaxiway\Map\HealthRiskAsses\Fig3_ReceptorLocs.mxd 00343.23.1 4/21/2022 - SAB

HELIX Environmental Planning

Receptor Locations

Figure 3

flight paths in the modeling is generally conservative (health protective) because it results in much higher initial concentrations of pollutants.

In addition to the flight paths, a takeoff and a landing ground roll path was modeled for each runway. Because there are a myriad of potential aircraft taxi patterns for arriving and departing aircraft, taxi patterns were consolidated in the modeling to include an arrival and a departure taxi path from the runway ends (8L/8R and 26L/26R) to the commercial terminal ramp.

In addition to variations in flight paths due to ATC and weather, flight takeoff ground roll, departure path climb angle, and landing ground roll are dependent on aircraft performance. To determine average ground roll and climb angle at ONT, data was collected for aircraft which departed ONT with a filed flight plan during a 24-hour period on February 28 and March 1, 2022 (FlightAware 2022) and combined with aircraft performance data (EUROCONTROL 2022). For ONT, the estimated average landing ground roll is 1,491 meters (0.93 mile); the estimated average takeoff ground roll is 2,109 meters (1.31 miles); and the estimated average climb angle is 7.4 degrees. The aircraft performance calculations are included in Appendix A, *Dispersion Modeling Input*. Departure flight paths were modeled from the point of liftoff to the emissions mixing height of 2,402 feet (732 meters) above ground level (AGL), recommended in the SCAQMD's 2016 Air Quality Management Plan (SCAQMD 2017a), approximately 5,661 meters (3.5 miles) horizontal distance from the runway at 7.4 degrees. The approach paths were modeled extending 5,000 meters (3.1 miles) to the touchdown target of each runway. The approach angle was set to the visual glide slope approach light system's angle of 3 degrees for all runways.

Emissions sources involving moving aircraft including taxi-out, takeoff roll, climb, approach, and landing roll, and taxi-in, were modeled as volume line sources. To account for the initial spread of the plume due to the lift from the wings, engine thrust and the aircraft wake, the initial plume height was set at two times the typical aircraft height (4.8 meters [15.7 feet]) and the initial plume width was set at approximately 2 times the typical wingspan (34.3 meters [113 feet]) of the most common aircraft operating at ONT—the Boeing 737. The release height was set at the typical Boeing 737 engine center height of approximately 1.5 meters (5 feet). The modeled aircraft volume line sources are shown in Table 3, *Aircraft Movement Volume Line Sources*. A figure showing the line source locations is included in Appendix A.

Table 3
AIRCRAFT MOVEMENT VOLUME LINE SOURCES

ID	Description	Length (meters)	Angle (degrees)
A08LGR	Approach 8L, landing roll	1,491	-
A08LSI	Approach 8L, straight in	5,000	3
A08RGR	Approach 8R, landing roll	1,491	-
A08RSI	Approach 8R, straight in	5,000	3
A026LGR	Approach 26L, landing roll	1,491	-
A26LSI	Approach 26L, straight in	5,000	3
A26RGR	Approach 26R, landing roll	1,491	-
A26RSI	Approach 26R, straight in	5,000	3
A08TX	Arrival 8L and 8R Taxi into the ramp	1,137	-
A26TX	Arrival 26L and 26R Taxi into the ramp	1,430	-
D08LGR	Departure 08L, takeoff roll	2,109	-
D08LRC	Departure 08L, right crosswind (90-degree right turn)	5,661	7.4

ID	Description	Length (meters)	Angle (degrees)
D08LSO	Departure 08L, straight out	5,661	7.4
D08RGR	Departure 08R, takeoff roll	2,109	-
D08RRC	Departure 08R, right crosswind (90-degree right turn)	5,661	7.4
D26LGR	Departure 26L, takeoff roll	2,109	-
D26LLC	Departure 26L, left crosswind (90-degree left turn)	5,661	7.4
D26LRT	Departure 26L, right turn (30-degree right turn)	5,661	7.4
D26LSO	Departure 26R, straight out	5,661	7.4
D26RGR	Departure 26R, takeoff roll	2,109	-
D26RLC	Departure 26R, left crosswind (90-degree left turn)	5,661	7.4
D26RRT	Departure 26R, right turn (30-degree right turn)	5,661	7.4
D26RSO	Departure 26R, straight out	5,661	7.4
D08TX	Departure 8L and 8R Taxi to the runway	2,505	-
D26TX	Departure 26L and 26R Taxi to the runway	1,810	-

Source: FlightAware 2022; EUROCONTROL 2022. See Appendix A for model inputs.

3.1.1.2 Construction Equipment

Emissions from diesel powered construction equipment were modeled using four area sources corresponding to areas where the most intense use of equipment would occur: 2023 electrical vault; 2023 taxiways; 2024 Runway 8R-26L rehabilitation; and 2025 taxiways. Area sources were modeled with a release height of 2.5 meters (8 feet) representing the typical exhaust stack height of off-road construction equipment.

3.1.1.3 Concrete Batch Plant

Emissions for the concrete batch plant were modeled as a volume source representing the size of a typical small batch plant—approximately 50 meters (164 feet) wide by 10 meters (32.8 feet) high. The release height was set at 3 meters (9.8 feet) representing an average dry material transfer height. See Figure 2 for the batch plant location.

3.1.1.4 Variable Emissions

Variable emissions factors consisting of the fraction of the peak hour emissions were applied to all emissions sources for each hour of the day, day of the week, and month of the year. The variable factors were based on the peak period figures for operation by month, operations by day, and operations by hour of day for ONT provided by HNTB. The variable emissions factors used in the modeling are included in Appendix A to this report.

3.1.2 Meteorological Data

The SCAQMD provides pre-processed meteorological data suitable for use with AERMOD for projects within the SCAB (SCAQMD 2017b). The available data set most representative of conditions in the Project vicinity was from the ONT station. The ONT set includes five years of data collected between 2012 to 2016. Urban dispersion coefficients were selected in the model using the population of San Bernardino County, as recommended by SCAQMD. A wind rose for the ONT shows an average speed of 7.7 miles per hour from the south-southeast (SCAQMD 2017b). The wind rose graphic is included in Appendix A to this report.

3.1.3 Terrain Data

United States Geological Survey (USGS) National Elevation Dataset (NED) files with a 30-meter resolution covering an area approximately 10 kilometers around the airport site were used in the model to cover the analysis area. Terrain data was imported to the model using AERMAP (a terrain preprocessing program for AERMOD).

3.1.4 Modeled Receptors

To develop risk isopleths (linear contours showing equal level of risk) and ensure that the area of maximum impact was captured, receptors were placed in a cartesian grid 12,500 meters by 7,500 meters (approximately 7.8 miles by 4.7 miles), centered on the Project site with a grid spacing of 250 meters (820 feet). An additional cartesian grid 1,400 meters by 1,400 meters (approximately 0.87 by 0.87 mile) with a grid spacing of 100 meters (328 feet) was placed at the west end of the airport. To represent approximate standing human breathing height, receptors were placed at a height (flagpole height) of 1.2 meters (4 feet) above the ground. Fence line boundary receptors were place around the perimeter of ONT at 100-meter (328-foot) intervals, and an additional tier of perimeter receptors was added 100 meters outside of the ONT perimeter at 100-meter intervals. Additional discrete receptors were placed at 28 sensitive receptor locations identified as closest to the ONT boundary or flight paths. See Figure 3 for the discrete receptor locations. Because ONT is surrounded by commercial/industrial land uses, rather than place additional discrete receptors for worker locations, all modeled receptors in the uniform cartesian grid and airport perimeter were assumed to be worker locations.

3.2 TAC EMISSIONS

HNTB modeled aircraft emissions for each phase of aircraft movement and each year/scenario for the Project using the FAA's Aviation Environmental Design Tool (AEDT). Emissions of TACs from jet/turbine powered aircraft were calculated from the emissions of total organic gasses (TOG) provided by HNTB and the speciated fraction of TACs in jet/turbine exhaust TOG in the USEPA's *Recommended Best Practice for Quantifying Speciated Organic Gas Emissions from Aircraft Equipped with Turbofan, Turbojet, and Turboprop Engines* (USEPA 2009a). The mass fraction of each evaluated TAC is shown in Table 4, *Aircraft Turbine Exhaust TAC Mass Fractions*.

Table 4
AIRCRAFT TURBINE EXHAUST TAC MASS FRACTIONS

Compound	CAS Registry Number	Mass Fraction in TOG
1,3-Butadiene	106-99-0	0.01687
Acetaldehyde	75-07-0	0.04272
Acrolein	107-02-8	0.02449
Benzene	71-43-2	0.01681
Ethylbenzene	100-41-4	0.00174
Formaldehyde	50-00-0	0.12310
Methanol	67-56-1	0.01805
m-xylene	108-38-3	0.00282
Naphthalene	91-20-3	0.00541
o-xylene	95-47-6	0.00166
Phenol	108-95-2	0.00726
Propionaldehyde	123-38-6	0.00727

Compound	CAS Registry Number	Mass Fraction in TOG
Styrene	100-42-5	0.00309
Toluene	108-88-3	0.00642

Source: USEPA 2009a.

The AEDT does not report lead emissions in aircraft exhaust. Estimates of the lead emissions from piston-powered aircraft were based on the methodology from the USEPA's *Calculating Piston-Engine Aircraft Airport Inventories for Lead for the 2008 National Emissions Inventory* (USEPA 2010). The USEPA's method provides a formula based on fuel consumption data for airport average aircraft fleet mix for a landing takeoff cycle (LTO). To break emissions by phase of flight, the percentage of jet fuel consumption for each phase of the LTO was calculated from the AEDT data provided by HNTB for jet fuel consumption, assuming that the percentages of leaded avgas consumption for each phase of the LTO would be similar. Although an unleaded alternative avgas has been approved by the FAA for some aircraft engines, the lead emissions inventory assumes all piston engine aircraft operating at ONT would use leaded avgas. Data for total annual piston engine aircraft LTOs was provided by HNTB.

The Project construction equipment emissions were modeled by HNTB using the California Emissions Estimator Model (CalEEMod). The on-site exhaust particulate matter with 10 micron or smaller particle diameter (PM_{10}) emissions reported by CalEEMod is a proxy for the on-site DPM emissions. The DPM emissions inventory assumes implementation of USEPA Tier 4 certified engines, which includes control of exhaust particulate matter emissions.

Concrete batch plant emissions of TACs were calculated using emissions factors (pounds TAC per cubic yard [CY] of concrete mixed) and data in the USEPA's *AP-42 Compilation of Emissions Factors*, Chapter 11.12 Concrete Batching (USEPA 2006). In accordance with the SCAQMD Rule 403 requirement for control of fugitive dust, the batch plant emissions inventory assumes emissions controlled with fabric filtration (e.g., a baghouse) and water spray for dust control. The estimated throughput for the Project's batch plant was provided by HNTB: 2023 – 44,291 CY; 2024 – 36,272 CY; and 2025 – 20,488 CY. For the Two-Year Program Alternative, the concrete throughput for 2024 and 2025 are assumed to be combined.

The TAC emissions inventory and calculation sheet printouts are included in Appendix B, *Risk Modeling Input/Output*.

3.3 RISK DETERMINATION

Health risks resulting from localized concentrations of TACs were estimated using the ADMRT. The latest cancer slope factors, chronic Recommended Exposure Limits (RELs), and exposure paths for all TACs designated by CARB are included in the ADMRT. For the residential cancer risk, each year of Project implementation was evaluated separately with an exposure duration of one year, starting with the age bin for infants in utero in the third trimester of pregnancy. The cancer risk results for each year were summed to calculate the total cancer risk during the Project implementation period. The Project's incremental increase in cancer risk is based on the emissions associated with the Project's implementation. For non-cancer chronic and acute health risks, the maximum hazard index (HI) was calculated for each year of Project implementation. The highest HI for all years would be the maximum HI during the Project implementation period. The Project's incremental increase in non-cancer chronic and acute health risks is based on the emissions associated with the Project's implementation.

The model conservatively assumes that residents would be standing and breathing outdoors at the location of the property line or primary outdoor space closest to the airport or flight paths between 17 and 21 hours per day (depending on the age group), starting with infants in utero in the third trimester of pregnancy for the first year of Project implementation, then infants age 0 for the second year of Project implementation, and infants age 1 for the third year of Project implementation. Although the Project would not be subject to the *Air Toxics "Hot Spots" Information and Assessment Act* (AB 2588), or to the SCAQMD Rule 1402, the applicable portions of the SCAQMD's *AB 2588 and Rule 1402 Supplemental Guidelines* were followed in selecting parameters in the ADMRT (SCAQMD 2020). In accordance with the SCAQMD's supplemental guidelines, the following non-default ADMRT options were selected: the RMP derived intake rate percentile method (for residential risks only); mandatory minimum pathways plus the home grown produce pathway (for residential risks only); 0.02 m/s deposition rate (for non-inhalation pathways); and warm climate (for the dermal pathway). For off-site worker cancer risk, an exposure duration of one year was selected with an assumption of eight hours per day, five days per week of exposure while standing outside, in accordance with the OEHHA guidelines.

3.4 SIGNIFICANCE CRITERIA

To assess exposure to substantial TAC concentrations, the SCAQMD recommends the following thresholds for the Project's incremental contribution to community health risks (SCAQMD 2019):

> **Maximum Incremental Cancer Risk** – An increased risk equal to or greater than 10 in 1 million for the maximally exposed individual to project emissions is considered to result in a significant impact.
>
> **Cancer Burden** – 0.5 or more excess cancer cases in areas exposed to an incremental cancer risk greater than 1 in million over a 70-year exposure is considered to be a significant impact.
>
> **Chronic and Acute Health Risk** – An HI equal to or greater than 1 for the maximally exposed individual to project emissions is considered to result in a significant impact.

4.0 HEALTH RISK IMPACT ANALYSIS

The incremental excess cancer risk is an estimate of the chance a person exposed to a specific source of a TAC may have of developing cancer from that exposure beyond the individual's risk of developing cancer from existing background levels of TACs in the ambient air. For context, the average cancer risk from TACs in the ambient air for an individual living in an urban area of California is 830 in 1 million (CARB 2015). The SCAQMD has conducted studies on carcinogenic risk from exposure to air toxics in the SCAB. The most recent is the Multiple Air Toxics Exposure Study V (MATES V). According to the MATES Data Visualization interactive tool, the area around ONT has a cumulative cancer risk of 600 in 1 million (SCAQMD 2022b). Cancer risk estimates do not mean, and should not be interpreted to mean, that a person will develop cancer from estimated exposures to toxic air pollutants.

4.1 MEIR AND MEIW

The maximum estimated community health risks are determined by evaluating the increased cancer risk and non-cancer chronic risks for the maximally exposed individual resident (MEIR) and off-site maximally

exposed individual worker (MEIW). To be conservative (health protective), sensitive receptors located at the closest school and closest hospital were evaluated using the residential risk parameters (age bins starting utero in the third trimester of pregnancy; 17 to 21 hours per day exposure).

The incremental excess cancer and chronic risks for the MEIR resulting from implementation of the Project are presented in Table 5, *Maximally Exposed Individual Resident Incremental Health Risk*. These estimates are conservative (health protective) and assume that the resident is outdoors for the entire exposure period. The locations of the MEIR are shown in Figure 3. As shown in Table 5, health risks for the MEIR would not exceed the SCAQMD's thresholds for either the Proposed Project or the Two-Year Program Alternative. For the MEIR, the Two-Year Program Alternative would result in slightly lower cancer risks, non-cancer chronic HI, and acute HI, compared to the Proposed Project.

Table 5
MAXIMALLY EXPOSED INDIVIDUAL RESIDENT INCREMENTAL HEALTH RISK

	MEIR Cancer Risk	MEIR Chronic Hazard Index	MEIR Acute Hazard Index
Proposed Project	3.0 in 1 million	0.11	0.45
Two-Year Program Alternative	2.2 in 1 million	0.08	0.22
Threshold	10 in 1 million	1	1
Exceed Threshold?	No	No	No

Source: Lakes AERMOD View, CARB ADMRT. See Appendix B for model inputs and outputs.

The incremental excess cancer and chronic risks for the MEIW resulting from implementation of the project are presented in Table 6, *Maximally Exposed Individual Worker Incremental Health Risk*. These estimates are conservative (health protective) and assume that the worker is outdoors for the entire exposure period. The locations of the MEIW are shown in Figure 3. As shown in Table 6, health risks for the MEIW would not exceed the SCAQMD's thresholds for either the Proposed Project or the Two-Year Program Alternative. For the MEIR, the Two-Year Program Alternative would result in slightly lower cancer risks, non-cancer chronic HI, and acute HI, compared to the Proposed Project.

Table 6
MAXIMALLY EXPOSED INDIVIDUAL WORKER INCREMENTAL HEALTH RISK

	MEIW Cancer Risk	MEIW Chronic Hazard Index	MEIW Acute Hazard Index
Proposed Project	0.4 in 1 million	0.18	0.54
Two-Year Program Alternative	<0.1 in 1 million	0.27	0.54
Threshold	10 in 1 million	1	1
Exceed Threshold?	No	No	No

Source: Lakes AERMOD View, CARB ADMRT. See Appendix B for model inputs and outputs.

The point of maximum impact (PMI; off-site) for cancer risks would be the location of the MEIW, at the airport property line near the location of the proposed concrete batch plant, at approximately Universal Transverse Mercator (UTM) coordinates Zone 11, 4443897 meters East, 3767796 meters North. The location of the PMI is shown in Figure 3. No sensitive receptors are located near the PMI for cancer risks.

4.2 SENSITIVE RECEPTOR HEALTH RISKS

The estimated incremental excess cancer risks due to exposure to the Project's TAC emissions for each modeled discrete sensitive receptor (shown in Figure 3) are presented in Table 7, *Discrete Sensitive Receptor Incremental Cancer Risk*. The model inputs, outputs, and risk isopleth figures are available in Appendix B to this report. As shown in Table 7, the incremental increase in cancer risk would not exceed the SCAQMD's threshold of 10 in 1 million for any sensitive receptor for the either the Proposed Project or the Two-Year Program Alternative. For sensitive receptors, the Two-Year Program Alternative would result in slightly lower cancer risks, compared to the Proposed Project.

Table 7
DISCRETE SENSITIVE RECEPTOR INCREMENTAL CANCER RISK

Receptor	Proposed Project Risk (chances per million)	Two-Year Program Alternative Risk (chances per million)
R1, Residence	-0.4 in 1 million	-0.5 in 1 million
R2, Residence	-0.5 in 1 million	-0.4 in 1 million
R3, Residence	-0.3 in 1 million	-0.3 in 1 million
R4, Residence	-0.2 in 1 million	-0.2 in 1 million
R5, Residence	-0.1 in 1 million	-0.1 in 1 million
R6, Residence	0.1 in 1 million	<0.1 in 1 million
R7, Residence	2.6 in 1 million	2.2 in 1 million
R8, Residence	0.4 in 1 million	<0.1 in 1 million
R9, Residence	3.0 in 1 million	1.2 in 1 million
R10, Residence	3.0 in 1 million	1.6 in 1 million
R11, Residence	0.5 in 1 million	0.4 in 1 million
R12, Residence	0.4 in 1 million	0.3 in 1 million
R13, Residence	0.2 in 1 million	0.2 in 1 million
R14, Residence	0.1 in 1 million	0.1 in 1 million
R15, Residence	<0.1 in 1 million	<0.1 in 1 million
R16, Residence	-0.2 in 1 million	-0.2 in 1 million
R17, Residence	-0.2 in 1 million	-0.2 in 1 million
R18, Residence	-0.3 in 1 million	-0.2 in 1 million
R19, Residence	-0.2 in 1 million	-0.2 in 1 million
R20, Residence	1.0 in 1 million	1.0 in 1 million
R21, Residence	0.6 in 1 million	0.6 in 1 million
R22, Residence	0.4 in 1 million	0.3 in 1 million
S1, School	1.7 in 1 million	1.1 in 1 million
S2, School	1.5 in 1 million	1.1 in 1 million
S3, School	1.5 in 1 million	1.4 in 1 million
S4, School	<0.1 in 1 million	<0.1 in 1 million
S5, School	0.1 in 1 million	0.1 in 1 million
H1, Hospital	-0.1 in 1 million	-0.1 in 1 million

Source: Lakes AERMOD View and CARB ADMRT. See Appendix B for model inputs, outputs, and risk isopleths.

The estimated incremental non-cancer chronic risk due to exposure to the Project's TAC emissions for each modeled discrete sensitive receptor (shown in Figure 3) is presented in Table 8, *Discrete Sensitive Receptor Incremental Chronic Risk*. The model inputs, outputs, and risk isopleth figures are available in Appendix B to this report. As shown in Table 8, the incremental increase in non-cancer chronic HI would

not exceed the SCAQMD's threshold of 1 for any sensitive receptor for the either the Proposed Project or the Two-Year Program Alternative. For sensitive receptors, the Two-Year Program Alternative would result in slightly lower non-cancer chronic HI, compared to the Proposed Project.

Table 8
DISCRETE SENSITIVE RECEPTOR INCREMENTAL CHRONIC RISK

Receptor	Proposed Project (HI)	Two-Year Program Alternative (HI)
R1, Residence	0.01	<0.01
R2, Residence	<0.01	-0.01
R3, Residence	<0.01	<0.01
R4, Residence	<0.01	<0.01
R5, Residence	<0.01	<0.01
R6, Residence	0.01	<0.01
R7, Residence	0.08	0.08
R8, Residence	0.02	<0.01
R9, Residence	0.11	0.07
R10, Residence	0.08	0.04
R11, Residence	0.02	0.02
R12, Residence	0.02	0.02
R13, Residence	0.01	0.01
R14, Residence	0.01	0.01
R15, Residence	0.01	0.01
R16, Residence	<0.01	<0.01
R17, Residence	<0.01	<0.01
R18, Residence	<0.01	<0.01
R19, Residence	<0.01	<0.01
R20, Residence	0.06	0.06
R21, Residence	0.04	0.04
R21, Residence	0.04	0.03
S1, School	0.02	0.02
S2, School	0.04	0.04
S3, School	0.05	0.05
S4, School	<0.01	<0.01
S5, School	0.01	0.01
H1, Hospital	<0.01	<0.01

Source: Lakes AERMOD View and CARB ADMRT. See Appendix B for model inputs, outputs, and risk isopleths.

The estimated incremental non-cancer chronic risk due to exposure to the Project's TAC emissions for each modeled discrete sensitive receptor (shown in Figure 3) is presented in Table 9, *Discrete Sensitive Receptor Incremental Acute Risk*. The model inputs, outputs, and risk isopleth figures are available in Appendix B to this report. As shown in Table 9, the incremental increase in non-cancer acute HI would not exceed the SCAQMD threshold of 1 for any sensitive receptor for the either the Proposed Project or the Two-Year Program Alternative. For sensitive receptors, the Two-Year Program Alternative would result in slightly lower acute HI except for receptor S5, which would have a slight increase in Acute HI, compared to the Proposed Project.

Table 9
DISCRETE SENSITIVE RECEPTOR INCREMENTAL ACUTE RISK

Receptor	Proposed Project (HI)	Two-Year Program Alternative (HI)
R1, Residence	0.07	-0.03
R2, Residence	-0.05	-0.07
R3, Residence	<0.01	-0.01
R4, Residence	0.01	<0.01
R5, Residence	0.01	<0.01
R6, Residence	0.01	<0.01
R7, Residence	0.14	0.14
R8, Residence	0.05	-0.11
R9, Residence	0.45	0.13
R10, Residence	0.27	-0.01
R11, Residence	<0.01	<0.01
R12, Residence	-0.03	-0.03
R13, Residence	<0.01	<0.01
R14, Residence	0.05	0.05
R15, Residence	0.05	0.05
R16, Residence	0.10	0.10
R17, Residence	0.05	0.05
R18, Residence	0.03	0.03
R19, Residence	0.03	0.03
R20, Residence	0.15	0.15
R21, Residence	-0.03	-0.03
R22, Residence	-0.03	-0.06
S1, School	0.17	0.13
S2, School	0.18	0.18
S3, School	0.22	0.22
S4, School	0.01	0.01
S5, School	0.02	0.13
H1, Hospital	0.01	<0.01

Source: Lakes AERMOD View and CARB ADMRT. See Appendix B for model inputs, outputs, and risk isopleths.

4.3 CANCER BURDEN

The cancer burden is the estimated increase in the occurrence of cancer cases from a source or facility over a 70-year exposure duration. The Project would involve short-term and temporary airport runway rehabilitation and associated improvement activities, anticipated to last a maximum duration of three years. Once implementation of the Project is complete, the Project would not result in any long-term changes in emissions at ONT. Therefore, an analysis of cancer burden is not applicable to the Project.

4.4 CUMULATIVE HEALTH RISKS

Air quality cumulative health risks are the total risks from all sources of pollutants affecting a community or individual sensitive receptor. Cumulative sources of pollutants in the vicinity of ONT include on-road vehicles (e.g., high volume roadways), aircraft emissions, off-road equipment (e.g., airport ground support equipment, construction equipment), permitted stationary sources (e.g., gas stations), diesel-powered emergency generators, and other industrial sources. As discussed above, the SCAQMD

has conducted studies on carcinogenic risk from exposure to air toxics in the SCAB. According to the MATES V Data Visualization interactive tool, the area around ONT has a cumulative cancer risk of 600 in 1 million (SCAQMD 2022b).

Multiple future development projects are planned or approved for the City of Ontario, as well as ONT itself. For example, the proposed South Airport Cargo Center (SACC) project would develop a new air cargo facility at ONT. If approved, the SACC project would include additional short-term construction emissions, and long-term operational emissions (including additional aircraft and ground support equipment operating at ONT, and additional vehicles on area roads). Construction and operation of the SACC project has the potential to overlap with the ONT Rehabilitation of Runway 8R-26L and Associated Improvements Project. However, the results of the SACC project's health risk assessment were not available at the time of preparation of this analysis. And, due to the large number of project-specific inputs and detail needed to complete health risk analysis, it would be speculative to undertake further quantitative analysis of the SACC project at this time.

While the SCAQMD has not adopted any cumulative health risk thresholds at this time, the SCAQMD's thresholds (10 in 1 million cancer risk, non-cancer HI of 1) are used for evaluating the impact from a single project's incremental increase in health risks. The SCAQMD considers that, if a project's emissions do not result in incremental health risks exceeding the thresholds, then the project's cumulative health risk impact would be less than cumulatively considerable.

Based on the SCAQMD's approach, the Project's less-than-significant health risk impacts and related factors (such as the Project's temporary duration), this analysis concludes that the Project would not result in a cumulatively considerable health risk impact.

4.5 IMPACT CONCLUSION

Implementation of the Proposed Project or the Two-Year Program Alternative would not result in incremental increased cancer health risks or non-cancer chronic or acute risks exceeding the SCAQMD's thresholds. Therefore, the Project would not expose sensitive receptors to substantial concentrations of TACs and the impact would be less than significant in both the Project-specific and cumulative contexts.

5.0 LIST OF PREPARERS

Martin Rolph	Air Quality Specialist
Victor Ortiz	Senior Air Quality Specialist

6.0 REFERENCES

California Air Resources Board (CARB). 2021. Overview: Diesel Exhaust and Health. Available at: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health. Accessed March 2022.

2015. Risk Management Guidance for Stationary Sources of Air Toxics. Available at: https://www.arb.ca.gov/toxics/rma/rmgssat.pdf.

2005. Air Quality and Land Use Handbook: A Community Health Perspective. Available at: https://www.arb.ca.gov/ch/handbook.pdf.

EUROCONTROL. 2022. Aircraft Performance Database. Available at: https://contentzone.eurocontrol.int/aircraftperformance/default.aspx?. Accessed March 1, 2022.

FlightAware. 2022. Ontario International Airport (Ontario, CA) ONT. Available at: https://flightaware.com/live/airport/KONT. Accessed Marth 1, 2022.

Office of Environmental Health Hazard Assessment (OEHHA). 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. Available at: https://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0.

South Coast Air Quality Management District (SCAQMD). 2022a. Modeling Guidance for AERMOD. Available at: http://www.aqmd.gov/home/air-quality/meteorological-data/modeling-guidance. Accessed March 2022.

2022b. MATES V Multiple Air Toxics Exposure Study. Available at: http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v. Accessed April 4, 2022.

2020. AB 2588 and Rule 1402 Supplemental Guidelines (Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act). October. Available at: https://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab-2588-supplemental-guidelines.pdf?sfvrsn=13.

2019. South Coast AQMD Air Quality Significance Thresholds. April. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.

2017a. Final 2016 Air Quality Management Plan. March. Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

2017b. Meteorological Data for AERMOD Applications. Available at: https://www.aqmd.gov/home/air-quality/meteorological-data/data-for-aermod.

U.S. Environmental Protection Agency (USEPA). 2021a. Learn about Lead. Available at: https://www.epa.gov/lead/learn-about-lead. Accessed March 2022.

2021b. Arsenic Compounds. Available at: https://www.epa.gov/sites/default/files/2021-04/documents/arsenic_april_2021.pdf.

2016. Manganese Compounds. Available at: https://www.epa.gov/sites/default/files/2016-10/documents/manganese.pdf.

2012a. Benzene. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/benzene.pdf.

2012b. Toluene. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/toluene.pdf.

2010. Calculating Piston-Engine Aircraft Airport Inventories for Lead for the 2008 National Emissions Inventory. December.

2009a. Recommended Best Practice for Quantifying Speciated Organic Gas Emissions from Aircraft Equipped with Turbofan, Turbojet, and Turboprop Engines. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi/P1003YX3.PDF?Dockey=P1003YX3.PDF.

2009b. 1,3-Butadiene. Available at: https://www.epa.gov/sites/default/files/2016-08/documents/13-butadiene.pdf.

2009c. Acrolein. Available at: https://www.epa.gov/sites/default/files/2016-08/documents/acrolein.pdf.

2006. AP-42: Compilation of Air Emissions Factors, Chapter 11.12 – Concrete Batching. Available at: https://www.epa.gov/sites/default/files/2020-10/documents/c11s12.pdf.

2000a. Acetaldehyde. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/acetaldehyde.pdf.

2000b. Ethylbenzene. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/ethylbenzene.pdf.

2000c. Formaldehyde. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/formaldehyde.pdf.

2000d. Methanol. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/methanol.pdf.

2000e. Xylenes. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/xylenes.pdf.

2000f. Naphthalene. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/naphthalene.pdf.

2000g. Phenol. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/phenol.pdf.

2000h. Propionaldehyde. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/propionaldehyde.pdf.

2000i. Styrene. Available at: https://www.epa.gov/sites/default/files/2020-05/documents/styrene_update_2a.pdf.

2000j. Beryllium Compounds. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/beryllium-compounds.pdf.

2000k. Cadmium Compounds. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/cadmium-compounds.pdf.

2000l. Chromium Compounds. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/chromium-compounds.pdf.

2000m. Nickel Compounds. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/nickle-compounds.pdf.

2000n. Selenium Compounds. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/selenium-compounds.pdf.

This page intentionally left blank

Appendix A

Dispersion Modeling Input

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements
Ontario Internationl Airport Average Aircraft Performance

	feet	meters
Mixing height	2,402.0	732.1

KONT Departures for filed flight plans 2/28/2022 15:00 PST to 3/1/2022 14:59 PST

Flight	ICAO Code	Description	TO Roll (m)	Iniital Climb (kts)	TAS (kts)	GS (ft/min)	Initial ROC (ft/min)	Time to Mix (min)	Distance to Mix (ft)	Distance to Mix (m)	Climb Angle	Landing Roll (m)
FFT2188	A20N	Airbus A320neo	1,951.0	175.0	182.0	18,430.9	2,200.0	1.1	20,123.2	6,133.5	6.8	1,650.0
VOI937	A20N	Airbus A320neo	1,951.0	175.0	182.0	18,430.9	2,200.0	1.1	20,123.2	6,133.5	6.8	1,650.0
FFT2186	A20N	Airbus A320neo	1,951.0	175.0	182.0	18,430.9	2,200.0	1.1	20,123.2	6,133.5	6.8	1,650.0
HAL79	A21N	Airbus A321neo	2,150.0	175.0	182.0	18,430.9	2,000.0	1.2	22,135.5	6,746.9	6.2	1,850.0
UPS2274	A306	Airbus A300-600	2,240.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,532.0
UPS2296	A306	Airbus A300-600	2,240.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,532.0
UPS2972	A306	Airbus A300-600	2,240.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,532.0
UPS2344	A306	Airbus A300-600	2,240.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,532.0
UPS2911	A306	Airbus A300-600	2,240.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,532.0
FDX3624	A306	Airbus A300-600	2,240.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,532.0
UPS954	A306	Airbus A300-600	2,240.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,532.0
UPS888	A306	Airbus A300-600	2,240.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,532.0
UPS836	A306	Airbus A300-600	2,240.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,532.0
UPS966	A306	Airbus A300-600	2,240.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,532.0
FDX1366	A306	Airbus A300-600	2,240.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,532.0
AAL1994	A319	Airbus A319	1,750.0	165.0	171.6	17,377.7	2,500.0	1.0	16,696.5	5,089.1	8.2	1,350.0
UAL2448	A319	Airbus A319	1,750.0	165.0	171.6	17,377.7	2,500.0	1.0	16,696.5	5,089.1	8.2	1,350.0
UAL1824	A319	Airbus A319	1,750.0	165.0	171.6	17,377.7	2,500.0	1.0	16,696.5	5,089.1	8.2	1,350.0
ASA537	A320	Airbus A320	2,190.0	175.0	182.0	18,430.9	2,500.0	1.0	17,708.4	5,397.5	7.7	1,440.0
AAL2007	A320	Airbus A320	2,190.0	175.0	182.0	18,430.9	2,500.0	1.0	17,708.4	5,397.5	7.7	1,440.0
UAL2438	A320	Airbus A320	2,190.0	175.0	182.0	18,430.9	2,500.0	1.0	17,708.4	5,397.5	7.7	1,440.0
AAL2635	A321	Airbus A321	2,210.0	175.0	182.0	18,430.9	2,500.0	1.0	17,708.4	5,397.5	7.7	1,600.0
DAL1144	A321	Airbus A321	2,210.0	175.0	182.0	18,430.9	2,500.0	1.0	17,708.4	5,397.5	7.7	1,600.0
AAL1821	A321	Airbus A321	2,210.0	175.0	182.0	18,430.9	2,500.0	1.0	17,708.4	5,397.5	7.7	1,600.0
AAL1534	A321	Airbus A321	2,210.0	175.0	182.0	18,430.9	2,500.0	1.0	17,708.4	5,397.5	7.7	1,600.0
DAL740	A321	Airbus A321	2,210.0	175.0	182.0	18,430.9	2,500.0	1.0	17,708.4	5,397.5	7.7	1,600.0
AAL1412	A321	Airbus A321	2,210.0	175.0	182.0	18,430.9	2,500.0	1.0	17,708.4	5,397.5	7.7	1,600.0
AAL2635	A321	Airbus A321	2,210.0	175.0	182.0	18,430.9	2,500.0	1.0	17,708.4	5,397.5	7.7	1,600.0
CFS8693	AT43	Alenia ATR-42-300	1,100.0	140.0	145.6	14,744.7	1,000.0	2.4	35,416.8	10,795.0	3.9	1,000.0
AIP1938	B190	Ratheon 1900	1,150.0	145.0	150.8	15,271.3	2,500.0	1.0	14,672.7	4,472.2	9.3	825.0
SWA2472	B38M	Boeing 737 Max	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,700.0
ASA918	B39M	Boeing 737 Max	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,700.0
ASA420	B39M	Boeing 737 Max	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,700.0
SWA1925	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA123	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA649	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA1502	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA1133	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA1648	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA1839	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA1887	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA29	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA617	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA2286	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA1001	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA2238	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA2301	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA551	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA986	B737	Boeing 737-700	1,800.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,400.0
SWA778	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
DAL2256	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
SWA2233	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
AAL2008	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
SWA1175	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
SWA1870	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
SWA2349	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
DAL2395	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
SWA526	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
SWA1017	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
SWA2325	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
SWA1219	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
SWA778	B738	Boeing 737-800	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,600.0
ASA106	B739	Boeing 737-900	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,700.0
ASA617	B739	Boeing 737-900	2,300.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,700.0

KONT Departures for filed flight plans 2/28/2022 15:00 PST to 3/1/2022 14:59 PST

Flight	ICAO Code	Description	TO Roll (m)	Iniital Climb (kts)	TAS (kts)	GS (ft/min)	Initial ROC (ft/min)	Time to Mix (min)	Distance to Mix (ft)	Distance to Mix (m)	Climb Angle	Landing Roll (m)
UPS2915	B744	Boeing 747-400	3,300.0	215.0	223.6	22,643.7	1,500.0	1.6	36,260.0	11,052.1	3.8	2,130.0
UPS2964	B744	Boeing 747-400	3,300.0	215.0	223.6	22,643.7	1,500.0	1.6	36,260.0	11,052.1	3.8	2,130.0
UPS56	B748	Boeing 747-800	3,190.0	230.0	239.2	24,223.4	2,500.0	1.0	23,273.9	7,093.9	5.9	2,680.0
UPS98	B748	Boeing 747-800	3,190.0	230.0	239.2	24,223.4	2,500.0	1.0	23,273.9	7,093.9	5.9	2,680.0
UPS2976	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
UPS2888	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
UPS2106	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
UPS2770	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
UPS2986	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
UPS2022	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
UPS2066	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
UPS2310	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
MGE710	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
UPS992	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
UPS852	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
FDX1116	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
FDX1359	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
UPS9780	B752	Boeing 757-200	1,900.0	175.0	182.0	18,430.9	3,500.0	0.7	12,648.9	3,855.4	10.8	1,400.0
ATN3232	B762	Boeing 767-200ER	2,700.0	190.0	197.6	20,010.7	2,000.0	1.2	24,032.8	7,325.2	5.7	1,500.0
UPS2804	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
ATN3511	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UPS2084	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
ATN3448	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
GTI3814	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
FDX3645	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UPS2917	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
AJT887	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UPS5513	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UPS2933	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
FDX3112	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UPS2931	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
ATN3452	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
GTI3801	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UPS834	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UPS808	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UPS2968	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
FDX2648	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
FDX1803	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UPS929	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UPS927	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UPS919	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
GTI3811	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
ATN4332	B763	Boeing 767-300ER	2,900.0	190.0	197.6	20,010.7	3,000.0	0.8	16,021.9	4,883.5	8.5	1,800.0
UAL2581	B77W	Boeing 777-300ER	3,000.0	200.0	208.0	21,063.9	3,000.0	0.8	16,865.1	5,140.5	8.1	1,800.0
AMF1936	BE99	Beech 99	1,000.0	145.0	150.8	15,271.3	1,000.0	2.4	36,681.7	11,180.6	3.7	900.0
AMF1902	BE99	Beech 99	1,000.0	145.0	150.8	15,271.3	1,000.0	2.4	36,681.7	11,180.6	3.7	900.0
AMF1946	BE99	Beech 99	1,000.0	145.0	150.8	15,271.3	1,000.0	2.4	36,681.7	11,180.6	3.7	900.0
N3953S	C172	Cessna 172 Skyhawk	300.0	90.0	93.6	9,478.7	400.0	6.0	56,919.8	17,349.2	2.4	160.0
PCM8662	C208	Cessna 208 Caravan	500.0	115.0	119.6	12,111.7	800.0	3.0	36,365.5	11,084.2	3.8	450.0
PCM8694	C208	Cessna 208 Caravan	500.0	115.0	119.6	12,111.7	800.0	3.0	36,365.5	11,084.2	3.8	450.0
PCM8683	C208	Cessna 208 Caravan	500.0	115.0	119.6	12,111.7	800.0	3.0	36,365.5	11,084.2	3.8	450.0
PCM8749	C208	Cessna 208 Caravan	500.0	115.0	119.6	12,111.7	800.0	3.0	36,365.5	11,084.2	3.8	450.0
PCM8654	C208	Cessna 208 Caravan	500.0	115.0	119.6	12,111.7	800.0	3.0	36,365.5	11,084.2	3.8	450.0
PCM8682	C208	Cessna 208 Caravan	500.0	115.0	119.6	12,111.7	800.0	3.0	36,365.5	11,084.2	3.8	450.0
PCM8671	C208	Cessna 208 Caravan	500.0	115.0	119.6	12,111.7	800.0	3.0	36,365.5	11,084.2	3.8	450.0
PCM8688	C208	Cessna 208 Caravan	500.0	115.0	119.6	12,111.7	800.0	3.0	36,365.5	11,084.2	3.8	450.0
PCM8656	C208	Cessna 208 Caravan	500.0	115.0	119.6	12,111.7	800.0	3.0	36,365.5	11,084.2	3.8	450.0
PCM8730	C208	Cessna 208 Caravan	500.0	115.0	119.6	12,111.7	800.0	3.0	36,365.5	11,084.2	3.8	450.0
N599KD	C560	Cessna Citation 560	963.0	240.0	249.6	25,276.6	2,800.0	0.9	21,683.7	6,609.2	6.3	890.0
SKW5416	CRJ2	Canadair RJ-200	1,527.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,423.0
SKW4628	CRJ2	Canadair RJ-200	1,527.0	165.0	171.6	17,377.7	3,000.0	0.8	13,913.7	4,240.9	9.8	1,423.0
ASH5858	CRJ9	Canadair RJ-900	1,770.0	165.0	171.6	17,377.7	2,500.0	1.0	16,696.5	5,089.1	8.2	1,630.0
AMF2520	E120	Embraer Brasilia	1,400.0	150.0	156.0	15,797.9	1,500.0	1.6	25,297.7	7,710.7	5.4	1,400.0
FTN4	E145	Embraer EMB-145	2,000.0	165.0	171.6	17,377.7	2,500.0	1.0	16,696.5	5,089.1	8.2	1,350.0
SKW3659	E75L	Embraer ERJ 170-200	1,644.0	190.0	197.6	20,010.7	3,400.0	0.7	14,137.0	4,308.9	9.6	1,247.0
SKW4152	E75L	Embraer ERJ 170-200	1,644.0	190.0	197.6	20,010.7	3,400.0	0.7	14,137.0	4,308.9	9.6	1,247.0
SKW3676	E75L	Embraer ERJ 170-200	1,644.0	190.0	197.6	20,010.7	3,400.0	0.7	14,137.0	4,308.9	9.6	1,247.0
SKW5366	E75L	Embraer ERJ 170-200	1,644.0	190.0	197.6	20,010.7	3,400.0	0.7	14,137.0	4,308.9	9.6	1,247.0
SKW3680	E75L	Embraer ERJ 170-200	1,644.0	190.0	197.6	20,010.7	3,400.0	0.7	14,137.0	4,308.9	9.6	1,247.0
SKW3506	E75L	Embraer ERJ 170-200	1,644.0	190.0	197.6	20,010.7	3,400.0	0.7	14,137.0	4,308.9	9.6	1,247.0

KONT Departures for filed flight plans 2/28/2022 15:00 PST to 3/1/2022 14:59 PST

Flight	ICAO Code	Description	TO Roll (m)	Iniital Climb (kts)	TAS (kts)	GS (ft/min)	Initial ROC (ft/min)	Time to Mix (min)	Distance to Mix (ft)	Distance to Mix (m)	Climb Angle	Landing Roll (m)
EJA100	GL5T	Bombardier Global 5000	1,689.0	155.0	161.2	16,324.5	3,500.0	0.7	11,203.3	3,414.8	12.1	814.0
PEG88	GLF4	Gulfstream 4	1,600.0	175.0	182.0	18,430.9	4,000.0	0.6	11,067.7	3,373.4	12.2	1,000.0
FDX698	MD11	McDonnell Douglas MD-11	3,100.0	190.0	197.6	20,010.7	2,000.0	1.2	24,032.8	7,325.2	5.7	2,100.0
FDX415	MD11	McDonnell Douglas MD-11	3,100.0	190.0	197.6	20,010.7	2,000.0	1.2	24,032.8	7,325.2	5.7	2,100.0
UPS984	MD11	McDonnell Douglas MD-11	3,100.0	190.0	197.6	20,010.7	2,000.0	1.2	24,032.8	7,325.2	5.7	2,100.0
UPS972	MD11	McDonnell Douglas MD-11	3,100.0	190.0	197.6	20,010.7	2,000.0	1.2	24,032.8	7,325.2	5.7	2,100.0
UPS850	MD11	McDonnell Douglas MD-11	3,100.0	190.0	197.6	20,010.7	2,000.0	1.2	24,032.8	7,325.2	5.7	2,100.0
UPS962	MD11	McDonnell Douglas MD-11	3,100.0	190.0	197.6	20,010.7	2,000.0	1.2	24,032.8	7,325.2	5.7	2,100.0
UPS806	MD11	McDonnell Douglas MD-11	3,100.0	190.0	197.6	20,010.7	2,000.0	1.2	24,032.8	7,325.2	5.7	2,100.0
FDX1215	MD11	McDonnell Douglas MD-11	3,100.0	190.0	197.6	20,010.7	2,000.0	1.2	24,032.8	7,325.2	5.7	2,100.0
UPS915	MD11	McDonnell Douglas MD-11	3,100.0	190.0	197.6	20,010.7	2,000.0	1.2	24,032.8	7,325.2	5.7	2,100.0
		Average	**2,109.0**	**173.3**	**180.2**	**18,249.3**	**2,663.4**	**1.1**	**18,571.4**	**5,660.6**	**7.370**	**1,490.6**

Notes:
1. Departure data from FlightAware (https://flightaware.com/).
2. Aircraft perfromance data from EUROCONTROL Aircraft Perfromance Database (https://contentzone.eurocontrol.int/aircraftperformance/default.aspx?).

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Approach Runway 08L

Flight Tracks Reported from AEDT

	2023 No Action		2023 Project		2024 No Action		2024 Project		2025 No Action		2025 Project		2-Year Alt 2023 Project		2-Year Alt 2024 Project	
Track	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**
A08CJN1	316	11.7%	212	10.6%	328	11.7%	331	10.5%	342	11.8%	199	11.8%	159	10.8%	331	10.5%
A08LCJE1	241	8.9%	162	8.1%	250	8.9%	253	8.0%	261	9.0%	152	9.0%	121	8.3%	253	8.0%
A08LCJN2	125	4.6%	84	4.2%	129	4.6%	131	4.1%	135	4.6%	79	4.6%	63	4.3%	131	4.1%
A08LCJN3	158	5.8%	106	5.3%	164	5.8%	166	5.2%	171	5.9%	100	5.9%	80	5.4%	166	5.2%
A08LCJN4	50	1.8%	34	1.7%	52	1.8%	52	1.7%	54	1.9%	31	1.9%	25	1.7%	52	1.7%
A08LCJS1	67	2.5%	45	2.2%	69	2.5%	70	2.2%	72	2.5%	42	2.5%	33	2.3%	70	2.2%
A08LCPN1	28	1.0%	32	1.6%	29	1.0%	54	1.7%	30	1.0%	18	1.0%	22	1.5%	54	1.7%
A08LCPW1	93	3.4%	107	5.4%	96	3.4%	181	5.7%	100	3.4%	58	3.4%	74	5.0%	181	5.7%
A08LGJW1	143	5.3%	156	7.8%	143	5.1%	253	8.0%	144	5.0%	84	5.0%	108	7.3%	253	8.0%
A08LGPW1	36	1.3%	87	4.4%	36	1.3%	151	4.8%	36	1.2%	21	1.2%	56	3.8%	151	4.8%
A08LPJE1	430	15.9%	288	14.4%	446	15.9%	449	14.2%	462	15.9%	270	15.9%	216	14.7%	449	14.2%
A08LPJN1	168	6.2%	112	5.6%	174	6.2%	175	5.5%	180	6.2%	105	6.2%	84	5.7%	175	5.5%
A08LPJN2	15	0.5%	10	0.5%	15	0.5%	15	0.5%	16	0.5%	9	0.5%	7	0.5%	15	0.5%
A08LPJN3	29	1.1%	20	1.0%	30	1.1%	30	1.0%	31	1.1%	18	1.1%	15	1.0%	30	1.0%
A08LPJN4	80	3.0%	54	2.7%	83	3.0%	84	2.7%	86	3.0%	50	3.0%	40	2.7%	84	2.7%
A08LPJN6	95	3.5%	64	3.2%	98	3.5%	99	3.1%	102	3.5%	59	3.5%	48	3.2%	99	3.1%
A08LPJN7	350	12.9%	235	11.7%	363	13.0%	365	11.6%	376	12.9%	219	12.9%	176	12.0%	365	11.6%
A08LPJN8	255	9.4%	171	8.6%	265	9.5%	266	8.4%	274	9.4%	160	9.4%	128	8.7%	266	8.4%
A08LPJS1	29	1.1%	20	1.0%	30	1.1%	30	1.0%	31	1.1%	18	1.1%	15	1.0%	30	1.0%
Total	**2,705**		**1,998**		**2,801**		**3,155**		**2,904**		**1,694**		**1,469**		**3,155**	

Modeled Tracks

A08LSI	2,705		1,998		2,801		3,155		2,904		1,694		1,469		3,155	

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Approach Runway 08R

Flight Tracks Reported from AEDT

	2023 No Action		2023 Project		2024 No Action		2024 Project		2025 No Action		2025 Project		2-Year Alt 2023 Project		2-Year Alt 2024 Project	
Track	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**
A08RCJE1	54	5.9%	94	7.3%	56	5.9%	14	5.9%	59	6.0%	143	7.2%	135	7.4%	14	5.9%
A08RCJN1	68	7.4%	119	9.2%	71	7.5%	18	7.5%	74	7.6%	180	9.1%	170	9.3%	18	7.5%
A08RCJN2	16	1.7%	28	2.2%	17	1.8%	4	1.8%	17	1.8%	42	2.1%	40	2.2%	4	1.8%
A08RCJN3	20	2.2%	35	2.7%	21	2.2%	5	2.2%	22	2.2%	53	2.7%	50	2.7%	5	2.2%
A08RCJN4	28	3.0%	49	3.8%	29	3.1%	7	3.1%	30	3.1%	74	3.8%	70	3.8%	7	3.1%
A08RCJN5	10	1.1%	17	1.4%	10	1.1%	3	1.1%	11	1.1%	26	1.3%	25	1.4%	3	1.1%
A08RCJN7	12	1.3%	21	1.6%	12	1.3%	3	1.3%	13	1.3%	32	1.6%	30	1.6%	3	1.3%
A08RCJS1	31	3.4%	28	2.2%	32	3.4%	8	3.4%	34	3.4%	47	2.4%	39	2.1%	8	3.4%
A08RCPN1	34	3.7%	21	1.7%	36	3.8%	9	3.8%	37	3.8%	39	2.0%	28	1.5%	9	3.8%
A08RCPS2	23	2.5%	14	1.1%	24	2.5%	6	2.5%	25	2.6%	26	1.3%	19	1.0%	6	2.5%
A08RCPW1	6	0.6%	4	0.3%	6	0.6%	1	0.6%	6	0.6%	7	0.3%	5	0.3%	1	0.6%
A08RCPW2	34	3.7%	21	1.7%	36	3.8%	9	3.8%	37	3.8%	39	2.0%	28	1.5%	9	3.8%
A08RCPW3	40	4.4%	25	1.9%	42	4.4%	10	4.4%	43	4.5%	46	2.3%	32	1.8%	10	4.4%
A08RCPW4	57	6.2%	36	2.8%	60	6.3%	15	6.3%	62	6.4%	65	3.3%	46	2.6%	15	6.3%
A08RCPW5	17	1.9%	11	0.8%	18	1.9%	4	1.9%	19	1.9%	20	1.0%	14	0.8%	4	1.9%
A08RGJE2	88	9.6%	63	4.9%	89	9.4%	22	9.4%	89	9.2%	104	5.3%	84	4.6%	22	9.4%
A08RGJE3	59	6.4%	42	3.3%	59	6.3%	15	6.3%	60	6.1%	69	3.5%	56	3.1%	15	6.3%
A08RGJN1	59	6.4%	42	3.3%	59	6.3%	15	6.3%	60	6.1%	69	3.5%	56	3.1%	15	6.3%
A08RGPN5	110	12.0%	90	7.0%	110	11.7%	28	11.7%	111	11.4%	144	7.3%	122	6.7%	28	11.7%
A08RPJE1	49	5.3%	168	13.1%	51	5.4%	13	5.4%	52	5.4%	240	12.2%	246	13.5%	13	5.4%
A08RPJE3	30	3.2%	102	7.9%	31	3.3%	8	3.3%	32	3.3%	146	7.4%	150	8.2%	8	3.3%
A08RPJN1	8	0.9%	29	2.3%	9	0.9%	2	0.9%	9	0.9%	42	2.1%	43	2.4%	2	0.9%
A08RPJN2	19	2.1%	66	5.1%	20	2.1%	5	2.1%	21	2.1%	94	4.8%	96	5.3%	5	2.1%
A08RPJN3	38	4.1%	132	10.2%	40	4.2%	10	4.2%	41	4.2%	188	9.5%	193	10.6%	10	4.2%
A08RPJN4	8	0.9%	29	2.3%	9	0.9%	2	0.9%	9	0.9%	42	2.1%	43	2.4%	2	0.9%
Total	**921**		**1,288**		**944**		**236**		**972**		**1,977**		**1,816**		**236**	

Modeled Tracks

A08RSI	921		1,288		944		236		972		1,977		1,816		236	

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Approach Runway 26L

Flight Tracks Reported from AEDT

	2023 No Action		2023 Project		2024 No Action		2024 Project		2025 No Action		2025 Project		2-Year Alt 2023 Project		2-Year Alt 2024 Project	
Track	Ops	%	Ops	%	Ops	%	Ops	%	Ops	%	Ops	%	Ops	%	Ops	%
A26LCJE1	3,530	14.2%	2,551	10.9%	3,664	14.3%	916	14.3%	3,801	14.5%	4,466	11.7%	3,385	10.6%	916	14.3%
A26LCJE2	48	0.2%	35	0.1%	50	0.2%	13	0.2%	52	0.2%	61	0.2%	46	0.1%	13	0.2%
A26LCJE3	76	0.3%	55	0.2%	79	0.3%	20	0.3%	82	0.3%	96	0.3%	73	0.2%	20	0.3%
A26LCJE4	97	0.4%	70	0.3%	100	0.4%	25	0.4%	104	0.4%	122	0.3%	93	0.3%	25	0.4%
A26LCJE5																
A26LCJN1	28	0.1%	20	0.1%	29	0.1%	7	0.1%	30	0.1%	35	0.1%	26	0.1%	7	0.1%
A26LCJN2	212	0.9%	191	0.8%	219	0.9%	55	0.9%	226	0.9%	316	0.8%	260	0.8%	55	0.9%
A26LCJN3																
A26LCJN4	3,395	13.7%	3,051	13.1%	3,507	13.7%	877	13.7%	3,615	13.8%	5,056	13.3%	4,153	13.0%	877	13.7%
A26LCJN5																
A26LCJN6	637	2.6%	572	2.5%	658	2.6%	164	2.6%	678	2.6%	948	2.5%	779	2.4%	164	2.6%
A26LCJN7	1,934	7.8%	1,398	6.0%	2,007	7.9%	502	7.9%	2,083	7.9%	2,447	6.4%	1,855	5.8%	502	7.9%
A26LCJN8	207	0.8%	150	0.6%	215	0.8%	54	0.8%	223	0.9%	262	0.7%	199	0.6%	54	0.8%
A26LCJN9	332	1.3%	240	1.0%	344	1.3%	86	1.3%	357	1.4%	419	1.1%	318	1.0%	86	1.3%
A26LCJS1	131	0.5%	95	0.4%	136	0.5%	34	0.5%	141	0.5%	166	0.4%	126	0.4%	34	0.5%
A26LCJS2	318	1.3%	230	1.0%	330	1.3%	82	1.3%	342	1.3%	402	1.1%	305	1.0%	82	1.3%
A26LCJS3	145	0.6%	105	0.4%	151	0.6%	38	0.6%	156	0.6%	184	0.5%	139	0.4%	38	0.6%
A26LCJW1	76	0.3%	55	0.2%	79	0.3%	20	0.3%	82	0.3%	96	0.3%	73	0.2%	20	0.3%
A26LCJW3	145	0.6%	105	0.4%	151	0.6%	38	0.6%	156	0.6%	184	0.5%	139	0.4%	38	0.6%
A26LCPE3	132	0.5%	89	0.4%	137	0.5%	34	0.5%	142	0.5%	158	0.4%	117	0.4%	34	0.5%
A26LCPE4	103	0.4%	70	0.3%	107	0.4%	27	0.4%	111	0.4%	124	0.3%	92	0.3%	27	0.4%
A26LCPN1	183	0.7%	124	0.5%	190	0.7%	48	0.7%	197	0.8%	220	0.6%	163	0.5%	48	0.7%
A26LCPN2	132	0.5%	89	0.4%	137	0.5%	34	0.5%	142	0.5%	158	0.4%	117	0.4%	34	0.5%
A26LCPN3	63	0.3%	43	0.2%	65	0.3%	16	0.3%	68	0.3%	76	0.2%	56	0.2%	16	0.3%
A26LCPN4	40	0.2%	27	0.1%	42	0.2%	10	0.2%	43	0.2%	48	0.1%	36	0.1%	10	0.2%
A26LCPN5	114	0.5%	77	0.3%	119	0.5%	30	0.5%	123	0.5%	138	0.4%	102	0.3%	30	0.5%
A26LCPN6	109	0.4%	74	0.3%	113	0.4%	28	0.4%	117	0.4%	131	0.3%	97	0.3%	28	0.4%
A26LCPN7	40	0.2%	27	0.1%	42	0.2%	10	0.2%	43	0.2%	48	0.1%	36	0.1%	10	0.2%
A26LCPS1	177	0.7%	120	0.5%	184	0.7%	46	0.7%	191	0.7%	213	0.6%	158	0.5%	46	0.7%
A26LCPS2	155	0.6%	105	0.4%	160	0.6%	40	0.6%	166	0.6%	186	0.5%	138	0.4%	40	0.6%
A26LCPS3	97	0.4%	66	0.3%	101	0.4%	25	0.4%	105	0.4%	117	0.3%	87	0.3%	25	0.4%
A26LCPS4	11	0.0%	8	0.0%	12	0.0%	3	0.0%	12	0.0%	14	0.0%	10	0.0%	3	0.0%
A26LCPW1	17	0.1%	12	0.0%	18	0.1%	4	0.1%	18	0.1%	21	0.1%	15	0.0%	4	0.1%
A26LCPW2	343	1.4%	232	1.0%	357	1.4%	89	1.4%	370	1.4%	413	1.1%	306	1.0%	89	1.4%
A26LCPW3	481	1.9%	325	1.4%	499	2.0%	125	2.0%	518	2.0%	578	1.5%	428	1.3%	125	2.0%
A26LCPW4	555	2.2%	376	1.6%	577	2.3%	144	2.3%	598	2.3%	668	1.8%	494	1.5%	144	2.3%
A26LCPW5	34	0.1%	23	0.1%	36	0.1%	9	0.1%	37	0.1%	41	0.1%	31	0.1%	9	0.1%
A26LCPW7	504	2.0%	341	1.5%	523	2.0%	131	2.0%	542	2.1%	606	1.6%	448	1.4%	131	2.0%
A26LGJE1	1,078	4.3%	704	3.0%	1,083	4.2%	271	4.2%	1,084	4.1%	1,179	3.1%	921	2.9%	271	4.2%
A26LGJE2	35	0.1%	23	0.1%	35	0.1%	9	0.1%	35	0.1%	38	0.1%	30	0.1%	9	0.1%
A26LGJN1																
A26LGJN2																
A26LGJN3	35	0.1%	23	0.1%	35	0.1%	9	0.1%	35	0.1%	38	0.1%	30	0.1%	9	0.1%
A26LGJS1	348	1.4%	227	1.0%	349	1.4%	87	1.4%	350	1.3%	380	1.0%	297	0.9%	87	1.4%
A26LGJS2	244	1.0%	159	0.7%	245	1.0%	61	1.0%	245	0.9%	266	0.7%	208	0.7%	61	1.0%
A26LGJW1	157	0.6%	102	0.4%	157	0.6%	39	0.6%	157	0.6%	171	0.4%	134	0.4%	39	0.6%
A26LGJW2	296	1.2%	193	0.8%	297	1.2%	74	1.2%	297	1.1%	323	0.8%	252	0.8%	74	1.2%
A26LGJW3	818	3.3%	533	2.3%	821	3.2%	205	3.2%	822	3.1%	894	2.3%	698	2.2%	205	3.2%
A26LGPE2	189	0.8%	131	0.6%	189	0.7%	47	0.7%	189	0.7%	216	0.6%	172	0.5%	47	0.7%
A26LGPE3	603	2.4%	418	1.8%	606	2.4%	152	2.4%	606	2.3%	690	1.8%	552	1.7%	152	2.4%
A26LGPE4	415	1.7%	287	1.2%	417	1.6%	104	1.6%	417	1.6%	474	1.2%	379	1.2%	104	1.6%
A26LGPS2	302	1.2%	209	0.9%	303	1.2%	76	1.2%	303	1.2%	345	0.9%	276	0.9%	76	1.2%
A26LGPW1	641	2.6%	444	1.9%	644	2.5%	161	2.5%	644	2.5%	733	1.9%	586	1.8%	161	2.5%
A26LGPW2	113	0.5%	78	0.3%	114	0.4%	28	0.4%	114	0.4%	129	0.3%	103	0.3%	28	0.4%
A26LPJE2	64	0.3%	135	0.6%	67	0.3%	17	0.3%	69	0.3%	200	0.5%	194	0.6%	17	0.3%
A26LPJE3	1,462	5.9%	3,069	13.1%	1,518	5.9%	380	5.9%	1,562	5.9%	4,546	11.9%	4,421	13.9%	380	5.9%
A26LPJN1	78	0.3%	165	0.7%	81	0.3%	20	0.3%	84	0.3%	244	0.6%	237	0.7%	20	0.3%
A26LPJN2	64	0.3%	135	0.6%	67	0.3%	17	0.3%	69	0.3%	200	0.5%	194	0.6%	17	0.3%
A26LPJN3	157	0.6%	329	1.4%	163	0.6%	41	0.6%	168	0.6%	488	1.3%	474	1.5%	41	0.6%
A26LPJN4																
A26LPJN5	29	0.1%	60	0.3%	30	0.1%	7	0.1%	30	0.1%	89	0.2%	86	0.3%	7	0.1%
A26LPJN6	1,487	6.0%	1,405	6.0%	1,536	6.0%	384	6.0%	1,583	6.0%	2,306	6.0%	1,921	6.0%	384	6.0%
A26LPJN7	242	1.0%	509	2.2%	252	1.0%	63	1.0%	259	1.0%	754	2.0%	733	2.3%	63	1.0%
A26LPJN8	806	3.2%	1,692	7.2%	837	3.3%	209	3.3%	861	3.3%	2,506	6.6%	2,437	7.6%	209	3.3%
A26LPJS1	36	0.1%	75	0.3%	37	0.1%	9	0.1%	38	0.1%	111	0.3%	108	0.3%	9	0.1%

Approach Runway 26L
Flight Tracks Reported from AEDT

	2023 No Action		2023 Project		2024 No Action		2024 Project		2025 No Action		2025 Project		2-Year Alt 2023 Project		2-Year Alt 2024 Project	
Track	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**
A26LPJS2	93	0.4%	195	0.8%	96	0.4%	24	0.4%	99	0.4%	288	0.8%	280	0.9%	24	0.4%
A26LPJS3	93	0.4%	195	0.8%	96	0.4%	24	0.4%	99	0.4%	288	0.8%	280	0.9%	24	0.4%
A26LPJS4	50	0.2%	105	0.4%	52	0.2%	13	0.2%	53	0.2%	155	0.4%	151	0.5%	13	0.2%
A26LPJW2	93	0.4%	195	0.8%	96	0.4%	24	0.4%	99	0.4%	288	0.8%	280	0.9%	24	0.4%
A26LPJW3	193	0.8%	404	1.7%	200	0.8%	50	0.8%	206	0.8%	599	1.6%	582	1.8%	50	0.8%
Total	**24,819**		**23,344**		**25,559**		**6,390**		**26,248**		**38,156**		**31,913**		**6,390**	

Modeled Tracks

A26LSI	24,819		23,344		25,559		6,390		26,248		38,156		31,913		6,390	

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Approach Runway 26R

Flight Tracks Reported from AEDT

	2023 No Action		2023 Project		2024 No Action		2024 Project		2025 No Action		2025 Project		2-Year Alt 2023 Project		2-Year Alt 2024 Project	
Track	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**
A26PJE4																
A26RCJE1	860	3.3%	1,486	5.3%	890	3.3%	2,596	5.6%	929	3.3%	542	3.3%	978	5.0%	2,596	5.6%
A26RCJN1																
A26RCJN2	334	1.3%	405	1.4%	345	1.3%	685	1.5%	359	1.3%	210	1.3%	276	1.4%	685	1.5%
A26RCJN3																
A26RCJN4																
A26RCJN6	801	3.0%	971	3.5%	828	3.1%	1,644	3.5%	862	3.1%	503	3.0%	663	3.4%	1,644	3.5%
A26RCJN7																
A26RCJS1	280	1.1%	485	1.7%	291	1.1%	847	1.8%	303	1.1%	177	1.1%	319	1.6%	847	1.8%
A26RCJS3	18	0.1%	31	0.1%	19	0.1%	55	0.1%	20	0.1%	11	0.1%	21	0.1%	55	0.1%
A26RCJW1	769	2.9%	1,330	4.7%	797	2.9%	2,323	5.0%	831	2.9%	485	2.9%	875	4.5%	2,323	5.0%
A26RCJW2	290	1.1%	501	1.8%	300	1.1%	875	1.9%	313	1.1%	183	1.1%	329	1.7%	875	1.9%
A26RCJW3	109	0.4%	188	0.7%	112	0.4%	328	0.7%	117	0.4%	68	0.4%	123	0.6%	328	0.7%
A26RCJW4	54	0.2%	94	0.3%	56	0.2%	164	0.4%	59	0.2%	34	0.2%	62	0.3%	164	0.4%
A26RCJW5	72	0.3%	125	0.4%	75	0.3%	219	0.5%	78	0.3%	46	0.3%	82	0.4%	219	0.5%
A26RCPE1	47	0.2%	111	0.4%	48	0.2%	197	0.4%	51	0.2%	30	0.2%	71	0.4%	197	0.4%
A26RCPN1	62	0.2%	147	0.5%	64	0.2%	262	0.6%	67	0.2%	39	0.2%	95	0.5%	262	0.6%
A26RCPN2	62	0.2%	147	0.5%	64	0.2%	262	0.6%	67	0.2%	39	0.2%	95	0.5%	262	0.6%
A26RCPN3	31	0.1%	74	0.3%	32	0.1%	131	0.3%	34	0.1%	20	0.1%	47	0.2%	131	0.3%
A26RCPN4	78	0.3%	184	0.7%	80	0.3%	328	0.7%	84	0.3%	49	0.3%	118	0.6%	328	0.7%
A26RCPN5	54	0.2%	129	0.5%	56	0.2%	229	0.5%	59	0.2%	34	0.2%	83	0.4%	229	0.5%
A26RCPN6	31	0.1%	74	0.3%	32	0.1%	131	0.3%	34	0.1%	20	0.1%	47	0.2%	131	0.3%
A26RCPN7	38	0.1%	52	0.2%	40	0.1%	71	0.2%	42	0.1%	37	0.2%	44	0.2%	71	0.2%
A26RCPN8	31	0.1%	74	0.3%	32	0.1%	131	0.3%	34	0.1%	20	0.1%	47	0.2%	131	0.3%
A26RCPS1	47	0.2%	111	0.4%	48	0.2%	197	0.4%	51	0.2%	30	0.2%	71	0.4%	197	0.4%
A26RCPS2	47	0.2%	111	0.4%	48	0.2%	197	0.4%	51	0.2%	30	0.2%	71	0.4%	197	0.4%
A26RCPW1	47	0.2%	111	0.4%	48	0.2%	197	0.4%	51	0.2%	30	0.2%	71	0.4%	197	0.4%
A26RCPW2	85	0.3%	163	0.6%	88	0.3%	268	0.6%	92	0.3%	67	0.4%	115	0.6%	268	0.6%
A26RCPW3	124	0.5%	295	1.0%	129	0.5%	524	1.1%	135	0.5%	79	0.5%	189	1.0%	524	1.1%
A26RCPW4	101	0.4%	239	0.9%	104	0.4%	426	0.9%	110	0.4%	64	0.4%	154	0.8%	426	0.9%
A26RGJE1	223	0.8%	641	2.3%	223	0.8%	1,113	2.4%	226	0.8%	132	0.8%	407	2.1%	1,113	2.4%
A26RGJN1	193	0.7%	556	2.0%	193	0.7%	965	2.1%	196	0.7%	114	0.7%	353	1.8%	965	2.1%
A26RGJN2																
A26RGJS1	119	0.5%	342	1.2%	119	0.4%	594	1.3%	120	0.4%	70	0.4%	217	1.1%	594	1.3%
A26RGJW3	74	0.3%	214	0.8%	74	0.3%	371	0.8%	75	0.3%	44	0.3%	136	0.7%	371	0.8%
A26RGPE1	79	0.3%	102	0.4%	79	0.3%	138	0.3%	79	0.3%	67	0.4%	84	0.4%	138	0.3%
A26RGPE2	430	1.6%	793	2.8%	430	1.6%	1,346	2.9%	435	1.5%	254	1.5%	519	2.7%	1,346	2.9%
A26RGPN1	61	0.2%	113	0.4%	61	0.2%	192	0.4%	62	0.2%	36	0.2%	74	0.4%	192	0.4%
A26RGPS1	82	0.3%	151	0.5%	82	0.3%	256	0.5%	83	0.3%	48	0.3%	99	0.5%	256	0.5%
A26RGPW1	102	0.4%	189	0.7%	102	0.4%	320	0.7%	104	0.4%	60	0.4%	124	0.6%	320	0.7%
A26RGPW2	82	0.3%	151	0.5%	82	0.3%	256	0.5%	83	0.3%	48	0.3%	99	0.5%	256	0.5%
A26RPJE1	42	0.2%	32	0.1%	44	0.2%	51	0.1%	45	0.2%	26	0.2%	23	0.1%	51	0.1%
A26RPJE2	36	0.1%	27	0.1%	37	0.1%	44	0.1%	39	0.1%	23	0.1%	20	0.1%	44	0.1%
A26RPJE3																
A26RPJE4	30	0.1%	23	0.1%	31	0.1%	36	0.1%	32	0.1%	19	0.1%	17	0.1%	36	0.1%
A26RPJE5	318	1.2%	349	1.2%	329	1.2%	585	1.3%	343	1.2%	200	1.2%	241	1.2%	585	1.3%
A26RPJE6																
A26RPJE7	4,266	16.2%	4,681	16.7%	4,413	16.3%	7,834	16.8%	4,594	16.3%	2,680	16.2%	3,235	16.6%	7,834	16.8%
A26RPJE8																
A26RPJE9	210	0.8%	160	0.6%	218	0.8%	255	0.5%	226	0.8%	132	0.8%	117	0.6%	255	0.5%
A26RPJN1	402	1.5%	307	1.1%	417	1.5%	488	1.0%	434	1.5%	253	1.5%	224	1.2%	488	1.0%
A26RPJN2	547	2.1%	416	1.5%	566	2.1%	663	1.4%	589	2.1%	343	2.1%	305	1.6%	663	1.4%
A26RPJN3	84	0.3%	64	0.2%	87	0.3%	102	0.2%	91	0.3%	53	0.3%	47	0.2%	102	0.2%
A26RPJN4	378	1.4%	288	1.0%	392	1.4%	459	1.0%	408	1.4%	238	1.4%	211	1.1%	459	1.0%
A26RPJN5	30	0.1%	23	0.1%	31	0.1%	36	0.1%	32	0.1%	19	0.1%	17	0.1%	36	0.1%
A26RPJN8																
A26RPJN9	446	1.7%	489	1.7%	461	1.7%	818	1.8%	480	1.7%	280	1.7%	338	1.7%	818	1.8%
A26RPJS1	6,608	25.2%	5,035	17.9%	6,840	25.2%	8,018	17.2%	7,118	25.2%	4,152	25.2%	3,682	18.9%	8,018	17.2%
A26RPJW1	252	1.0%	192	0.7%	261	1.0%	306	0.7%	272	1.0%	159	1.0%	141	0.7%	306	0.7%
A26RPJW2	5,040	19.2%	3,840	13.7%	5,217	19.2%	6,115	13.1%	5,429	19.3%	3,167	19.2%	2,808	14.4%	6,115	13.1%
A26RPJW3	1,646	6.3%	1,254	4.5%	1,704	6.3%	1,997	4.3%	1,773	6.3%	1,034	6.3%	917	4.7%	1,997	4.3%
Total	**26,252**		**28,068**		**27,122**		**46,645**		**28,198**		**16,496**		**19,499**		**46,645**	

Modeled Tracks

A26RSI	26,252		28,068		27,122		46,645		28,198		16,496		19,499		46,645	

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Departure Runway 08L

Flight Tracks Reported from AEDT

	2023 No Action		2023 Project		2024 No Action		2024 Project		2025 No Action		2025 Project		2-Year Alt 2023 Project		2-Year Alt 2024 Project	
Track	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**
D08LCJE1	306	4.5%	113	4.3%	318	4.5%	147	4.2%	329	4.5%	192	4.5%	98	4.3%	147	4.2%
D08LCJN1	90	1.3%	33	1.3%	94	1.3%	43	1.2%	97	1.3%	56	1.3%	29	1.3%	43	1.2%
D08LCJN2	54	0.8%	20	0.8%	56	0.8%	26	0.7%	58	0.8%	34	0.8%	17	0.8%	26	0.7%
D08LCJN3	252	3.7%	93	3.5%	262	3.7%	121	3.5%	271	3.7%	158	3.7%	81	3.6%	121	3.5%
D08LCJN4	72	1.1%	27	1.0%	75	1.1%	35	1.0%	77	1.1%	45	1.1%	23	1.0%	35	1.0%
D08LCJS1	630	9.3%	232	8.8%	655	9.3%	303	8.7%	677	9.3%	395	9.3%	202	9.0%	303	8.7%
D08LCJS2	306	4.5%	113	4.3%	318	4.5%	147	4.2%	329	4.5%	192	4.5%	98	4.3%	147	4.2%
D08LCJW1	54	0.8%	20	0.8%	56	0.8%	26	0.7%	58	0.8%	34	0.8%	17	0.8%	26	0.7%
D08LCPN1	10	0.2%	13	0.5%	11	0.1%	22	0.6%	11	0.1%	6	0.1%	9	0.4%	22	0.6%
D08LCPW1	31	0.5%	38	1.4%	32	0.4%	65	1.8%	33	0.4%	19	0.4%	26	1.1%	65	1.8%
D08LCPW2	41	0.6%	51	1.9%	42	0.6%	86	2.5%	43	0.6%	25	0.6%	34	1.5%	86	2.5%
D08LGJ1	67	1.0%	129	4.9%	67	1.0%	220	6.3%	67	0.9%	39	0.9%	84	3.7%	220	6.3%
D08LGP1	9	0.1%	73	2.8%	9	0.1%	130	3.7%	9	0.1%	5	0.1%	45	2.0%	130	3.7%
D08LPJN1	23	0.3%	8	0.3%	24	0.3%	10	0.3%	24	0.3%	14	0.3%	7	0.3%	10	0.3%
D08LPJN2	148	2.2%	51	1.9%	154	2.2%	65	1.9%	158	2.2%	92	2.2%	46	2.0%	65	1.9%
D08LPJN3	285	4.2%	99	3.7%	295	4.2%	125	3.6%	304	4.2%	177	4.2%	88	3.9%	125	3.6%
D08LPJN4	399	5.9%	138	5.2%	414	5.9%	175	5.0%	426	5.9%	248	5.9%	123	5.4%	175	5.0%
D08LPJS1	171	2.5%	59	2.2%	177	2.5%	75	2.1%	183	2.5%	106	2.5%	53	2.3%	75	2.1%
D08LPJS2	182	2.7%	63	2.4%	189	2.7%	80	2.3%	195	2.7%	114	2.7%	56	2.5%	80	2.3%
D08LPJS3	1,710	25.2%	591	22.4%	1,772	25.2%	749	21.4%	1,825	25.2%	1,065	25.2%	526	23.3%	749	21.4%
D08LPJW1	844	12.4%	292	11.1%	874	12.4%	369	10.5%	901	12.4%	525	12.4%	259	11.5%	369	10.5%
D08LPJW2	923	13.6%	319	12.1%	957	13.6%	404	11.5%	986	13.6%	575	13.6%	284	12.6%	404	11.5%
D08LPJW4	182	2.7%	63	2.4%	189	2.7%	80	2.3%	195	2.7%	114	2.7%	56	2.5%	80	2.3%
Total	**6,790**		**2,637**		**7,039**		**3,502**		**7,256**		**4,232**		**2,261**		**3,502**	

Modeled Tracks

D08LRC	6,701		2,500		6,948		3,272		7,165		4,179		2,170		3,272	
D08LSO	90		137		91		230		91		53		91		230	

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Departure Runway 08R

Flight Tracks Reported from AEDT

	2023 No Action		2023 Project		2024 No Action		2024 Project		2025 No Action		2025 Project		2-Year Alt 2023 Project		2-Year Alt 2024 Project	
Track	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**
D08RCJE1	130	1.8%	36	1.4%	134	1.8%	34	1.8%	139	1.8%	86	1.6%	38	1.3%	34	1.8%
D08RCJE2	2,173	30.0%	605	23.6%	2,250	30.1%	562	30.1%	2,333	30.2%	1,445	26.2%	636	21.6%	562	30.1%
D08RCJE3	389	5.4%	108	4.2%	402	5.4%	101	5.4%	417	5.4%	258	4.7%	114	3.9%	101	5.4%
D08RCJE5	201	2.8%	56	2.2%	209	2.8%	52	2.8%	216	2.8%	134	2.4%	59	2.0%	52	2.8%
D08RCJN1	173	2.4%	48	1.9%	179	2.4%	45	2.4%	185	2.4%	115	2.1%	51	1.7%	45	2.4%
D08RCJN2	201	2.8%	56	2.2%	209	2.8%	52	2.8%	216	2.8%	134	2.4%	59	2.0%	52	2.8%
D08RCJN3	331	4.6%	92	3.6%	343	4.6%	86	4.6%	355	4.6%	220	4.0%	97	3.3%	86	4.6%
D08RCJN4	144	2.0%	40	1.6%	149	2.0%	37	2.0%	155	2.0%	96	1.7%	42	1.4%	37	2.0%
D08RCJN5	130	1.8%	36	1.4%	134	1.8%	34	1.8%	139	1.8%	86	1.6%	38	1.3%	34	1.8%
D08RCJS1	173	2.4%	48	1.9%	179	2.4%	45	2.4%	185	2.4%	115	2.1%	51	1.7%	45	2.4%
D08RCJS2	158	2.2%	44	1.7%	164	2.2%	41	2.2%	170	2.2%	105	1.9%	46	1.6%	41	2.2%
D08RCJW1	273	3.8%	76	3.0%	283	3.8%	71	3.8%	294	3.8%	182	3.3%	80	2.7%	71	3.8%
D08RCJW2	993	13.7%	277	10.8%	1,028	13.8%	257	13.8%	1,066	13.8%	660	12.0%	291	9.9%	257	13.8%
D08RCJW3	403	5.6%	112	4.4%	417	5.6%	104	5.6%	433	5.6%	268	4.9%	118	4.0%	104	5.6%
D08RCPN1	36	0.5%	16	0.6%	37	0.5%	9	0.5%	38	0.5%	32	0.6%	20	0.7%	9	0.5%
D08RCPS1	18	0.2%	8	0.3%	18	0.2%	5	0.2%	19	0.2%	16	0.3%	10	0.3%	5	0.2%
D08RCPS2	42	0.6%	19	0.7%	43	0.6%	11	0.6%	44	0.6%	37	0.7%	23	0.8%	11	0.6%
D08RCPW1	59	0.8%	27	1.0%	61	0.8%	15	0.8%	63	0.8%	53	1.0%	33	1.1%	15	0.8%
D08RCPW2	71	1.0%	32	1.3%	73	1.0%	18	1.0%	75	1.0%	63	1.2%	39	1.3%	18	1.0%
D08RCPW3	36	0.5%	16	0.6%	37	0.5%	9	0.5%	38	0.5%	32	0.6%	20	0.7%	9	0.5%
D08RCPW4	47	0.7%	21	0.8%	49	0.7%	12	0.7%	50	0.7%	42	0.8%	26	0.9%	12	0.7%
D08RCPW5	12	0.2%	5	0.2%	12	0.2%	3	0.2%	13	0.2%	11	0.2%	7	0.2%	3	0.2%
D08RGJE1	162	2.2%	75	2.9%	162	2.2%	40	2.2%	161	2.1%	138	2.5%	92	3.1%	40	2.2%
D08RGJN1	259	3.6%	120	4.7%	259	3.5%	65	3.5%	258	3.3%	220	4.0%	148	5.0%	65	3.5%
D08RGPS1	131	1.8%	89	3.5%	131	1.8%	33	1.8%	130	1.7%	147	2.7%	117	4.0%	33	1.8%
D08RPJE1	184	2.5%	184	7.2%	190	2.5%	48	2.5%	196	2.5%	300	5.4%	253	8.6%	48	2.5%
D08RPJN1	27	0.4%	27	1.1%	28	0.4%	7	0.4%	29	0.4%	44	0.8%	37	1.3%	7	0.4%
D08RPJN2	55	0.8%	55	2.1%	56	0.8%	14	0.8%	58	0.8%	89	1.6%	75	2.6%	14	0.8%
D08RPJW1	102	1.4%	102	4.0%	106	1.4%	26	1.4%	109	1.4%	166	3.0%	141	4.8%	26	1.4%
D08RPJW2	130	1.8%	130	5.1%	134	1.8%	33	1.8%	138	1.8%	211	3.8%	178	6.1%	33	1.8%
Total	**7,242**		**2,562**		**7,476**		**1,869**		**7,723**		**5,504**		**2,938**		**1,869**	

Modeled Tracks

D08RRC	7,242		2,562		7,476		1,869		7,723		5,504		2,938		1,869	

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Departure Runway 26L

Flight Tracks Reported from AEDT

	2023 No Action		2023 Project		2024 No Action		2024 Project		2025 No Action		2025 Project		2-Year Alt 2023 Project		2-Year Alt 2024 Project	
Track	Ops	%	Ops	%	Ops	%	Ops	%	Ops	%	Ops	%	Ops	%	Ops	%
D26LCJE1	353	2.2%	447	2.1%	367	2.2%	92	2.2%	382	2.2%	706	2.1%	626	2.1%	92	2.2%
D26LCJE2	2,547	15.6%	3,222	14.9%	2,649	15.8%	662	15.8%	2,755	16.0%	5,091	15.3%	4,514	14.9%	662	15.8%
D26LCJE3	75	0.5%	94	0.4%	78	0.5%	19	0.5%	81	0.5%	149	0.4%	132	0.4%	19	0.5%
D26LCJE4	65	0.4%	82	0.4%	67	0.4%	17	0.4%	70	0.4%	129	0.4%	115	0.4%	17	0.4%
D26LCJN1	174	1.1%	220	1.0%	181	1.1%	45	1.1%	188	1.1%	348	1.0%	309	1.0%	45	1.1%
D26LCJN2	35	0.2%	44	0.2%	36	0.2%	9	0.2%	38	0.2%	70	0.2%	62	0.2%	9	0.2%
D26LCJN3	179	1.1%	227	1.1%	186	1.1%	47	1.1%	194	1.1%	358	1.1%	317	1.0%	47	1.1%
D26LCJN4	169	1.0%	214	1.0%	176	1.1%	44	1.1%	183	1.1%	338	1.0%	300	1.0%	44	1.1%
D26LCJN5	119	0.7%	151	0.7%	124	0.7%	31	0.7%	129	0.8%	239	0.7%	212	0.7%	31	0.7%
D26LCJN6	85	0.5%	107	0.5%	88	0.5%	22	0.5%	91	0.5%	169	0.5%	150	0.5%	22	0.5%
D26LCJS1	40	0.2%	50	0.2%	41	0.2%	10	0.2%	43	0.3%	80	0.2%	71	0.2%	10	0.2%
D26LCJS2	109	0.7%	138	0.6%	114	0.7%	28	0.7%	118	0.7%	219	0.7%	194	0.6%	28	0.7%
D26LCJS3	109	0.7%	138	0.6%	114	0.7%	28	0.7%	118	0.7%	219	0.7%	194	0.6%	28	0.7%
D26LCJS4	60	0.4%	76	0.4%	62	0.4%	16	0.4%	65	0.4%	119	0.4%	106	0.3%	16	0.4%
D26LCJW1	294	1.8%	371	1.7%	305	1.8%	76	1.8%	317	1.8%	587	1.8%	520	1.7%	76	1.8%
D26LCJW2	189	1.2%	239	1.1%	197	1.2%	49	1.2%	204	1.2%	378	1.1%	335	1.1%	49	1.2%
D26LCJW3	557	3.4%	705	3.3%	580	3.5%	145	3.5%	603	3.5%	1,114	3.3%	987	3.3%	145	3.5%
D26LCJW4	164	1.0%	208	1.0%	171	1.0%	43	1.0%	178	1.0%	328	1.0%	291	1.0%	43	1.0%
D26LCPE2	24	0.1%	17	0.1%	25	0.1%	6	0.1%	25	0.1%	30	0.1%	23	0.1%	6	0.1%
D26LCPE4	65	0.4%	48	0.2%	67	0.4%	17	0.4%	70	0.4%	83	0.2%	63	0.2%	17	0.4%
D26LCPN1	147	0.9%	108	0.5%	153	0.9%	38	0.9%	159	0.9%	189	0.6%	144	0.5%	38	0.9%
D26LCPN2	271	1.7%	199	0.9%	282	1.7%	70	1.7%	293	1.7%	348	1.0%	265	0.9%	70	1.7%
D26LCPN3	177	1.1%	130	0.6%	184	1.1%	46	1.1%	191	1.1%	227	0.7%	173	0.6%	46	1.1%
D26LCPN4	153	0.9%	112	0.5%	159	1.0%	40	1.0%	165	1.0%	196	0.6%	150	0.5%	40	1.0%
D26LCPN5	77	0.5%	56	0.3%	80	0.5%	20	0.5%	83	0.5%	98	0.3%	75	0.2%	20	0.5%
D26LCPN6	100	0.6%	74	0.3%	104	0.6%	26	0.6%	108	0.6%	128	0.4%	98	0.3%	26	0.6%
D26LCPN7	118	0.7%	87	0.4%	123	0.7%	31	0.7%	127	0.7%	151	0.5%	115	0.4%	31	0.7%
D26LCPS1	242	1.5%	177	0.8%	251	1.5%	63	1.5%	261	1.5%	310	0.9%	236	0.8%	63	1.5%
D26LCPS2	118	0.7%	87	0.4%	123	0.7%	31	0.7%	127	0.7%	151	0.5%	115	0.4%	31	0.7%
D26LCPS4	218	1.3%	160	0.7%	227	1.4%	57	1.4%	235	1.4%	280	0.8%	213	0.7%	57	1.4%
D26LCPW1	6	0.0%	4	0.0%	6	0.0%	2	0.0%	6	0.0%	8	0.0%	6	0.0%	2	0.0%
D26LCPW2	584	3.6%	428	2.0%	607	3.6%	152	3.6%	630	3.7%	748	2.2%	569	1.9%	152	3.6%
D26LCPW3	324	2.0%	238	1.1%	337	2.0%	84	2.0%	350	2.0%	416	1.2%	316	1.0%	84	2.0%
D26LCPW4	195	1.2%	143	0.7%	202	1.2%	51	1.2%	210	1.2%	249	0.7%	190	0.6%	51	1.2%
D26LCPW5	171	1.0%	125	0.6%	178	1.1%	44	1.1%	184	1.1%	219	0.7%	167	0.6%	44	1.1%
D26LGJN1	216	1.3%	155	0.7%	217	1.3%	54	1.3%	217	1.3%	254	0.8%	206	0.7%	54	1.3%
D26LGJN2	180	1.1%	129	0.6%	181	1.1%	45	1.1%	181	1.1%	212	0.6%	171	0.6%	45	1.1%
D26LGJN3	72	0.4%	52	0.2%	72	0.4%	18	0.4%	72	0.4%	85	0.3%	69	0.2%	18	0.4%
D26LGJN4	126	0.8%	90	0.4%	126	0.8%	32	0.8%	127	0.7%	148	0.4%	120	0.4%	32	0.8%
D26LGJS1	323	2.0%	232	1.1%	325	1.9%	81	1.9%	326	1.9%	381	1.1%	308	1.0%	81	1.9%
D26LGJS2	144	0.9%	103	0.5%	144	0.9%	36	0.9%	145	0.8%	169	0.5%	137	0.5%	36	0.9%
D26LGJS3	916	5.6%	659	3.1%	921	5.5%	230	5.5%	923	5.4%	1,079	3.2%	873	2.9%	230	5.5%
D26LGJS4	323	2.0%	232	1.1%	325	1.9%	81	1.9%	326	1.9%	381	1.1%	308	1.0%	81	1.9%
D26LGJW1	377	2.3%	271	1.3%	379	2.3%	95	2.3%	380	2.2%	444	1.3%	360	1.2%	95	2.3%
D26LGJW2	664	4.1%	478	2.2%	668	4.0%	167	4.0%	670	3.9%	783	2.3%	634	2.1%	167	4.0%
D26LGPE1	208	1.3%	152	0.7%	209	1.2%	52	1.2%	209	1.2%	248	0.7%	202	0.7%	52	1.2%
D26LGPN1	208	1.3%	152	0.7%	209	1.2%	52	1.2%	209	1.2%	248	0.7%	202	0.7%	52	1.2%
D26LGPN2	208	1.3%	152	0.7%	209	1.2%	52	1.2%	209	1.2%	248	0.7%	202	0.7%	52	1.2%
D26LGPS1	623	3.8%	456	2.1%	626	3.7%	157	3.7%	627	3.6%	744	2.2%	607	2.0%	157	3.7%
D26LGPS2	161	1.0%	118	0.5%	162	1.0%	41	1.0%	163	0.9%	193	0.6%	157	0.5%	41	1.0%
D26LGPW1	185	1.1%	135	0.6%	186	1.1%	46	1.1%	186	1.1%	221	0.7%	180	0.6%	46	1.1%
D26LGPW2	46	0.3%	34	0.2%	46	0.3%	12	0.3%	46	0.3%	55	0.2%	45	0.1%	12	0.3%
D26LGPW4	115	0.7%	85	0.4%	116	0.7%	29	0.7%	116	0.7%	138	0.4%	112	0.4%	29	0.7%
D26LGPW5	254	1.6%	186	0.9%	255	1.5%	64	1.5%	255	1.5%	303	0.9%	247	0.8%	64	1.5%
D26LGPW6	115	0.7%	85	0.4%	116	0.7%	29	0.7%	116	0.7%	138	0.4%	112	0.4%	29	0.7%
D26LPJE1	1,058	6.5%	3,650	16.9%	1,103	6.6%	276	6.6%	1,140	6.6%	5,217	15.7%	5,343	17.6%	276	6.6%
D26LPJE2	57	0.3%	196	0.9%	59	0.4%	15	0.4%	61	0.4%	279	0.8%	286	0.9%	15	0.4%
D26LPJN1	104	0.6%	359	1.7%	108	0.6%	27	0.6%	112	0.7%	512	1.5%	525	1.7%	27	0.6%
D26LPJN2	161	1.0%	554	2.6%	167	1.0%	42	1.0%	173	1.0%	792	2.4%	811	2.7%	42	1.0%
D26LPJN4	57	0.3%	196	0.9%	59	0.4%	15	0.4%	61	0.4%	279	0.8%	286	0.9%	15	0.4%
D26LPJS2	85	0.5%	293	1.4%	89	0.5%	22	0.5%	92	0.5%	419	1.3%	429	1.4%	22	0.5%
D26LPJW1	416	2.6%	1,434	6.7%	433	2.6%	108	2.6%	448	2.6%	2,049	6.1%	2,099	6.9%	108	2.6%
D26LPJW2	576	3.5%	1,988	9.2%	601	3.6%	150	3.6%	621	3.6%	2,841	8.5%	2,910	9.6%	150	3.6%
Total	**16,287**		**21,553**		**16,755**		**4,189**		**17,191**		**33,331**		**30,293**		**4,189**	

Departure Runway 26L
Flight Tracks Reported from AEDT

	2023 No Action		2023 Project		2024 No Action		2024 Project		2025 No Action		2025 Project		2-Year Alt 2023 Project		2-Year Alt 2024 Project	
Track	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**
Modeled Tracks																
DP26LLC	6,228		9,590		6,444		1,611		6,651		14,649		13,606		1,611	
DP26LRT	600		440		603		151		604		717		584		151	
DP26LS0	9,459		11,523		9,708		2,427		9,936		17,965		16,102		2,427	

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Departure Runway 26R

Flight Tracks Reported from AEDT

	2023 No Action		2023 Project		2024 No Action		2024 Project		2025 No Action		2025 Project		2-Year Alt 2023 Project		2-Year Alt 2024 Project	
Track	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**	**Ops**	**%**
D26RCJE1	377	1.5%	774	2.8%	390	1.6%	1,366	2.9%	408	1.6%	238	1.6%	502	2.6%	1,366	2.9%
D26RCJE2	1,744	7.2%	3,579	12.8%	1,806	7.2%	6,319	13.5%	1,887	7.2%	1,101	7.2%	2,322	12.1%	6,319	13.5%
D26RCJE3	330	1.4%	677	2.4%	342	1.4%	1,195	2.6%	357	1.4%	208	1.4%	439	2.3%	1,195	2.6%
D26RCJN1	393	1.6%	806	2.9%	407	1.6%	1,423	3.0%	425	1.6%	248	1.6%	523	2.7%	1,423	3.0%
D26RCJN2	63	0.3%	129	0.5%	65	0.3%	228	0.5%	68	0.3%	40	0.3%	84	0.4%	228	0.5%
D26RCJN3	385	1.6%	790	2.8%	399	1.6%	1,395	3.0%	417	1.6%	243	1.6%	512	2.7%	1,395	3.0%
D26RCJN4	267	1.1%	548	2.0%	277	1.1%	968	2.1%	289	1.1%	169	1.1%	356	1.9%	968	2.1%
D26RCJW1	102	0.4%	210	0.7%	106	0.4%	370	0.8%	111	0.4%	64	0.4%	136	0.7%	370	0.8%
D26RCJW2	86	0.4%	177	0.6%	89	0.4%	313	0.7%	94	0.4%	55	0.4%	115	0.6%	313	0.7%
D26RCPE1	53	0.2%	96	0.3%	54	0.2%	169	0.4%	57	0.2%	33	0.2%	63	0.3%	169	0.4%
D26RCPN1	59	0.2%	108	0.4%	61	0.2%	190	0.4%	64	0.2%	37	0.2%	71	0.4%	190	0.4%
D26RCPN2	105	0.4%	192	0.7%	109	0.4%	337	0.7%	114	0.4%	66	0.4%	126	0.7%	337	0.7%
D26RCPN3	105	0.4%	192	0.7%	109	0.4%	337	0.7%	114	0.4%	66	0.4%	126	0.7%	337	0.7%
D26RCPN4	138	0.6%	253	0.9%	142	0.6%	443	0.9%	149	0.6%	87	0.6%	165	0.9%	443	0.9%
D26RCPN5	66	0.3%	120	0.4%	68	0.3%	211	0.5%	71	0.3%	41	0.3%	79	0.4%	211	0.5%
D26RCPN6	53	0.2%	96	0.3%	54	0.2%	169	0.4%	57	0.2%	33	0.2%	63	0.3%	169	0.4%
D26RCPN7	79	0.3%	144	0.5%	81	0.3%	253	0.5%	85	0.3%	50	0.3%	94	0.5%	253	0.5%
D26RCPS1	53	0.2%	96	0.3%	54	0.2%	169	0.4%	57	0.2%	33	0.2%	63	0.3%	169	0.4%
D26RCPS2	53	0.2%	96	0.3%	54	0.2%	169	0.4%	57	0.2%	33	0.2%	63	0.3%	169	0.4%
D26RCPW1	197	0.8%	361	1.3%	203	0.8%	633	1.4%	213	0.8%	124	0.8%	236	1.2%	633	1.4%
D26RCPW2	13	0.1%	24	0.1%	14	0.1%	42	0.1%	14	0.1%	8	0.1%	16	0.1%	42	0.1%
D26RCPW3	171	0.7%	313	1.1%	176	0.7%	548	1.2%	185	0.7%	108	0.7%	205	1.1%	548	1.2%
D26RGJE1	381	1.6%	748	2.7%	380	1.5%	1,274	2.7%	384	1.5%	224	1.5%	487	2.5%	1,274	2.7%
D26RGJE3	19	0.1%	37	0.1%	19	0.1%	64	0.1%	19	0.1%	11	0.1%	24	0.1%	64	0.1%
D26RGJN1	133	0.5%	262	0.9%	133	0.5%	446	1.0%	135	0.5%	78	0.5%	170	0.9%	446	1.0%
D26RGJN2	133	0.5%	262	0.9%	133	0.5%	446	1.0%	135	0.5%	78	0.5%	170	0.9%	446	1.0%
D26RGJW1	171	0.7%	337	1.2%	171	0.7%	573	1.2%	173	0.7%	101	0.7%	219	1.1%	573	1.2%
D26RGJW3	305	1.2%	598	2.1%	304	1.2%	1,020	2.2%	308	1.2%	179	1.2%	390	2.0%	1,020	2.2%
D26RGPE2	433	1.8%	673	2.4%	433	1.7%	1,129	2.4%	437	1.7%	255	1.7%	447	2.3%	1,129	2.4%
D26RGPN1	87	0.4%	135	0.5%	87	0.3%	226	0.5%	87	0.3%	51	0.3%	89	0.5%	226	0.5%
D26RGPN2	115	0.5%	180	0.6%	115	0.5%	301	0.6%	117	0.4%	68	0.4%	119	0.6%	301	0.6%
D26RGPW1	289	1.2%	449	1.6%	289	1.1%	753	1.6%	291	1.1%	170	1.1%	298	1.6%	753	1.6%
D26RGPW2	58	0.2%	90	0.3%	58	0.2%	151	0.3%	58	0.2%	34	0.2%	60	0.3%	151	0.3%
D26RPJE1	66	0.3%	55	0.2%	69	0.3%	89	0.2%	71	0.3%	42	0.3%	40	0.2%	89	0.2%
D26RPJE2	84	0.3%	70	0.3%	87	0.3%	113	0.2%	91	0.3%	53	0.3%	50	0.3%	113	0.2%
D26RPJE3	109	0.4%	90	0.3%	112	0.4%	145	0.3%	117	0.4%	68	0.4%	65	0.3%	145	0.3%
D26RPJE4	2,629	10.8%	2,179	7.8%	2,721	10.8%	3,518	7.5%	2,834	10.8%	1,653	10.8%	1,570	8.2%	3,518	7.5%
D26RPJE5	2,936	12.0%	2,434	8.7%	3,039	12.1%	3,929	8.4%	3,165	12.1%	1,846	12.1%	1,754	9.1%	3,929	8.4%
D26RPJN1	187	0.8%	155	0.6%	193	0.8%	250	0.5%	201	0.8%	118	0.8%	112	0.6%	250	0.5%
D26RPJN2	591	2.4%	490	1.8%	612	2.4%	791	1.7%	637	2.4%	372	2.4%	353	1.8%	791	1.7%
D26RPJN3	778	3.2%	645	2.3%	805	3.2%	1,041	2.2%	838	3.2%	489	3.2%	465	2.4%	1,041	2.2%
D26RPJN4	1,290	5.3%	1,069	3.8%	1,335	5.3%	1,727	3.7%	1,391	5.3%	811	5.3%	771	4.0%	1,727	3.7%
D26RPJN5	151	0.6%	125	0.4%	156	0.6%	202	0.4%	162	0.6%	95	0.6%	90	0.5%	202	0.4%
D26RPJS2	253	1.0%	210	0.8%	262	1.0%	339	0.7%	273	1.0%	159	1.0%	151	0.8%	339	0.7%
D26RPJW1	4,432	18.2%	3,673	13.1%	4,587	18.2%	5,930	12.7%	4,777	18.3%	2,787	18.3%	2,647	13.8%	5,930	12.7%
D26RPJW2	3,582	14.7%	2,968	10.6%	3,707	14.7%	4,793	10.2%	3,861	14.8%	2,252	14.8%	2,139	11.1%	4,793	10.2%
D26RPJW3	271	1.1%	225	0.8%	281	1.1%	363	0.8%	292	1.1%	171	1.1%	162	0.8%	363	0.8%
D26RPJW4	6	0.0%	5	0.0%	6	0.0%	8	0.0%	6	0.0%	4	0.0%	4	0.0%	8	0.0%
Total	**24,379**		**27,946**		**25,155**		**46,866**		**26,153**		**15,256**		**19,205**		**46,866**	

Modeled Tracks

DP26RLC	9,590		11,928		9,895		20,179		10,288		6,001		8,116		20,179	
DP26RRT	516		833		519		1,412		529		308		551		1,412	
DP26RS0	14,272		15,184		14,741		25,274		15,337		8,947		10,538		25,274	

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Approach and Departure Calculations

Approach

Approach Angle (degrees)	3.0		
Modeled ground to mixing height	feet	meters	
Mix height	2,402	732	
Distance	45,833	13,970	
Modeled from distance	feet	meters	% of mix height
Distance	16,404	5000	
Height	860	262	35.8%

Departure

Departure Angle (degrees)	7.4	
Modeled ground to mixing height	feet	meters
Mix height	2,402	732
Distance	18,494	5,637

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Operations - Fractions of total by hour, day, and month

Hour	Arrival	Departure
1:00	0.1691	0.4706
2:00	0.0399	0.2179
3:00	0.0785	0.3620
4:00	0.1778	0.1805
5:00	0.1773	0.1415
6:00	0.1752	0.3911
7:00	0.1532	1.0000
8:00	0.3122	0.8435
9:00	0.4739	0.5175
10:00	0.6002	0.4351
11:00	0.4771	0.5312
12:00	0.4556	0.4875
13:00	0.4074	0.4650
14:00	0.3704	0.4245
15:00	0.4088	0.3679
16:00	0.5268	0.4186
17:00	0.5882	0.3977
18:00	0.7270	0.3279
19:00	1.0000	0.3432
20:00	0.5324	0.5017
21:00	0.5311	0.2763
22:00	0.6768	0.2834
23:00	0.5885	0.1715
24:00:00	0.3402	0.1866

Day	
Sunday	0.5950
Monday	0.7726
Tuesday	1.0000
Wednesday	0.9938
Thursday	0.9844
Friday	0.8723
Saturday	0.6262

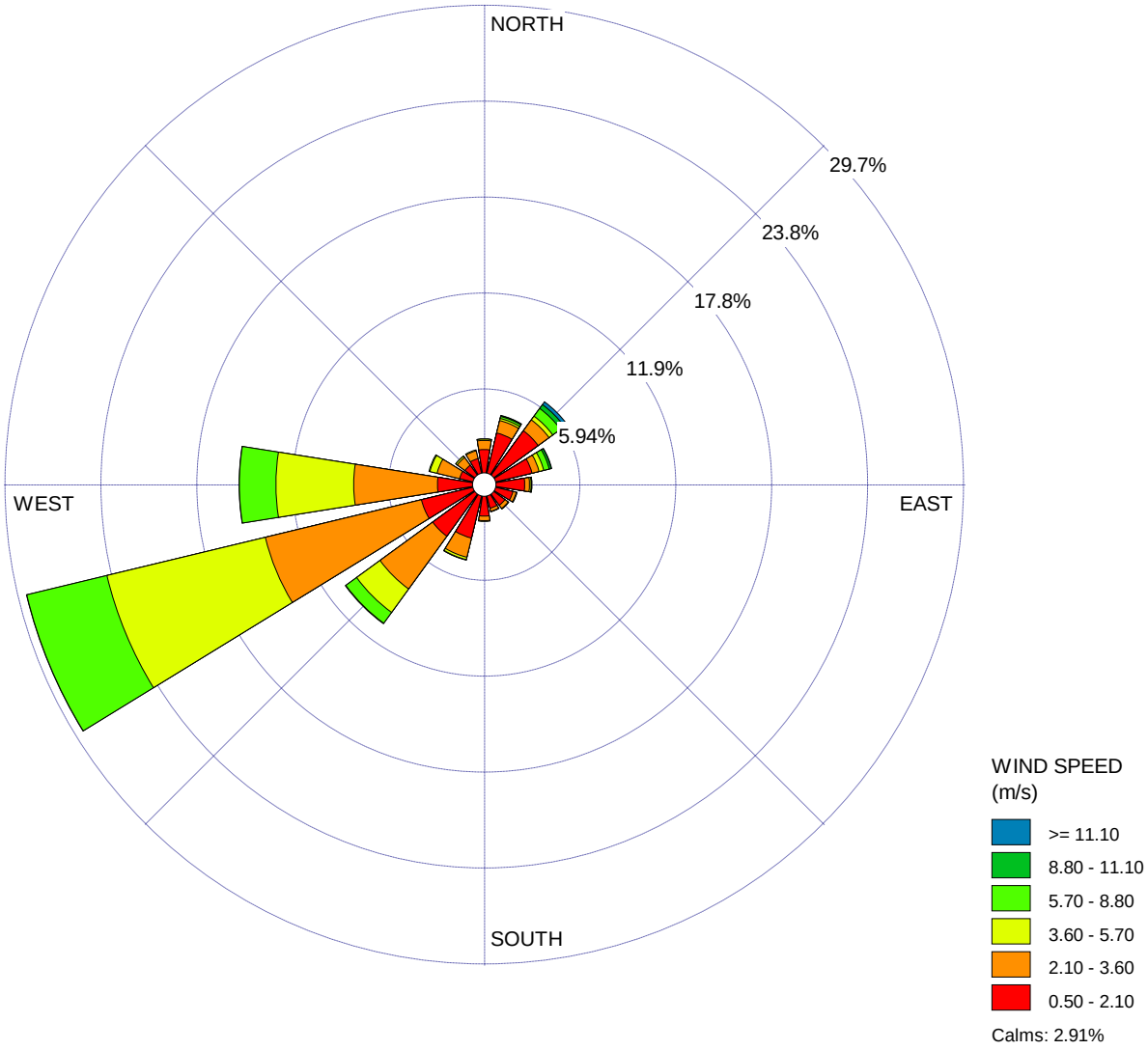
Month	
January	0.9042
February	0.8359
March	0.8852
April	0.7950
May	0.8355
June	0.8746
July	0.8995
August	0.9417
September	0.8806
October	0.9436
November	0.9065
December	1.0000

WIND ROSE PLOT:

Station #3102

DISPLAY:

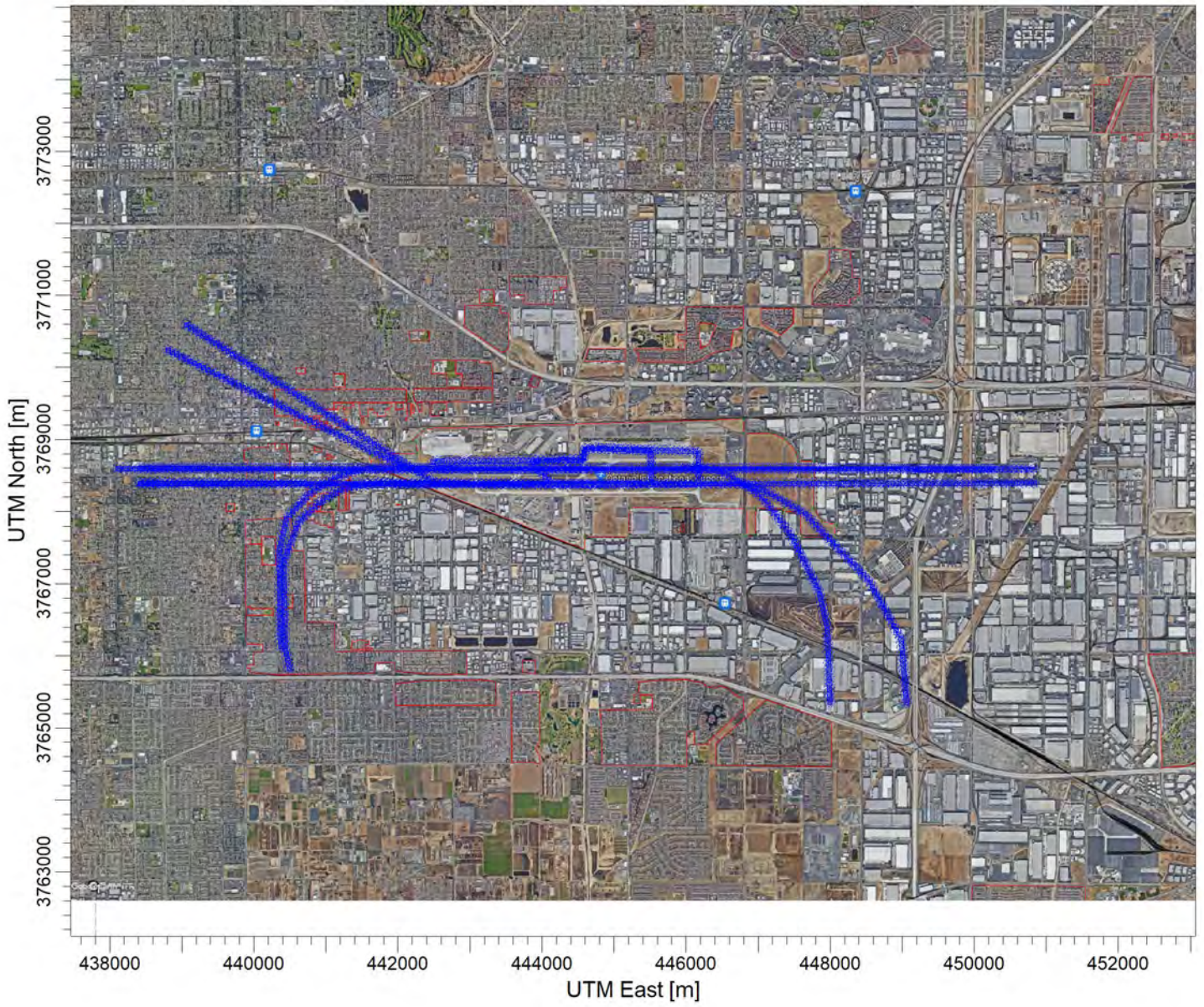
Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD: **Start Date: 1/1/2012 - 00:00** **End Date: 12/31/2016 - 23:59**	COMPANY NAME: **South Coast Air Quality Management District**	
		MODELER: **Melissa Sheffer**	
	CALM WINDS: **2.91%**	TOTAL COUNT: **43599 hrs.**	
	AVG. WIND SPEED: **2.88 m/s**	DATE: **5/23/2017**	PROJECT NO.:

PROJECT TITLE:

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements
Aircraft Movement Volume Line Sources



COMMENTS:

SOURCES:

30

RECEPTORS:

1711

COMPANY NAME:

HELIX Environmenal Planning

DATE:

4/8/2022

SCALE: 1:87,959

0 2 km

PROJECT NO.:

Control Pathway

Dispersion Options

Titles

C:\Users\martinr\Desktop\ONT HRA\ONT Disp\ONT Disp.isc

Dispersion Options

- [■] Regulatory Default
- [ ] Non-Default Options

Dispersion Coefficient

Urban

Population:
Name (Optional):
Roughness Length:

Output Type

- [■] Concentration
- [ ] Total Deposition (Dry & Wet)
- [ ] Dry Deposition
- [ ] Wet Deposition

Plume Depletion

- [ ] Dry Removal
- [ ] Wet Removal

Output Warnings

- [ ] No Output Warnings
- [ ] Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type

OTHER - MULTIPLE

Averaging Time Options

Hours

1	2	3	4	6	8	12	24
[■]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

- [ ] Month
- [■] Period
- [ ] Annual

Exponential Decay

Half-life of 4 hrs will be used

Terrain Height Options

- [ ] Flat
- [■] Elevated

SO: Meters
RE: Meters
TG: Meters

Flagpole Receptors

- [■] Yes
- [ ] No

Default Height = 1.20 m

Control Pathway

Optional Files

Re-Start File	Init File	Multi-Year Analyses	Event Input File	Error Listing File
☐	☐	☐	☐	■

Detailed Error Listing File

Filename: ONT Disp.err

Source Pathway - Source Inputs

Volume Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dim. [m]	Initial Vertical Dim. [m]
VOLUME	BATCH	443864.96 Batch Plant	3767802.23	275.10	3.00	1.00000	50.00	Surface-Based	11.63	2.33

Source Pathway - Source Inputs

Polygon Area Sources

Source Type: AREA POLY

Source: 2023EV (2023 Construction Electrical Vault)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
275.22	2.50	0.00024		6	444660.00	3768032.37
		0.00024			444660.00	3768014.08
		0.00024			444708.40	3768014.08
		0.00024			444710.55	3768204.47
		0.00024			444690.11	3768203.39
		0.00024			444691.19	3768030.21

Source Type: AREA POLY

Source: 2023PV (2023 Paving/Demo)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
286.17	2.50	2.02E-6		4	443069.84	3768545.13
		2.02E-6			443067.78	3768273.12
		2.02E-6			444862.60	3768264.88
		2.02E-6			444860.54	3768545.13

Source Type: AREA POLY

Source: 2024RR (2024 Runway Rehab)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
284.69	2.50	4.11E-6		4	443061.60	3768423.55
		4.11E-6			443059.54	3768351.43
		4.11E-6			446298.87	3768341.12
		4.11E-6			446296.81	3768419.43

Source Pathway - Source Inputs

Source Type: AREA POLY
Source: 2025PD (2025 Paving/Demo)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
287.75	2.50	5.30E-6		4	442513.47	3768740.89
		5.30E-6			444670.96	3768755.31
		5.30E-6			444670.96	3768668.76
		5.30E-6			442517.59	3768652.28

Source Pathway - Source Inputs

Line Volume Sources

Source Type: LINE VOLUME
Source: A08LGR (Approach 08L Ground Roll)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		443095.92	3768592.19	287.09	1.50
			444586.86	3768591.85	282.96	1.50

Source Type: LINE VOLUME
Source: A08LSI (Approach 08L Straight In)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		443092.54	3768593.19	287.09	1.50
			438092.32	3768593.64	549.10	1.50

Source Type: LINE VOLUME
Source: A08RGR (Approach 08R Ground Roll)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		443407.01	3768380.11	283.39	1.50
			444898.02	3768378.61	280.61	1.50

Source Type: LINE VOLUME
Source: A08RSI (Approach 08R Straight In)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		443406.20	3768380.20	283.39	1.50
			438405.95	3768391.02	545.40	1.50

Source Pathway - Source Inputs

Source Type: LINE VOLUME
Source: A08TX (Approach 08 Taxi)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		445515.81	3768426.22	280.26	1.50
			445511.35	3768842.83	286.09	1.50
			444791.22	3768874.07	286.26	1.50

Source Type: LINE VOLUME
Source: A26LGR (Approach 26L Ground Roll)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		445856.58	3768379.36	281.06	1.50
			444365.51	3768379.25	281.13	1.50

Source Type: LINE VOLUME
Source: A26LSI (Approach 26L Straight In)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		445857.23	3768379.61	281.06	1.50
			450856.99	3768392.85	543.10	1.50

Source Type: LINE VOLUME
Source: A26RGR (Aproach 26R Ground Roll)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		445851.99	3768592.18	283.26	1.50
			444361.21	3768592.00	283.55	1.50

Source Pathway - Source Inputs

Source Type: LINE VOLUME
Source: A26RSI (Approach 26R Straight In)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		445852.18	3768592.24	283.26	1.50
			450852.05	3768586.99	545.30	1.50

Source Type: LINE VOLUME
Source: A26TX (Approach 26 Taxi)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		444117.47	3768420.53	281.71	1.50
			443851.05	3768665.97	285.26	1.50
			443931.05	3768710.24	285.72	1.50
			444575.72	3768718.01	284.06	1.50
			444590.48	3768867.91	285.91	1.50
			444771.46	3768874.13	286.26	1.50

Source Type: LINE VOLUME
Source: D08LGR (Departure 08L Ground Roll)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		442537.00	3768591.00	287.03	1.50
			444646.00	3768591.00	282.89	1.50

Source Pathway - Source Inputs

Source Type: LINE VOLUME
Source: D08LRC (Departure 08L Right Crosswind)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		444652.68	3768591.17	282.84	1.50
			446308.32	3768595.49	497.00	1.50
			446590.39	3768508.00	535.20	1.50
			447048.83	3768203.54	606.40	1.50
			447461.79	3767671.60	693.50	1.50
			447850.24	3766891.19	806.20	1.50
			447961.46	3766374.03	874.70	1.50
			447998.99	3765288.82	1015.10	1.50

Source Type: LINE VOLUME
Source: D08LSO (Departure 08L Straight Out)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		444652.44	3768591.55	282.84	1.50
			450313.23	3768588.25	1015.00	1.50

Source Type: LINE VOLUME
Source: D08RGR (Departure 08R Ground Roll)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		443135.00	3768378.00	284.76	1.50
			445244.00	3768378.00	280.48	1.50

Source Pathway - Source Inputs

Source Type: LINE VOLUME
Source: D08RRC (Departure 08R Right Crosswind)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		445250.95	3768378.07	280.36	1.50
			446801.00	3768382.70	480.90	1.50
			447108.49	3768281.70	522.70	1.50
			447661.57	3767961.92	605.30	1.50
			448536.94	3767049.15	768.90	1.50
			448986.04	3766229.21	889.90	1.50
			449065.03	3765282.98	1012.70	1.50

Source Type: LINE VOLUME
Source: D08TX (Departion 08 Taxi)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		444774.67	3768874.24	286.26	1.50
			444589.36	3768863.95	286.00	1.50
			444579.06	3768715.69	284.10	1.50
			442487.51	3768697.42	288.01	1.50
			442478.58	3768618.57	287.32	1.50

Source Type: LINE VOLUME
Source: D26LGR (Departure 26L Ground Roll)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		446130.00	3768379.00	281.68	1.50
			444021.00	3768379.00	281.20	1.50

Source Pathway - Source Inputs

Source Type: LINE VOLUME
Source: D26LLC (Departure 26L Left Crosswind)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.32	1.00000		444019.29	3768378.48	281.20	1.50
			441687.40	3768389.75	582.80	1.50
			441219.24	3768309.28	644.30	1.50
			440912.00	3768126.40	690.50	1.50
			440615.74	3767852.09	742.70	1.50
			440410.92	3767303.46	818.50	1.50
			440432.37	3766124.81	971.00	1.50
			440498.94	3765802.93	1013.50	1.50

Source Type: LINE VOLUME
Source: D26LRT (Departure 26L Right Turn)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		444019.62	3768379.07	281.20	1.50
			442532.12	3768389.04	473.60	1.50
			439008.67	3770627.15	1013.50	1.50

Source Type: LINE VOLUME
Source: D26LSO (Departure 26L Straight Out)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		444018.57	3768379.05	281.21	1.50
			438357.91	3768382.33	1013.40	1.50

Source Type: LINE VOLUME
Source: D26RGR (Deaprture 26R Ground Roll)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		446130.00	3768592.00	283.51	1.50
			444021.00	3768592.00	284.33	1.50

Source Pathway - Source Inputs

Source Type: LINE VOLUME
Source: D26RLC (Departure 26R Left Crosswind)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		444019.51	3768591.28	284.33	0.00
			441522.16	3768596.35	607.40	1.50
			441128.32	3768473.74	660.70	1.50
			440786.50	3768261.95	712.70	1.50
			440452.11	3767908.99	775.60	1.50
			440355.51	3767481.71	832.30	1.50
			440369.41	3766226.07	994.70	1.50
			440393.32	3766059.66	1016.40	1.50

Source Type: LINE VOLUME
Source: D26RRT (Departure 26R Right Turn)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		444019.65	3768591.69	284.33	1.50
			442116.33	3768596.37	530.50	1.50
			438751.05	3770266.31	1016.40	1.50

Source Type: LINE VOLUME
Source: D26RSO (Departure 26R Striagnt Out)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		444019.18	3768592.22	284.33	1.50
			438358.29	3768595.16	1016.50	1.50

Source Pathway - Source Inputs

Source Type: LINE VOLUME
Source: D26TX (Depareture 26 R Taxi)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
68.64	1.00000		444788.66	3768870.16	286.26	1.50
			446170.57	3768834.04	286.02	1.50
			446172.12	3768406.59	281.79	1.50

Source Pathway - Source Inputs

Volume Sources Generated from Line Sources

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08LGR	L0044907	442571.32	3768591.00	286.89	1.50	0.03226	68.64		31.93	6.66
	L0044908	442639.96	3768591.00	286.89	1.50	0.03226	68.64		31.93	6.66
	L0044909	442708.60	3768591.00	287.01	1.50	0.03226	68.64		31.93	6.66
	L0044910	442777.24	3768591.00	287.14	1.50	0.03226	68.64		31.93	6.66
	L0044911	442845.88	3768591.00	287.24	1.50	0.03226	68.64		31.93	6.66
	L0044912	442914.52	3768591.00	287.29	1.50	0.03226	68.64		31.93	6.66
	L0044913	442983.16	3768591.00	287.26	1.50	0.03226	68.64		31.93	6.66
	L0044914	443051.80	3768591.00	287.13	1.50	0.03226	68.64		31.93	6.66
	L0044915	443120.44	3768591.00	286.98	1.50	0.03226	68.64		31.93	6.66
	L0044916	443189.08	3768591.00	286.76	1.50	0.03226	68.64		31.93	6.66
	L0044917	443257.72	3768591.00	286.51	1.50	0.03226	68.64		31.93	6.66
	L0044918	443326.36	3768591.00	286.36	1.50	0.03226	68.64		31.93	6.66
	L0044919	443395.00	3768591.00	286.11	1.50	0.03226	68.64		31.93	6.66
	L0044920	443463.64	3768591.00	285.91	1.50	0.03226	68.64		31.93	6.66
	L0044921	443532.28	3768591.00	285.71	1.50	0.03226	68.64		31.93	6.66
	L0044922	443600.92	3768591.00	285.49	1.50	0.03226	68.64		31.93	6.66
	L0044923	443669.56	3768591.00	285.30	1.50	0.03226	68.64		31.93	6.66
	L0044924	443738.20	3768591.00	285.04	1.50	0.03226	68.64		31.93	6.66
	L0044925	443806.84	3768591.00	284.88	1.50	0.03226	68.64		31.93	6.66
	L0044926	443875.48	3768591.00	284.64	1.50	0.03226	68.64		31.93	6.66
	L0044927	443944.12	3768591.00	284.50	1.50	0.03226	68.64		31.93	6.66
	L0044928	444012.76	3768591.00	284.38	1.50	0.03226	68.64		31.93	6.66
	L0044929	444081.40	3768591.00	284.24	1.50	0.03226	68.64		31.93	6.66
	L0044930	444150.04	3768591.00	284.06	1.50	0.03226	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08LGR	L0044931	444218.68	3768591.00	283.92	1.50	0.03226	68.64		31.93	6.66
	L0044932	444287.32	3768591.00	283.77	1.50	0.03226	68.64		31.93	6.66
	L0044933	444355.96	3768591.00	283.62	1.50	0.03226	68.64		31.93	6.66
	L0044934	444424.60	3768591.00	283.45	1.50	0.03226	68.64		31.93	6.66
	L0044935	444493.24	3768591.00	283.24	1.50	0.03226	68.64		31.93	6.66
	L0044936	444561.88	3768591.00	283.08	1.50	0.03226	68.64		31.93	6.66
	L0044937	444630.52	3768591.00	282.99	1.50	0.03226	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08RGR	L0044938	443169.32	3768378.00	284.59	1.50	0.03226	68.64		31.93	6.66
	L0044939	443237.96	3768378.00	284.09	1.50	0.03226	68.64		31.93	6.66
	L0044940	443306.60	3768378.00	283.80	1.50	0.03226	68.64		31.93	6.66
	L0044941	443375.24	3768378.00	283.52	1.50	0.03226	68.64		31.93	6.66
	L0044942	443443.88	3768378.00	283.20	1.50	0.03226	68.64		31.93	6.66
	L0044943	443512.52	3768378.00	282.97	1.50	0.03226	68.64		31.93	6.66
	L0044944	443581.16	3768378.00	282.90	1.50	0.03226	68.64		31.93	6.66
	L0044945	443649.80	3768378.00	282.47	1.50	0.03226	68.64		31.93	6.66
	L0044946	443718.44	3768378.00	282.12	1.50	0.03226	68.64		31.93	6.66
	L0044947	443787.08	3768378.00	281.81	1.50	0.03226	68.64		31.93	6.66
	L0044948	443855.72	3768378.00	281.53	1.50	0.03226	68.64		31.93	6.66
	L0044949	443924.36	3768378.00	281.33	1.50	0.03226	68.64		31.93	6.66
	L0044950	443993.00	3768378.00	281.26	1.50	0.03226	68.64		31.93	6.66
	L0044951	444061.64	3768378.00	281.27	1.50	0.03226	68.64		31.93	6.66
	L0044952	444130.28	3768378.00	281.37	1.50	0.03226	68.64		31.93	6.66
	L0044953	444198.92	3768378.00	281.48	1.50	0.03226	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08RGR	L0044954	444267.56	3768378.00	281.31	1.50	0.03226	68.64		31.93	6.66
	L0044955	444336.20	3768378.00	281.20	1.50	0.03226	68.64		31.93	6.66
	L0044956	444404.84	3768378.00	281.23	1.50	0.03226	68.64		31.93	6.66
	L0044957	444473.48	3768378.00	281.33	1.50	0.03226	68.64		31.93	6.66
	L0044958	444542.12	3768378.00	281.12	1.50	0.03226	68.64		31.93	6.66
	L0044959	444610.76	3768378.00	281.03	1.50	0.03226	68.64		31.93	6.66
	L0044960	444679.40	3768378.00	280.99	1.50	0.03226	68.64		31.93	6.66
	L0044961	444748.04	3768378.00	281.00	1.50	0.03226	68.64		31.93	6.66
	L0044962	444816.68	3768378.00	280.74	1.50	0.03226	68.64		31.93	6.66
	L0044963	444885.32	3768378.00	280.63	1.50	0.03226	68.64		31.93	6.66
	L0044964	444953.96	3768378.00	280.55	1.50	0.03226	68.64		31.93	6.66
	L0044965	445022.60	3768378.00	280.47	1.50	0.03226	68.64		31.93	6.66
	L0044966	445091.24	3768378.00	280.39	1.50	0.03226	68.64		31.93	6.66
	L0044967	445159.88	3768378.00	280.43	1.50	0.03226	68.64		31.93	6.66
	L0044968	445228.52	3768378.00	280.42	1.50	0.03226	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LGR	L0044969	446095.68	3768379.00	281.52	1.50	0.03226	68.64		31.93	6.66
	L0044970	446027.04	3768379.00	281.35	1.50	0.03226	68.64		31.93	6.66
	L0044971	445958.40	3768379.00	281.17	1.50	0.03226	68.64		31.93	6.66
	L0044972	445889.76	3768379.00	281.00	1.50	0.03226	68.64		31.93	6.66
	L0044973	445821.12	3768379.00	280.84	1.50	0.03226	68.64		31.93	6.66
	L0044974	445752.48	3768379.00	280.68	1.50	0.03226	68.64		31.93	6.66
	L0044975	445683.84	3768379.00	280.50	1.50	0.03226	68.64		31.93	6.66
	L0044976	445615.20	3768379.00	280.36	1.50	0.03226	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LGR	L0044977	445546.56	3768379.00	280.30	1.50	0.03226	68.64		31.93	6.66
	L0044978	445477.92	3768379.00	280.02	1.50	0.03226	68.64		31.93	6.66
	L0044979	445409.28	3768379.00	279.98	1.50	0.03226	68.64		31.93	6.66
	L0044980	445340.64	3768379.00	280.07	1.50	0.03226	68.64		31.93	6.66
	L0044981	445272.00	3768379.00	280.29	1.50	0.03226	68.64		31.93	6.66
	L0044982	445203.36	3768379.00	280.47	1.50	0.03226	68.64		31.93	6.66
	L0044983	445134.72	3768379.00	280.39	1.50	0.03226	68.64		31.93	6.66
	L0044984	445066.08	3768379.00	280.44	1.50	0.03226	68.64		31.93	6.66
	L0044985	444997.44	3768379.00	280.52	1.50	0.03226	68.64		31.93	6.66
	L0044986	444928.80	3768379.00	280.60	1.50	0.03226	68.64		31.93	6.66
	L0044987	444860.16	3768379.00	280.67	1.50	0.03226	68.64		31.93	6.66
	L0044988	444791.52	3768379.00	280.91	1.50	0.03226	68.64		31.93	6.66
	L0044989	444722.88	3768379.00	281.04	1.50	0.03226	68.64		31.93	6.66
	L0044990	444654.24	3768379.00	281.00	1.50	0.03226	68.64		31.93	6.66
	L0044991	444585.60	3768379.00	281.08	1.50	0.03226	68.64		31.93	6.66
	L0044992	444516.96	3768379.00	281.20	1.50	0.03226	68.64		31.93	6.66
	L0044993	444448.32	3768379.00	281.40	1.50	0.03226	68.64		31.93	6.66
	L0044994	444379.68	3768379.00	281.23	1.50	0.03226	68.64		31.93	6.66
	L0044995	444311.04	3768379.00	281.22	1.50	0.03226	68.64		31.93	6.66
	L0044996	444242.40	3768379.00	281.43	1.50	0.03226	68.64		31.93	6.66
	L0044997	444173.76	3768379.00	281.50	1.50	0.03226	68.64		31.93	6.66
	L0044998	444105.12	3768379.00	281.32	1.50	0.03226	68.64		31.93	6.66
	L0044999	444036.48	3768379.00	281.29	1.50	0.03226	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RGR	L0045000	446095.68	3768592.00	283.54	1.50	0.03226	68.64		31.93	6.66
	L0045001	446027.04	3768592.00	283.49	1.50	0.03226	68.64		31.93	6.66
	L0045002	445958.40	3768592.00	283.44	1.50	0.03226	68.64		31.93	6.66
	L0045003	445889.76	3768592.00	283.38	1.50	0.03226	68.64		31.93	6.66
	L0045004	445821.12	3768592.00	283.34	1.50	0.03226	68.64		31.93	6.66
	L0045005	445752.48	3768592.00	283.27	1.50	0.03226	68.64		31.93	6.66
	L0045006	445683.84	3768592.00	283.22	1.50	0.03226	68.64		31.93	6.66
	L0045007	445615.20	3768592.00	283.15	1.50	0.03226	68.64		31.93	6.66
	L0045008	445546.56	3768592.00	283.19	1.50	0.03226	68.64		31.93	6.66
	L0045009	445477.92	3768592.00	283.10	1.50	0.03226	68.64		31.93	6.66
	L0045010	445409.28	3768592.00	283.07	1.50	0.03226	68.64		31.93	6.66
	L0045011	445340.64	3768592.00	283.03	1.50	0.03226	68.64		31.93	6.66
	L0045012	445272.00	3768592.00	282.99	1.50	0.03226	68.64		31.93	6.66
	L0045013	445203.36	3768592.00	282.91	1.50	0.03226	68.64		31.93	6.66
	L0045014	445134.72	3768592.00	282.88	1.50	0.03226	68.64		31.93	6.66
	L0045015	445066.08	3768592.00	282.84	1.50	0.03226	68.64		31.93	6.66
	L0045016	444997.44	3768592.00	282.79	1.50	0.03226	68.64		31.93	6.66
	L0045017	444928.80	3768592.00	282.74	1.50	0.03226	68.64		31.93	6.66
	L0045018	444860.16	3768592.00	282.71	1.50	0.03226	68.64		31.93	6.66
	L0045019	444791.52	3768592.00	282.70	1.50	0.03226	68.64		31.93	6.66
	L0045020	444722.88	3768592.00	282.73	1.50	0.03226	68.64		31.93	6.66
	L0045021	444654.24	3768592.00	282.94	1.50	0.03226	68.64		31.93	6.66
	L0045022	444585.60	3768592.00	283.06	1.50	0.03226	68.64		31.93	6.66
	L0045023	444516.96	3768592.00	283.20	1.50	0.03226	68.64		31.93	6.66
	L0045024	444448.32	3768592.00	283.38	1.50	0.03226	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RGR	L0045025	444379.68	3768592.00	283.59	1.50	0.03226	68.64		31.93	6.66
	L0045026	444311.04	3768592.00	283.73	1.50	0.03226	68.64		31.93	6.66
	L0045027	444242.40	3768592.00	283.89	1.50	0.03226	68.64		31.93	6.66
	L0045028	444173.76	3768592.00	284.02	1.50	0.03226	68.64		31.93	6.66
	L0045029	444105.12	3768592.00	284.19	1.50	0.03226	68.64		31.93	6.66
	L0045030	444036.48	3768592.00	284.34	1.50	0.03226	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08LGR	L0045031	443130.24	3768592.18	286.98	1.50	0.04545	68.64		31.93	6.66
	L0045032	443198.88	3768592.16	286.74	1.50	0.04545	68.64		31.93	6.66
	L0045033	443267.52	3768592.15	286.51	1.50	0.04545	68.64		31.93	6.66
	L0045034	443336.16	3768592.13	286.34	1.50	0.04545	68.64		31.93	6.66
	L0045035	443404.80	3768592.12	286.10	1.50	0.04545	68.64		31.93	6.66
	L0045036	443473.44	3768592.10	285.90	1.50	0.04545	68.64		31.93	6.66
	L0045037	443542.08	3768592.09	285.69	1.50	0.04545	68.64		31.93	6.66
	L0045038	443610.72	3768592.07	285.48	1.50	0.04545	68.64		31.93	6.66
	L0045039	443679.36	3768592.05	285.30	1.50	0.04545	68.64		31.93	6.66
	L0045040	443748.00	3768592.04	285.04	1.50	0.04545	68.64		31.93	6.66
	L0045041	443816.64	3768592.02	284.85	1.50	0.04545	68.64		31.93	6.66
	L0045042	443885.28	3768592.01	284.63	1.50	0.04545	68.64		31.93	6.66
	L0045043	443953.92	3768591.99	284.50	1.50	0.04545	68.64		31.93	6.66
	L0045044	444022.56	3768591.98	284.37	1.50	0.04545	68.64		31.93	6.66
	L0045045	444091.20	3768591.96	284.23	1.50	0.04545	68.64		31.93	6.66
	L0045046	444159.84	3768591.95	284.05	1.50	0.04545	68.64		31.93	6.66
	L0045047	444228.48	3768591.93	283.92	1.50	0.04545	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08LGR	L0045048	444297.12	3768591.91	283.76	1.50	0.04545	68.64		31.93	6.66
	L0045049	444365.76	3768591.90	283.61	1.50	0.04545	68.64		31.93	6.66
	L0045050	444434.40	3768591.88	283.42	1.50	0.04545	68.64		31.93	6.66
	L0045051	444503.04	3768591.87	283.23	1.50	0.04545	68.64		31.93	6.66
	L0045052	444571.68	3768591.85	283.07	1.50	0.04545	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08RGR	L0045053	443441.33	3768380.08	283.27	1.50	0.04545	68.64		31.93	6.66
	L0045054	443509.97	3768380.01	283.02	1.50	0.04545	68.64		31.93	6.66
	L0045055	443578.61	3768379.94	282.94	1.50	0.04545	68.64		31.93	6.66
	L0045056	443647.25	3768379.87	282.53	1.50	0.04545	68.64		31.93	6.66
	L0045057	443715.89	3768379.80	282.17	1.50	0.04545	68.64		31.93	6.66
	L0045058	443784.53	3768379.73	281.86	1.50	0.04545	68.64		31.93	6.66
	L0045059	443853.17	3768379.66	281.58	1.50	0.04545	68.64		31.93	6.66
	L0045060	443921.81	3768379.59	281.36	1.50	0.04545	68.64		31.93	6.66
	L0045061	443990.45	3768379.53	281.30	1.50	0.04545	68.64		31.93	6.66
	L0045062	444059.09	3768379.46	281.30	1.50	0.04545	68.64		31.93	6.66
	L0045063	444127.73	3768379.39	281.38	1.50	0.04545	68.64		31.93	6.66
	L0045064	444196.37	3768379.32	281.50	1.50	0.04545	68.64		31.93	6.66
	L0045065	444265.01	3768379.25	281.35	1.50	0.04545	68.64		31.93	6.66
	L0045066	444333.65	3768379.18	281.23	1.50	0.04545	68.64		31.93	6.66
	L0045067	444402.29	3768379.11	281.25	1.50	0.04545	68.64		31.93	6.66
	L0045068	444470.93	3768379.04	281.36	1.50	0.04545	68.64		31.93	6.66
	L0045069	444539.57	3768378.97	281.15	1.50	0.04545	68.64		31.93	6.66
	L0045070	444608.21	3768378.90	281.05	1.50	0.04545	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08RGR	L0045071	444676.85	3768378.84	281.00	1.50	0.04545	68.64		31.93	6.66
	L0045072	444745.49	3768378.77	281.01	1.50	0.04545	68.64		31.93	6.66
	L0045073	444814.13	3768378.70	280.77	1.50	0.04545	68.64		31.93	6.66
	L0045074	444882.77	3768378.63	280.64	1.50	0.04545	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26LGR	L0045075	445822.26	3768379.36	280.85	1.50	0.04545	68.64		31.93	6.66
	L0045076	445753.62	3768379.35	280.69	1.50	0.04545	68.64		31.93	6.66
	L0045077	445684.98	3768379.35	280.51	1.50	0.04545	68.64		31.93	6.66
	L0045078	445616.34	3768379.34	280.37	1.50	0.04545	68.64		31.93	6.66
	L0045079	445547.70	3768379.34	280.31	1.50	0.04545	68.64		31.93	6.66
	L0045080	445479.06	3768379.33	280.03	1.50	0.04545	68.64		31.93	6.66
	L0045081	445410.42	3768379.33	279.98	1.50	0.04545	68.64		31.93	6.66
	L0045082	445341.78	3768379.32	280.07	1.50	0.04545	68.64		31.93	6.66
	L0045083	445273.14	3768379.32	280.29	1.50	0.04545	68.64		31.93	6.66
	L0045084	445204.50	3768379.31	280.47	1.50	0.04545	68.64		31.93	6.66
	L0045085	445135.86	3768379.31	280.40	1.50	0.04545	68.64		31.93	6.66
	L0045086	445067.22	3768379.30	280.44	1.50	0.04545	68.64		31.93	6.66
	L0045087	444998.58	3768379.29	280.53	1.50	0.04545	68.64		31.93	6.66
	L0045088	444929.94	3768379.29	280.60	1.50	0.04545	68.64		31.93	6.66
	L0045089	444861.30	3768379.28	280.67	1.50	0.04545	68.64		31.93	6.66
	L0045090	444792.66	3768379.28	280.91	1.50	0.04545	68.64		31.93	6.66
	L0045091	444724.02	3768379.27	281.04	1.50	0.04545	68.64		31.93	6.66
	L0045092	444655.38	3768379.27	281.01	1.50	0.04545	68.64		31.93	6.66
	L0045093	444586.74	3768379.26	281.09	1.50	0.04545	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26LGR	L0045094	444518.10	3768379.26	281.20	1.50	0.04545	68.64		31.93	6.66
	L0045095	444449.46	3768379.25	281.40	1.50	0.04545	68.64		31.93	6.66
	L0045096	444380.82	3768379.25	281.23	1.50	0.04545	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26TX	L0045119	444822.97	3768869.27	286.36	1.50	0.03846	68.64		31.93	6.66
	L0045120	444891.58	3768867.47	286.34	1.50	0.03846	68.64		31.93	6.66
	L0045121	444960.20	3768865.68	286.32	1.50	0.03846	68.64		31.93	6.66
	L0045122	445028.82	3768863.89	286.32	1.50	0.03846	68.64		31.93	6.66
	L0045123	445097.43	3768862.09	286.32	1.50	0.03846	68.64		31.93	6.66
	L0045124	445166.05	3768860.30	286.31	1.50	0.03846	68.64		31.93	6.66
	L0045125	445234.67	3768858.51	286.29	1.50	0.03846	68.64		31.93	6.66
	L0045126	445303.28	3768856.71	286.27	1.50	0.03846	68.64		31.93	6.66
	L0045127	445371.90	3768854.92	286.26	1.50	0.03846	68.64		31.93	6.66
	L0045128	445440.52	3768853.12	286.23	1.50	0.03846	68.64		31.93	6.66
	L0045129	445509.13	3768851.33	286.23	1.50	0.03846	68.64		31.93	6.66
	L0045130	445577.75	3768849.54	286.22	1.50	0.03846	68.64		31.93	6.66
	L0045131	445646.37	3768847.74	286.17	1.50	0.03846	68.64		31.93	6.66
	L0045132	445714.98	3768845.95	286.16	1.50	0.03846	68.64		31.93	6.66
	L0045133	445783.60	3768844.16	286.12	1.50	0.03846	68.64		31.93	6.66
	L0045134	445852.22	3768842.36	286.10	1.50	0.03846	68.64		31.93	6.66
	L0045135	445920.83	3768840.57	286.07	1.50	0.03846	68.64		31.93	6.66
	L0045136	445989.45	3768838.77	286.05	1.50	0.03846	68.64		31.93	6.66
	L0045137	446058.07	3768836.98	286.04	1.50	0.03846	68.64		31.93	6.66
	L0045138	446126.68	3768835.19	286.05	1.50	0.03846	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26TX	L0045139	446170.66	3768809.30	285.69	1.50	0.03846	68.64		31.93	6.66
	L0045140	446170.91	3768740.66	285.43	1.50	0.03846	68.64		31.93	6.66
	L0045141	446171.16	3768672.02	284.36	1.50	0.03846	68.64		31.93	6.66
	L0045142	446171.41	3768603.38	283.81	1.50	0.03846	68.64		31.93	6.66
	L0045143	446171.66	3768534.74	282.57	1.50	0.03846	68.64		31.93	6.66
	L0045144	446171.91	3768466.11	281.72	1.50	0.03846	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08TX	L0045145	444740.41	3768872.34	286.38	1.50	0.02778	68.64		31.93	6.66
	L0045146	444671.87	3768868.53	286.36	1.50	0.02778	68.64		31.93	6.66
	L0045147	444603.34	3768864.72	286.18	1.50	0.02778	68.64		31.93	6.66
	L0045148	444585.57	3768809.44	284.09	1.50	0.02778	68.64		31.93	6.66
	L0045149	444580.82	3768740.97	284.61	1.50	0.02778	68.64		31.93	6.66
	L0045150	444535.76	3768715.31	284.02	1.50	0.02778	68.64		31.93	6.66
	L0045151	444467.12	3768714.71	284.02	1.50	0.02778	68.64		31.93	6.66
	L0045152	444398.48	3768714.11	284.07	1.50	0.02778	68.64		31.93	6.66
	L0045153	444329.85	3768713.52	283.82	1.50	0.02778	68.64		31.93	6.66
	L0045154	444261.21	3768712.92	284.31	1.50	0.02778	68.64		31.93	6.66
	L0045155	444192.57	3768712.32	284.77	1.50	0.02778	68.64		31.93	6.66
	L0045156	444123.93	3768711.72	284.79	1.50	0.02778	68.64		31.93	6.66
	L0045157	444055.30	3768711.12	285.07	1.50	0.02778	68.64		31.93	6.66
	L0045158	443986.66	3768710.52	285.50	1.50	0.02778	68.64		31.93	6.66
	L0045159	443918.02	3768709.92	285.73	1.50	0.02778	68.64		31.93	6.66
	L0045160	443849.38	3768709.32	285.75	1.50	0.02778	68.64		31.93	6.66
	L0045161	443780.75	3768708.72	285.59	1.50	0.02778	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08TX	L0045162	443712.11	3768708.12	286.02	1.50	0.02778	68.64		31.93	6.66
	L0045163	443643.47	3768707.52	285.81	1.50	0.02778	68.64		31.93	6.66
	L0045164	443574.83	3768706.92	285.82	1.50	0.02778	68.64		31.93	6.66
	L0045165	443506.20	3768706.32	286.19	1.50	0.02778	68.64		31.93	6.66
	L0045166	443437.56	3768705.72	286.47	1.50	0.02778	68.64		31.93	6.66
	L0045167	443368.92	3768705.12	286.76	1.50	0.02778	68.64		31.93	6.66
	L0045168	443300.28	3768704.52	287.04	1.50	0.02778	68.64		31.93	6.66
	L0045169	443231.65	3768703.92	287.32	1.50	0.02778	68.64		31.93	6.66
	L0045170	443163.01	3768703.32	287.99	1.50	0.02778	68.64		31.93	6.66
	L0045171	443094.37	3768702.72	287.88	1.50	0.02778	68.64		31.93	6.66
	L0045172	443025.74	3768702.12	287.63	1.50	0.02778	68.64		31.93	6.66
	L0045173	442957.10	3768701.52	287.73	1.50	0.02778	68.64		31.93	6.66
	L0045174	442888.46	3768700.92	287.83	1.50	0.02778	68.64		31.93	6.66
	L0045175	442819.82	3768700.32	287.67	1.50	0.02778	68.64		31.93	6.66
	L0045176	442751.19	3768699.72	287.47	1.50	0.02778	68.64		31.93	6.66
	L0045177	442682.55	3768699.12	287.24	1.50	0.02778	68.64		31.93	6.66
	L0045178	442613.91	3768698.53	287.15	1.50	0.02778	68.64		31.93	6.66
	L0045179	442545.27	3768697.93	287.70	1.50	0.02778	68.64		31.93	6.66
	L0045180	442486.29	3768686.62	288.00	1.50	0.02778	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08TX	L0045181	445515.44	3768460.54	280.11	1.50	0.05882	68.64		31.93	6.66
	L0045182	445514.71	3768529.18	281.33	1.50	0.05882	68.64		31.93	6.66
	L0045183	445513.97	3768597.81	283.22	1.50	0.05882	68.64		31.93	6.66
	L0045184	445513.24	3768666.45	283.43	1.50	0.05882	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08TX	L0045185	445512.50	3768735.09	284.69	1.50	0.05882	68.64		31.93	6.66
	L0045186	445511.77	3768803.72	285.47	1.50	0.05882	68.64		31.93	6.66
	L0045187	445481.84	3768844.11	286.13	1.50	0.05882	68.64		31.93	6.66
	L0045188	445413.27	3768847.08	286.16	1.50	0.05882	68.64		31.93	6.66
	L0045189	445344.69	3768850.06	286.19	1.50	0.05882	68.64		31.93	6.66
	L0045190	445276.12	3768853.03	286.22	1.50	0.05882	68.64		31.93	6.66
	L0045191	445207.54	3768856.01	286.26	1.50	0.05882	68.64		31.93	6.66
	L0045192	445138.96	3768858.98	286.28	1.50	0.05882	68.64		31.93	6.66
	L0045193	445070.39	3768861.96	286.31	1.50	0.05882	68.64		31.93	6.66
	L0045194	445001.81	3768864.94	286.32	1.50	0.05882	68.64		31.93	6.66
	L0045195	444933.24	3768867.91	286.34	1.50	0.05882	68.64		31.93	6.66
	L0045196	444864.66	3768870.89	286.37	1.50	0.05882	68.64		31.93	6.66
	L0045197	444796.09	3768873.86	286.40	1.50	0.05882	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26TX	L0045198	444092.22	3768443.78	281.56	1.50	0.04762	68.64		31.93	6.66
	L0045199	444041.74	3768490.29	281.93	1.50	0.04762	68.64		31.93	6.66
	L0045200	443991.26	3768536.80	283.50	1.50	0.04762	68.64		31.93	6.66
	L0045201	443940.78	3768583.30	284.38	1.50	0.04762	68.64		31.93	6.66
	L0045202	443890.30	3768629.81	285.09	1.50	0.04762	68.64		31.93	6.66
	L0045203	443864.42	3768673.37	285.37	1.50	0.04762	68.64		31.93	6.66
	L0045204	443924.48	3768706.60	285.69	1.50	0.04762	68.64		31.93	6.66
	L0045205	443992.18	3768710.98	285.47	1.50	0.04762	68.64		31.93	6.66
	L0045206	444060.81	3768711.80	285.06	1.50	0.04762	68.64		31.93	6.66
	L0045207	444129.45	3768712.63	284.80	1.50	0.04762	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26TX	L0045208	444198.08	3768713.46	284.78	1.50	0.04762	68.64		31.93	6.66
	L0045209	444266.72	3768714.28	284.29	1.50	0.04762	68.64		31.93	6.66
	L0045210	444335.35	3768715.11	283.81	1.50	0.04762	68.64		31.93	6.66
	L0045211	444403.99	3768715.94	284.13	1.50	0.04762	68.64		31.93	6.66
	L0045212	444472.62	3768716.76	284.06	1.50	0.04762	68.64		31.93	6.66
	L0045213	444541.26	3768717.59	284.08	1.50	0.04762	68.64		31.93	6.66
	L0045214	444579.07	3768752.01	284.19	1.50	0.04762	68.64		31.93	6.66
	L0045215	444585.80	3768820.32	284.32	1.50	0.04762	68.64		31.93	6.66
	L0045216	444611.29	3768868.63	286.31	1.50	0.04762	68.64		31.93	6.66
	L0045217	444679.89	3768870.98	286.38	1.50	0.04762	68.64		31.93	6.66
	L0045218	444748.49	3768873.34	286.39	1.50	0.04762	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26RGR	L0048821	445817.67	3768592.17	283.34	1.50	0.04545	68.64		31.93	6.66
	L0048822	445749.03	3768592.16	283.27	1.50	0.04545	68.64		31.93	6.66
	L0048823	445680.39	3768592.16	283.22	1.50	0.04545	68.64		31.93	6.66
	L0048824	445611.75	3768592.15	283.16	1.50	0.04545	68.64		31.93	6.66
	L0048825	445543.11	3768592.14	283.19	1.50	0.04545	68.64		31.93	6.66
	L0048826	445474.47	3768592.13	283.10	1.50	0.04545	68.64		31.93	6.66
	L0048827	445405.83	3768592.12	283.07	1.50	0.04545	68.64		31.93	6.66
	L0048828	445337.19	3768592.11	283.03	1.50	0.04545	68.64		31.93	6.66
	L0048829	445268.55	3768592.11	282.99	1.50	0.04545	68.64		31.93	6.66
	L0048830	445199.91	3768592.10	282.91	1.50	0.04545	68.64		31.93	6.66
	L0048831	445131.27	3768592.09	282.88	1.50	0.04545	68.64		31.93	6.66
	L0048832	445062.63	3768592.08	282.84	1.50	0.04545	68.64		31.93	6.66

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26RGR	L0048833	444993.99	3768592.07	282.79	1.50	0.04545	68.64		31.93	6.66
	L0048834	444925.35	3768592.06	282.74	1.50	0.04545	68.64		31.93	6.66
	L0048835	444856.71	3768592.06	282.71	1.50	0.04545	68.64		31.93	6.66
	L0048836	444788.07	3768592.05	282.70	1.50	0.04545	68.64		31.93	6.66
	L0048837	444719.43	3768592.04	282.74	1.50	0.04545	68.64		31.93	6.66
	L0048838	444650.79	3768592.03	282.95	1.50	0.04545	68.64		31.93	6.66
	L0048839	444582.15	3768592.02	283.06	1.50	0.04545	68.64		31.93	6.66
	L0048840	444513.51	3768592.01	283.21	1.50	0.04545	68.64		31.93	6.66
	L0048841	444444.87	3768592.01	283.39	1.50	0.04545	68.64		31.93	6.66
	L0048842	444376.23	3768592.00	283.59	1.50	0.04545	68.64		31.93	6.66

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08LSI	L0048843	443058.22	3768593.19	288.89	1.50	0.01370	68.64		31.93	3.33
	L0048844	442989.58	3768593.20	292.49	1.50	0.01370	68.64		31.93	3.33
	L0048845	442920.94	3768593.21	296.08	1.50	0.01370	68.64		31.93	3.33
	L0048846	442852.30	3768593.21	299.68	1.50	0.01370	68.64		31.93	3.33
	L0048847	442783.66	3768593.22	303.28	1.50	0.01370	68.64		31.93	3.33
	L0048848	442715.02	3768593.22	306.87	1.50	0.01370	68.64		31.93	3.33
	L0048849	442646.38	3768593.23	310.47	1.50	0.01370	68.64		31.93	3.33
	L0048850	442577.74	3768593.24	314.07	1.50	0.01370	68.64		31.93	3.33
	L0048851	442509.10	3768593.24	317.66	1.50	0.01370	68.64		31.93	3.33
	L0048852	442440.46	3768593.25	321.26	1.50	0.01370	68.64		31.93	3.33
	L0048853	442371.82	3768593.26	324.86	1.50	0.01370	68.64		31.93	3.33
	L0048854	442303.18	3768593.26	328.45	1.50	0.01370	68.64		31.93	3.33
	L0048855	442234.54	3768593.27	332.05	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08LSI	L0048856	442165.90	3768593.27	335.65	1.50	0.01370	68.64		31.93	3.33
	L0048857	442097.26	3768593.28	339.24	1.50	0.01370	68.64		31.93	3.33
	L0048858	442028.62	3768593.29	342.84	1.50	0.01370	68.64		31.93	3.33
	L0048859	441959.98	3768593.29	346.44	1.50	0.01370	68.64		31.93	3.33
	L0048860	441891.34	3768593.30	350.03	1.50	0.01370	68.64		31.93	3.33
	L0048861	441822.70	3768593.31	353.63	1.50	0.01370	68.64		31.93	3.33
	L0048862	441754.06	3768593.31	357.23	1.50	0.01370	68.64		31.93	3.33
	L0048863	441685.42	3768593.32	360.82	1.50	0.01370	68.64		31.93	3.33
	L0048864	441616.78	3768593.32	364.42	1.50	0.01370	68.64		31.93	3.33
	L0048865	441548.14	3768593.33	368.02	1.50	0.01370	68.64		31.93	3.33
	L0048866	441479.50	3768593.34	371.61	1.50	0.01370	68.64		31.93	3.33
	L0048867	441410.86	3768593.34	375.21	1.50	0.01370	68.64		31.93	3.33
	L0048868	441342.22	3768593.35	378.81	1.50	0.01370	68.64		31.93	3.33
	L0048869	441273.58	3768593.35	382.40	1.50	0.01370	68.64		31.93	3.33
	L0048870	441204.94	3768593.36	386.00	1.50	0.01370	68.64		31.93	3.33
	L0048871	441136.30	3768593.37	389.60	1.50	0.01370	68.64		31.93	3.33
	L0048872	441067.66	3768593.37	393.19	1.50	0.01370	68.64		31.93	3.33
	L0048873	440999.02	3768593.38	396.79	1.50	0.01370	68.64		31.93	3.33
	L0048874	440930.38	3768593.39	400.39	1.50	0.01370	68.64		31.93	3.33
	L0048875	440861.74	3768593.39	403.98	1.50	0.01370	68.64		31.93	3.33
	L0048876	440793.10	3768593.40	407.58	1.50	0.01370	68.64		31.93	3.33
	L0048877	440724.46	3768593.40	411.18	1.50	0.01370	68.64		31.93	3.33
	L0048878	440655.82	3768593.41	414.77	1.50	0.01370	68.64		31.93	3.33
	L0048879	440587.18	3768593.42	418.37	1.50	0.01370	68.64		31.93	3.33
	L0048880	440518.54	3768593.42	421.97	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08LSI	L0048881	440449.90	3768593.43	425.56	1.50	0.01370	68.64		31.93	3.33
	L0048882	440381.26	3768593.44	429.16	1.50	0.01370	68.64		31.93	3.33
	L0048883	440312.62	3768593.44	432.76	1.50	0.01370	68.64		31.93	3.33
	L0048884	440243.98	3768593.45	436.35	1.50	0.01370	68.64		31.93	3.33
	L0048885	440175.34	3768593.45	439.95	1.50	0.01370	68.64		31.93	3.33
	L0048886	440106.70	3768593.46	443.55	1.50	0.01370	68.64		31.93	3.33
	L0048887	440038.06	3768593.47	447.14	1.50	0.01370	68.64		31.93	3.33
	L0048888	439969.42	3768593.47	450.74	1.50	0.01370	68.64		31.93	3.33
	L0048889	439900.78	3768593.48	454.34	1.50	0.01370	68.64		31.93	3.33
	L0048890	439832.14	3768593.49	457.93	1.50	0.01370	68.64		31.93	3.33
	L0048891	439763.50	3768593.49	461.53	1.50	0.01370	68.64		31.93	3.33
	L0048892	439694.86	3768593.50	465.13	1.50	0.01370	68.64		31.93	3.33
	L0048893	439626.22	3768593.50	468.72	1.50	0.01370	68.64		31.93	3.33
	L0048894	439557.58	3768593.51	472.32	1.50	0.01370	68.64		31.93	3.33
	L0048895	439488.94	3768593.52	475.92	1.50	0.01370	68.64		31.93	3.33
	L0048896	439420.30	3768593.52	479.51	1.50	0.01370	68.64		31.93	3.33
	L0048897	439351.66	3768593.53	483.11	1.50	0.01370	68.64		31.93	3.33
	L0048898	439283.02	3768593.54	486.71	1.50	0.01370	68.64		31.93	3.33
	L0048899	439214.38	3768593.54	490.30	1.50	0.01370	68.64		31.93	3.33
	L0048900	439145.74	3768593.55	493.90	1.50	0.01370	68.64		31.93	3.33
	L0048901	439077.10	3768593.55	497.50	1.50	0.01370	68.64		31.93	3.33
	L0048902	439008.46	3768593.56	501.09	1.50	0.01370	68.64		31.93	3.33
	L0048903	438939.82	3768593.57	504.69	1.50	0.01370	68.64		31.93	3.33
	L0048904	438871.18	3768593.57	508.29	1.50	0.01370	68.64		31.93	3.33
	L0048905	438802.54	3768593.58	511.88	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08LSI	L0048906	438733.90	3768593.59	515.48	1.50	0.01370	68.64		31.93	3.33
	L0048907	438665.26	3768593.59	519.08	1.50	0.01370	68.64		31.93	3.33
	L0048908	438596.62	3768593.60	522.67	1.50	0.01370	68.64		31.93	3.33
	L0048909	438527.98	3768593.60	526.27	1.50	0.01370	68.64		31.93	3.33
	L0048910	438459.34	3768593.61	529.87	1.50	0.01370	68.64		31.93	3.33
	L0048911	438390.70	3768593.62	533.47	1.50	0.01370	68.64		31.93	3.33
	L0048912	438322.06	3768593.62	537.06	1.50	0.01370	68.64		31.93	3.33
	L0048913	438253.42	3768593.63	540.66	1.50	0.01370	68.64		31.93	3.33
	L0048914	438184.78	3768593.64	544.26	1.50	0.01370	68.64		31.93	3.33
	L0048915	438116.14	3768593.64	547.85	1.50	0.01370	68.64		31.93	3.33

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08RSI	L0048916	443371.88	3768380.28	285.19	1.50	0.01370	68.64		31.93	3.33
	L0048917	443303.24	3768380.42	288.79	1.50	0.01370	68.64		31.93	3.33
	L0048918	443234.60	3768380.57	292.38	1.50	0.01370	68.64		31.93	3.33
	L0048919	443165.96	3768380.72	295.98	1.50	0.01370	68.64		31.93	3.33
	L0048920	443097.32	3768380.87	299.58	1.50	0.01370	68.64		31.93	3.33
	L0048921	443028.68	3768381.02	303.17	1.50	0.01370	68.64		31.93	3.33
	L0048922	442960.04	3768381.17	306.77	1.50	0.01370	68.64		31.93	3.33
	L0048923	442891.40	3768381.32	310.37	1.50	0.01370	68.64		31.93	3.33
	L0048924	442822.76	3768381.46	313.96	1.50	0.01370	68.64		31.93	3.33
	L0048925	442754.12	3768381.61	317.56	1.50	0.01370	68.64		31.93	3.33
	L0048926	442685.48	3768381.76	321.16	1.50	0.01370	68.64		31.93	3.33
	L0048927	442616.84	3768381.91	324.75	1.50	0.01370	68.64		31.93	3.33
	L0048928	442548.20	3768382.06	328.35	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08RSI	L0048929	442479.56	3768382.21	331.95	1.50	0.01370	68.64		31.93	3.33
	L0048930	442410.92	3768382.36	335.54	1.50	0.01370	68.64		31.93	3.33
	L0048931	442342.28	3768382.50	339.14	1.50	0.01370	68.64		31.93	3.33
	L0048932	442273.64	3768382.65	342.74	1.50	0.01370	68.64		31.93	3.33
	L0048933	442205.00	3768382.80	346.33	1.50	0.01370	68.64		31.93	3.33
	L0048934	442136.36	3768382.95	349.93	1.50	0.01370	68.64		31.93	3.33
	L0048935	442067.72	3768383.10	353.53	1.50	0.01370	68.64		31.93	3.33
	L0048936	441999.08	3768383.25	357.12	1.50	0.01370	68.64		31.93	3.33
	L0048937	441930.44	3768383.39	360.72	1.50	0.01370	68.64		31.93	3.33
	L0048938	441861.80	3768383.54	364.32	1.50	0.01370	68.64		31.93	3.33
	L0048939	441793.16	3768383.69	367.91	1.50	0.01370	68.64		31.93	3.33
	L0048940	441724.52	3768383.84	371.51	1.50	0.01370	68.64		31.93	3.33
	L0048941	441655.88	3768383.99	375.11	1.50	0.01370	68.64		31.93	3.33
	L0048942	441587.24	3768384.14	378.70	1.50	0.01370	68.64		31.93	3.33
	L0048943	441518.61	3768384.29	382.30	1.50	0.01370	68.64		31.93	3.33
	L0048944	441449.97	3768384.43	385.90	1.50	0.01370	68.64		31.93	3.33
	L0048945	441381.33	3768384.58	389.49	1.50	0.01370	68.64		31.93	3.33
	L0048946	441312.69	3768384.73	393.09	1.50	0.01370	68.64		31.93	3.33
	L0048947	441244.05	3768384.88	396.69	1.50	0.01370	68.64		31.93	3.33
	L0048948	441175.41	3768385.03	400.28	1.50	0.01370	68.64		31.93	3.33
	L0048949	441106.77	3768385.18	403.88	1.50	0.01370	68.64		31.93	3.33
	L0048950	441038.13	3768385.33	407.48	1.50	0.01370	68.64		31.93	3.33
	L0048951	440969.49	3768385.47	411.07	1.50	0.01370	68.64		31.93	3.33
	L0048952	440900.85	3768385.62	414.67	1.50	0.01370	68.64		31.93	3.33
	L0048953	440832.21	3768385.77	418.27	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08RSI	L0048954	440763.57	3768385.92	421.86	1.50	0.01370	68.64		31.93	3.33
	L0048955	440694.93	3768386.07	425.46	1.50	0.01370	68.64		31.93	3.33
	L0048956	440626.29	3768386.22	429.06	1.50	0.01370	68.64		31.93	3.33
	L0048957	440557.65	3768386.37	432.65	1.50	0.01370	68.64		31.93	3.33
	L0048958	440489.01	3768386.51	436.25	1.50	0.01370	68.64		31.93	3.33
	L0048959	440420.37	3768386.66	439.85	1.50	0.01370	68.64		31.93	3.33
	L0048960	440351.73	3768386.81	443.44	1.50	0.01370	68.64		31.93	3.33
	L0048961	440283.09	3768386.96	447.04	1.50	0.01370	68.64		31.93	3.33
	L0048962	440214.45	3768387.11	450.64	1.50	0.01370	68.64		31.93	3.33
	L0048963	440145.81	3768387.26	454.23	1.50	0.01370	68.64		31.93	3.33
	L0048964	440077.17	3768387.41	457.83	1.50	0.01370	68.64		31.93	3.33
	L0048965	440008.53	3768387.55	461.43	1.50	0.01370	68.64		31.93	3.33
	L0048966	439939.89	3768387.70	465.02	1.50	0.01370	68.64		31.93	3.33
	L0048967	439871.25	3768387.85	468.62	1.50	0.01370	68.64		31.93	3.33
	L0048968	439802.61	3768388.00	472.22	1.50	0.01370	68.64		31.93	3.33
	L0048969	439733.97	3768388.15	475.81	1.50	0.01370	68.64		31.93	3.33
	L0048970	439665.33	3768388.30	479.41	1.50	0.01370	68.64		31.93	3.33
	L0048971	439596.69	3768388.44	483.01	1.50	0.01370	68.64		31.93	3.33
	L0048972	439528.05	3768388.59	486.60	1.50	0.01370	68.64		31.93	3.33
	L0048973	439459.41	3768388.74	490.20	1.50	0.01370	68.64		31.93	3.33
	L0048974	439390.77	3768388.89	493.80	1.50	0.01370	68.64		31.93	3.33
	L0048975	439322.13	3768389.04	497.39	1.50	0.01370	68.64		31.93	3.33
	L0048976	439253.49	3768389.19	500.99	1.50	0.01370	68.64		31.93	3.33
	L0048977	439184.85	3768389.34	504.59	1.50	0.01370	68.64		31.93	3.33
	L0048978	439116.21	3768389.48	508.18	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A08RSI	L0048979	439047.57	3768389.63	511.78	1.50	0.01370	68.64		31.93	3.33
	L0048980	438978.93	3768389.78	515.38	1.50	0.01370	68.64		31.93	3.33
	L0048981	438910.29	3768389.93	518.97	1.50	0.01370	68.64		31.93	3.33
	L0048982	438841.65	3768390.08	522.57	1.50	0.01370	68.64		31.93	3.33
	L0048983	438773.01	3768390.23	526.17	1.50	0.01370	68.64		31.93	3.33
	L0048984	438704.37	3768390.38	529.76	1.50	0.01370	68.64		31.93	3.33
	L0048985	438635.73	3768390.52	533.36	1.50	0.01370	68.64		31.93	3.33
	L0048986	438567.09	3768390.67	536.96	1.50	0.01370	68.64		31.93	3.33
	L0048987	438498.45	3768390.82	540.55	1.50	0.01370	68.64		31.93	3.33
	L0048988	438429.81	3768390.97	544.15	1.50	0.01370	68.64		31.93	3.33

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26LSI	L0048989	445891.55	3768379.70	282.86	1.50	0.01370	68.64		31.93	3.33
	L0048990	445960.19	3768379.88	286.46	1.50	0.01370	68.64		31.93	3.33
	L0048991	446028.83	3768380.06	290.05	1.50	0.01370	68.64		31.93	3.33
	L0048992	446097.47	3768380.24	293.65	1.50	0.01370	68.64		31.93	3.33
	L0048993	446166.11	3768380.42	297.25	1.50	0.01370	68.64		31.93	3.33
	L0048994	446234.75	3768380.61	300.85	1.50	0.01370	68.64		31.93	3.33
	L0048995	446303.39	3768380.79	304.44	1.50	0.01370	68.64		31.93	3.33
	L0048996	446372.03	3768380.97	308.04	1.50	0.01370	68.64		31.93	3.33
	L0048997	446440.67	3768381.15	311.64	1.50	0.01370	68.64		31.93	3.33
	L0048998	446509.31	3768381.33	315.24	1.50	0.01370	68.64		31.93	3.33
	L0048999	446577.95	3768381.51	318.83	1.50	0.01370	68.64		31.93	3.33
	L0049000	446646.59	3768381.70	322.43	1.50	0.01370	68.64		31.93	3.33
	L0049001	446715.23	3768381.88	326.03	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26LSI	L0049002	446783.87	3768382.06	329.63	1.50	0.01370	68.64		31.93	3.33
	L0049003	446852.51	3768382.24	333.22	1.50	0.01370	68.64		31.93	3.33
	L0049004	446921.15	3768382.42	336.82	1.50	0.01370	68.64		31.93	3.33
	L0049005	446989.79	3768382.61	340.42	1.50	0.01370	68.64		31.93	3.33
	L0049006	447058.43	3768382.79	344.02	1.50	0.01370	68.64		31.93	3.33
	L0049007	447127.07	3768382.97	347.61	1.50	0.01370	68.64		31.93	3.33
	L0049008	447195.71	3768383.15	351.21	1.50	0.01370	68.64		31.93	3.33
	L0049009	447264.35	3768383.33	354.81	1.50	0.01370	68.64		31.93	3.33
	L0049010	447332.99	3768383.51	358.41	1.50	0.01370	68.64		31.93	3.33
	L0049011	447401.63	3768383.70	362.00	1.50	0.01370	68.64		31.93	3.33
	L0049012	447470.27	3768383.88	365.60	1.50	0.01370	68.64		31.93	3.33
	L0049013	447538.90	3768384.06	369.20	1.50	0.01370	68.64		31.93	3.33
	L0049014	447607.54	3768384.24	372.79	1.50	0.01370	68.64		31.93	3.33
	L0049015	447676.18	3768384.42	376.39	1.50	0.01370	68.64		31.93	3.33
	L0049016	447744.82	3768384.61	379.99	1.50	0.01370	68.64		31.93	3.33
	L0049017	447813.46	3768384.79	383.59	1.50	0.01370	68.64		31.93	3.33
	L0049018	447882.10	3768384.97	387.18	1.50	0.01370	68.64		31.93	3.33
	L0049019	447950.74	3768385.15	390.78	1.50	0.01370	68.64		31.93	3.33
	L0049020	448019.38	3768385.33	394.38	1.50	0.01370	68.64		31.93	3.33
	L0049021	448088.02	3768385.51	397.98	1.50	0.01370	68.64		31.93	3.33
	L0049022	448156.66	3768385.70	401.57	1.50	0.01370	68.64		31.93	3.33
	L0049023	448225.30	3768385.88	405.17	1.50	0.01370	68.64		31.93	3.33
	L0049024	448293.94	3768386.06	408.77	1.50	0.01370	68.64		31.93	3.33
	L0049025	448362.58	3768386.24	412.37	1.50	0.01370	68.64		31.93	3.33
	L0049026	448431.22	3768386.42	415.96	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26LSI	L0049027	448499.86	3768386.61	419.56	1.50	0.01370	68.64		31.93	3.33
	L0049028	448568.50	3768386.79	423.16	1.50	0.01370	68.64		31.93	3.33
	L0049029	448637.14	3768386.97	426.76	1.50	0.01370	68.64		31.93	3.33
	L0049030	448705.78	3768387.15	430.35	1.50	0.01370	68.64		31.93	3.33
	L0049031	448774.42	3768387.33	433.95	1.50	0.01370	68.64		31.93	3.33
	L0049032	448843.06	3768387.51	437.55	1.50	0.01370	68.64		31.93	3.33
	L0049033	448911.70	3768387.70	441.15	1.50	0.01370	68.64		31.93	3.33
	L0049034	448980.34	3768387.88	444.74	1.50	0.01370	68.64		31.93	3.33
	L0049035	449048.98	3768388.06	448.34	1.50	0.01370	68.64		31.93	3.33
	L0049036	449117.62	3768388.24	451.94	1.50	0.01370	68.64		31.93	3.33
	L0049037	449186.26	3768388.42	455.54	1.50	0.01370	68.64		31.93	3.33
	L0049038	449254.90	3768388.61	459.13	1.50	0.01370	68.64		31.93	3.33
	L0049039	449323.54	3768388.79	462.73	1.50	0.01370	68.64		31.93	3.33
	L0049040	449392.18	3768388.97	466.33	1.50	0.01370	68.64		31.93	3.33
	L0049041	449460.82	3768389.15	469.93	1.50	0.01370	68.64		31.93	3.33
	L0049042	449529.46	3768389.33	473.52	1.50	0.01370	68.64		31.93	3.33
	L0049043	449598.10	3768389.51	477.12	1.50	0.01370	68.64		31.93	3.33
	L0049044	449666.74	3768389.70	480.72	1.50	0.01370	68.64		31.93	3.33
	L0049045	449735.38	3768389.88	484.32	1.50	0.01370	68.64		31.93	3.33
	L0049046	449804.02	3768390.06	487.91	1.50	0.01370	68.64		31.93	3.33
	L0049047	449872.66	3768390.24	491.51	1.50	0.01370	68.64		31.93	3.33
	L0049048	449941.30	3768390.42	495.11	1.50	0.01370	68.64		31.93	3.33
	L0049049	450009.94	3768390.61	498.71	1.50	0.01370	68.64		31.93	3.33
	L0049050	450078.58	3768390.79	502.30	1.50	0.01370	68.64		31.93	3.33
	L0049051	450147.22	3768390.97	505.90	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26LSI	L0049052	450215.86	3768391.15	509.50	1.50	0.01370	68.64		31.93	3.33
	L0049053	450284.50	3768391.33	513.10	1.50	0.01370	68.64		31.93	3.33
	L0049054	450353.14	3768391.51	516.69	1.50	0.01370	68.64		31.93	3.33
	L0049055	450421.77	3768391.70	520.29	1.50	0.01370	68.64		31.93	3.33
	L0049056	450490.41	3768391.88	523.89	1.50	0.01370	68.64		31.93	3.33
	L0049057	450559.05	3768392.06	527.49	1.50	0.01370	68.64		31.93	3.33
	L0049058	450627.69	3768392.24	531.08	1.50	0.01370	68.64		31.93	3.33
	L0049059	450696.33	3768392.42	534.68	1.50	0.01370	68.64		31.93	3.33
	L0049060	450764.97	3768392.61	538.28	1.50	0.01370	68.64		31.93	3.33
	L0049061	450833.61	3768392.79	541.87	1.50	0.01370	68.64		31.93	3.33

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26RSI	L0049062	445886.50	3768592.21	285.06	1.50	0.01370	68.64		31.93	3.33
	L0049063	445955.14	3768592.13	288.66	1.50	0.01370	68.64		31.93	3.33
	L0049064	446023.78	3768592.06	292.25	1.50	0.01370	68.64		31.93	3.33
	L0049065	446092.42	3768591.99	295.85	1.50	0.01370	68.64		31.93	3.33
	L0049066	446161.06	3768591.92	299.45	1.50	0.01370	68.64		31.93	3.33
	L0049067	446229.70	3768591.85	303.05	1.50	0.01370	68.64		31.93	3.33
	L0049068	446298.34	3768591.77	306.64	1.50	0.01370	68.64		31.93	3.33
	L0049069	446366.98	3768591.70	310.24	1.50	0.01370	68.64		31.93	3.33
	L0049070	446435.62	3768591.63	313.84	1.50	0.01370	68.64		31.93	3.33
	L0049071	446504.26	3768591.56	317.44	1.50	0.01370	68.64		31.93	3.33
	L0049072	446572.90	3768591.49	321.03	1.50	0.01370	68.64		31.93	3.33
	L0049073	446641.54	3768591.41	324.63	1.50	0.01370	68.64		31.93	3.33
	L0049074	446710.18	3768591.34	328.23	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26RSI	L0049075	446778.82	3768591.27	331.82	1.50	0.01370	68.64		31.93	3.33
	L0049076	446847.46	3768591.20	335.42	1.50	0.01370	68.64		31.93	3.33
	L0049077	446916.10	3768591.13	339.02	1.50	0.01370	68.64		31.93	3.33
	L0049078	446984.74	3768591.05	342.62	1.50	0.01370	68.64		31.93	3.33
	L0049079	447053.38	3768590.98	346.21	1.50	0.01370	68.64		31.93	3.33
	L0049080	447122.02	3768590.91	349.81	1.50	0.01370	68.64		31.93	3.33
	L0049081	447190.66	3768590.84	353.41	1.50	0.01370	68.64		31.93	3.33
	L0049082	447259.30	3768590.77	357.01	1.50	0.01370	68.64		31.93	3.33
	L0049083	447327.94	3768590.69	360.60	1.50	0.01370	68.64		31.93	3.33
	L0049084	447396.58	3768590.62	364.20	1.50	0.01370	68.64		31.93	3.33
	L0049085	447465.22	3768590.55	367.80	1.50	0.01370	68.64		31.93	3.33
	L0049086	447533.86	3768590.48	371.40	1.50	0.01370	68.64		31.93	3.33
	L0049087	447602.50	3768590.41	374.99	1.50	0.01370	68.64		31.93	3.33
	L0049088	447671.14	3768590.33	378.59	1.50	0.01370	68.64		31.93	3.33
	L0049089	447739.78	3768590.26	382.19	1.50	0.01370	68.64		31.93	3.33
	L0049090	447808.42	3768590.19	385.79	1.50	0.01370	68.64		31.93	3.33
	L0049091	447877.06	3768590.12	389.38	1.50	0.01370	68.64		31.93	3.33
	L0049092	447945.70	3768590.05	392.98	1.50	0.01370	68.64		31.93	3.33
	L0049093	448014.34	3768589.97	396.58	1.50	0.01370	68.64		31.93	3.33
	L0049094	448082.98	3768589.90	400.17	1.50	0.01370	68.64		31.93	3.33
	L0049095	448151.62	3768589.83	403.77	1.50	0.01370	68.64		31.93	3.33
	L0049096	448220.26	3768589.76	407.37	1.50	0.01370	68.64		31.93	3.33
	L0049097	448288.90	3768589.68	410.97	1.50	0.01370	68.64		31.93	3.33
	L0049098	448357.54	3768589.61	414.56	1.50	0.01370	68.64		31.93	3.33
	L0049099	448426.18	3768589.54	418.16	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26RSI	L0049100	448494.82	3768589.47	421.76	1.50	0.01370	68.64		31.93	3.33
	L0049101	448563.46	3768589.40	425.36	1.50	0.01370	68.64		31.93	3.33
	L0049102	448632.10	3768589.32	428.95	1.50	0.01370	68.64		31.93	3.33
	L0049103	448700.74	3768589.25	432.55	1.50	0.01370	68.64		31.93	3.33
	L0049104	448769.38	3768589.18	436.15	1.50	0.01370	68.64		31.93	3.33
	L0049105	448838.02	3768589.11	439.75	1.50	0.01370	68.64		31.93	3.33
	L0049106	448906.66	3768589.04	443.34	1.50	0.01370	68.64		31.93	3.33
	L0049107	448975.30	3768588.96	446.94	1.50	0.01370	68.64		31.93	3.33
	L0049108	449043.94	3768588.89	450.54	1.50	0.01370	68.64		31.93	3.33
	L0049109	449112.58	3768588.82	454.14	1.50	0.01370	68.64		31.93	3.33
	L0049110	449181.22	3768588.75	457.73	1.50	0.01370	68.64		31.93	3.33
	L0049111	449249.86	3768588.68	461.33	1.50	0.01370	68.64		31.93	3.33
	L0049112	449318.50	3768588.60	464.93	1.50	0.01370	68.64		31.93	3.33
	L0049113	449387.14	3768588.53	468.52	1.50	0.01370	68.64		31.93	3.33
	L0049114	449455.78	3768588.46	472.12	1.50	0.01370	68.64		31.93	3.33
	L0049115	449524.42	3768588.39	475.72	1.50	0.01370	68.64		31.93	3.33
	L0049116	449593.06	3768588.32	479.32	1.50	0.01370	68.64		31.93	3.33
	L0049117	449661.70	3768588.24	482.91	1.50	0.01370	68.64		31.93	3.33
	L0049118	449730.34	3768588.17	486.51	1.50	0.01370	68.64		31.93	3.33
	L0049119	449798.98	3768588.10	490.11	1.50	0.01370	68.64		31.93	3.33
	L0049120	449867.62	3768588.03	493.71	1.50	0.01370	68.64		31.93	3.33
	L0049121	449936.26	3768587.96	497.30	1.50	0.01370	68.64		31.93	3.33
	L0049122	450004.90	3768587.88	500.90	1.50	0.01370	68.64		31.93	3.33
	L0049123	450073.54	3768587.81	504.50	1.50	0.01370	68.64		31.93	3.33
	L0049124	450142.18	3768587.74	508.10	1.50	0.01370	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
A26RSI	L0049125	450210.82	3768587.67	511.69	1.50	0.01370	68.64		31.93	3.33
	L0049126	450279.46	3768587.60	515.29	1.50	0.01370	68.64		31.93	3.33
	L0049127	450348.10	3768587.52	518.89	1.50	0.01370	68.64		31.93	3.33
	L0049128	450416.74	3768587.45	522.49	1.50	0.01370	68.64		31.93	3.33
	L0049129	450485.38	3768587.38	526.08	1.50	0.01370	68.64		31.93	3.33
	L0049130	450554.02	3768587.31	529.68	1.50	0.01370	68.64		31.93	3.33
	L0049131	450622.66	3768587.23	533.28	1.50	0.01370	68.64		31.93	3.33
	L0049132	450691.30	3768587.16	536.88	1.50	0.01370	68.64		31.93	3.33
	L0049133	450759.94	3768587.09	540.47	1.50	0.01370	68.64		31.93	3.33
	L0049134	450828.58	3768587.02	544.07	1.50	0.01370	68.64		31.93	3.33

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08LRC	L0049135	444687.00	3768591.26	287.28	1.50	0.01220	68.64		31.93	3.33
	L0049136	444755.64	3768591.44	296.16	1.50	0.01220	68.64		31.93	3.33
	L0049137	444824.28	3768591.62	305.04	1.50	0.01220	68.64		31.93	3.33
	L0049138	444892.92	3768591.80	313.92	1.50	0.01220	68.64		31.93	3.33
	L0049139	444961.56	3768591.98	322.79	1.50	0.01220	68.64		31.93	3.33
	L0049140	445030.20	3768592.16	331.67	1.50	0.01220	68.64		31.93	3.33
	L0049141	445098.84	3768592.34	340.55	1.50	0.01220	68.64		31.93	3.33
	L0049142	445167.48	3768592.52	349.43	1.50	0.01220	68.64		31.93	3.33
	L0049143	445236.12	3768592.70	358.31	1.50	0.01220	68.64		31.93	3.33
	L0049144	445304.76	3768592.88	367.19	1.50	0.01220	68.64		31.93	3.33
	L0049145	445373.40	3768593.05	376.07	1.50	0.01220	68.64		31.93	3.33
	L0049146	445442.04	3768593.23	384.95	1.50	0.01220	68.64		31.93	3.33
	L0049147	445510.68	3768593.41	393.82	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08LRC	L0049148	445579.32	3768593.59	402.70	1.50	0.01220	68.64		31.93	3.33
	L0049149	445647.96	3768593.77	411.58	1.50	0.01220	68.64		31.93	3.33
	L0049150	445716.60	3768593.95	420.46	1.50	0.01220	68.64		31.93	3.33
	L0049151	445785.24	3768594.13	429.34	1.50	0.01220	68.64		31.93	3.33
	L0049152	445853.88	3768594.31	438.22	1.50	0.01220	68.64		31.93	3.33
	L0049153	445922.52	3768594.49	447.10	1.50	0.01220	68.64		31.93	3.33
	L0049154	445991.16	3768594.66	455.97	1.50	0.01220	68.64		31.93	3.33
	L0049155	446059.80	3768594.84	464.85	1.50	0.01220	68.64		31.93	3.33
	L0049156	446128.44	3768595.02	473.73	1.50	0.01220	68.64		31.93	3.33
	L0049157	446197.08	3768595.20	482.61	1.50	0.01220	68.64		31.93	3.33
	L0049158	446265.72	3768595.38	491.49	1.50	0.01220	68.64		31.93	3.33
	L0049159	446333.19	3768587.78	500.37	1.50	0.01220	68.64		31.93	3.33
	L0049160	446398.75	3768567.44	509.25	1.50	0.01220	68.64		31.93	3.33
	L0049161	446464.31	3768547.11	518.13	1.50	0.01220	68.64		31.93	3.33
	L0049162	446529.87	3768526.77	527.00	1.50	0.01220	68.64		31.93	3.33
	L0049163	446594.78	3768505.08	535.88	1.50	0.01220	68.64		31.93	3.33
	L0049164	446651.96	3768467.11	544.76	1.50	0.01220	68.64		31.93	3.33
	L0049165	446709.14	3768429.14	553.64	1.50	0.01220	68.64		31.93	3.33
	L0049166	446766.32	3768391.16	562.52	1.50	0.01220	68.64		31.93	3.33
	L0049167	446823.50	3768353.19	571.40	1.50	0.01220	68.64		31.93	3.33
	L0049168	446880.68	3768315.22	580.28	1.50	0.01220	68.64		31.93	3.33
	L0049169	446937.86	3768277.24	589.16	1.50	0.01220	68.64		31.93	3.33
	L0049170	446995.03	3768239.27	598.04	1.50	0.01220	68.64		31.93	3.33
	L0049171	447051.32	3768200.33	606.92	1.50	0.01220	68.64		31.93	3.33
	L0049172	447093.41	3768146.11	615.80	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08LRC	L0049173	447135.51	3768091.89	624.68	1.50	0.01220	68.64		31.93	3.33
	L0049174	447177.60	3768037.68	633.56	1.50	0.01220	68.64		31.93	3.33
	L0049175	447219.69	3767983.46	642.44	1.50	0.01220	68.64		31.93	3.33
	L0049176	447261.78	3767929.24	651.31	1.50	0.01220	68.64		31.93	3.33
	L0049177	447303.87	3767875.02	660.19	1.50	0.01220	68.64		31.93	3.33
	L0049178	447345.96	3767820.80	669.07	1.50	0.01220	68.64		31.93	3.33
	L0049179	447388.05	3767766.58	677.95	1.50	0.01220	68.64		31.93	3.33
	L0049180	447430.15	3767712.36	686.83	1.50	0.01220	68.64		31.93	3.33
	L0049181	447469.38	3767656.34	695.70	1.50	0.01220	68.64		31.93	3.33
	L0049182	447499.97	3767594.90	704.58	1.50	0.01220	68.64		31.93	3.33
	L0049183	447530.55	3767533.45	713.45	1.50	0.01220	68.64		31.93	3.33
	L0049184	447561.14	3767472.00	722.32	1.50	0.01220	68.64		31.93	3.33
	L0049185	447591.73	3767410.55	731.20	1.50	0.01220	68.64		31.93	3.33
	L0049186	447622.31	3767349.10	740.07	1.50	0.01220	68.64		31.93	3.33
	L0049187	447652.90	3767287.65	748.95	1.50	0.01220	68.64		31.93	3.33
	L0049188	447683.49	3767226.20	757.82	1.50	0.01220	68.64		31.93	3.33
	L0049189	447714.07	3767164.76	766.69	1.50	0.01220	68.64		31.93	3.33
	L0049190	447744.66	3767103.31	775.57	1.50	0.01220	68.64		31.93	3.33
	L0049191	447775.25	3767041.86	784.44	1.50	0.01220	68.64		31.93	3.33
	L0049192	447805.83	3766980.41	793.32	1.50	0.01220	68.64		31.93	3.33
	L0049193	447836.42	3766918.96	802.19	1.50	0.01220	68.64		31.93	3.33
	L0049194	447858.15	3766854.41	811.07	1.50	0.01220	68.64		31.93	3.33
	L0049195	447872.58	3766787.31	819.96	1.50	0.01220	68.64		31.93	3.33
	L0049196	447887.02	3766720.20	828.85	1.50	0.01220	68.64		31.93	3.33
	L0049197	447901.45	3766653.10	837.74	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08LRC	L0049198	447915.88	3766585.99	846.63	1.50	0.01220	68.64		31.93	3.33
	L0049199	447930.31	3766518.88	855.51	1.50	0.01220	68.64		31.93	3.33
	L0049200	447944.74	3766451.78	864.40	1.50	0.01220	68.64		31.93	3.33
	L0049201	447959.17	3766384.67	873.29	1.50	0.01220	68.64		31.93	3.33
	L0049202	447963.46	3766316.31	882.17	1.50	0.01220	68.64		31.93	3.33
	L0049203	447965.83	3766247.71	891.04	1.50	0.01220	68.64		31.93	3.33
	L0049204	447968.20	3766179.11	899.92	1.50	0.01220	68.64		31.93	3.33
	L0049205	447970.57	3766110.51	908.79	1.50	0.01220	68.64		31.93	3.33
	L0049206	447972.95	3766041.92	917.67	1.50	0.01220	68.64		31.93	3.33
	L0049207	447975.32	3765973.32	926.54	1.50	0.01220	68.64		31.93	3.33
	L0049208	447977.69	3765904.72	935.42	1.50	0.01220	68.64		31.93	3.33
	L0049209	447980.06	3765836.12	944.29	1.50	0.01220	68.64		31.93	3.33
	L0049210	447982.43	3765767.52	953.17	1.50	0.01220	68.64		31.93	3.33
	L0049211	447984.81	3765698.92	962.04	1.50	0.01220	68.64		31.93	3.33
	L0049212	447987.18	3765630.32	970.92	1.50	0.01220	68.64		31.93	3.33
	L0049213	447989.55	3765561.72	979.79	1.50	0.01220	68.64		31.93	3.33
	L0049214	447991.92	3765493.12	988.67	1.50	0.01220	68.64		31.93	3.33
	L0049215	447994.29	3765424.52	997.54	1.50	0.01220	68.64		31.93	3.33
	L0049216	447996.67	3765355.93	1006.42	1.50	0.01220	68.64		31.93	3.33

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08LSO	L0049217	444686.76	3768591.53	287.28	1.50	0.01220	68.64		31.93	3.33
	L0049218	444755.40	3768591.49	296.16	1.50	0.01220	68.64		31.93	3.33
	L0049219	444824.04	3768591.45	305.03	1.50	0.01220	68.64		31.93	3.33
	L0049220	444892.68	3768591.41	313.91	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08LSO	L0049221	444961.32	3768591.37	322.79	1.50	0.01220	68.64		31.93	3.33
	L0049222	445029.96	3768591.33	331.67	1.50	0.01220	68.64		31.93	3.33
	L0049223	445098.60	3768591.29	340.55	1.50	0.01220	68.64		31.93	3.33
	L0049224	445167.24	3768591.25	349.42	1.50	0.01220	68.64		31.93	3.33
	L0049225	445235.88	3768591.21	358.30	1.50	0.01220	68.64		31.93	3.33
	L0049226	445304.52	3768591.17	367.18	1.50	0.01220	68.64		31.93	3.33
	L0049227	445373.16	3768591.13	376.06	1.50	0.01220	68.64		31.93	3.33
	L0049228	445441.80	3768591.09	384.93	1.50	0.01220	68.64		31.93	3.33
	L0049229	445510.44	3768591.05	393.81	1.50	0.01220	68.64		31.93	3.33
	L0049230	445579.08	3768591.01	402.69	1.50	0.01220	68.64		31.93	3.33
	L0049231	445647.72	3768590.97	411.57	1.50	0.01220	68.64		31.93	3.33
	L0049232	445716.36	3768590.93	420.45	1.50	0.01220	68.64		31.93	3.33
	L0049233	445785.00	3768590.89	429.32	1.50	0.01220	68.64		31.93	3.33
	L0049234	445853.64	3768590.85	438.20	1.50	0.01220	68.64		31.93	3.33
	L0049235	445922.28	3768590.81	447.08	1.50	0.01220	68.64		31.93	3.33
	L0049236	445990.92	3768590.77	455.96	1.50	0.01220	68.64		31.93	3.33
	L0049237	446059.56	3768590.73	464.84	1.50	0.01220	68.64		31.93	3.33
	L0049238	446128.20	3768590.69	473.71	1.50	0.01220	68.64		31.93	3.33
	L0049239	446196.84	3768590.65	482.59	1.50	0.01220	68.64		31.93	3.33
	L0049240	446265.48	3768590.61	491.47	1.50	0.01220	68.64		31.93	3.33
	L0049241	446334.12	3768590.57	500.35	1.50	0.01220	68.64		31.93	3.33
	L0049242	446402.76	3768590.53	509.22	1.50	0.01220	68.64		31.93	3.33
	L0049243	446471.40	3768590.49	518.10	1.50	0.01220	68.64		31.93	3.33
	L0049244	446540.04	3768590.45	526.98	1.50	0.01220	68.64		31.93	3.33
	L0049245	446608.68	3768590.41	535.86	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08LSO	L0049246	446677.32	3768590.37	544.74	1.50	0.01220	68.64		31.93	3.33
	L0049247	446745.96	3768590.33	553.61	1.50	0.01220	68.64		31.93	3.33
	L0049248	446814.60	3768590.29	562.49	1.50	0.01220	68.64		31.93	3.33
	L0049249	446883.24	3768590.25	571.37	1.50	0.01220	68.64		31.93	3.33
	L0049250	446951.88	3768590.21	580.25	1.50	0.01220	68.64		31.93	3.33
	L0049251	447020.52	3768590.17	589.12	1.50	0.01220	68.64		31.93	3.33
	L0049252	447089.16	3768590.13	598.00	1.50	0.01220	68.64		31.93	3.33
	L0049253	447157.80	3768590.09	606.88	1.50	0.01220	68.64		31.93	3.33
	L0049254	447226.44	3768590.05	615.76	1.50	0.01220	68.64		31.93	3.33
	L0049255	447295.08	3768590.01	624.64	1.50	0.01220	68.64		31.93	3.33
	L0049256	447363.72	3768589.97	633.51	1.50	0.01220	68.64		31.93	3.33
	L0049257	447432.36	3768589.93	642.39	1.50	0.01220	68.64		31.93	3.33
	L0049258	447501.00	3768589.89	651.27	1.50	0.01220	68.64		31.93	3.33
	L0049259	447569.64	3768589.85	660.15	1.50	0.01220	68.64		31.93	3.33
	L0049260	447638.28	3768589.81	669.03	1.50	0.01220	68.64		31.93	3.33
	L0049261	447706.92	3768589.77	677.90	1.50	0.01220	68.64		31.93	3.33
	L0049262	447775.56	3768589.73	686.78	1.50	0.01220	68.64		31.93	3.33
	L0049263	447844.20	3768589.69	695.66	1.50	0.01220	68.64		31.93	3.33
	L0049264	447912.84	3768589.65	704.54	1.50	0.01220	68.64		31.93	3.33
	L0049265	447981.48	3768589.61	713.41	1.50	0.01220	68.64		31.93	3.33
	L0049266	448050.12	3768589.57	722.29	1.50	0.01220	68.64		31.93	3.33
	L0049267	448118.76	3768589.53	731.17	1.50	0.01220	68.64		31.93	3.33
	L0049268	448187.40	3768589.49	740.05	1.50	0.01220	68.64		31.93	3.33
	L0049269	448256.04	3768589.45	748.93	1.50	0.01220	68.64		31.93	3.33
	L0049270	448324.68	3768589.41	757.80	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08LSO	L0049271	448393.32	3768589.37	766.68	1.50	0.01220	68.64		31.93	3.33
	L0049272	448461.96	3768589.33	775.56	1.50	0.01220	68.64		31.93	3.33
	L0049273	448530.60	3768589.29	784.44	1.50	0.01220	68.64		31.93	3.33
	L0049274	448599.24	3768589.25	793.31	1.50	0.01220	68.64		31.93	3.33
	L0049275	448667.88	3768589.21	802.19	1.50	0.01220	68.64		31.93	3.33
	L0049276	448736.52	3768589.17	811.07	1.50	0.01220	68.64		31.93	3.33
	L0049277	448805.16	3768589.13	819.95	1.50	0.01220	68.64		31.93	3.33
	L0049278	448873.80	3768589.09	828.83	1.50	0.01220	68.64		31.93	3.33
	L0049279	448942.44	3768589.05	837.70	1.50	0.01220	68.64		31.93	3.33
	L0049280	449011.08	3768589.01	846.58	1.50	0.01220	68.64		31.93	3.33
	L0049281	449079.72	3768588.97	855.46	1.50	0.01220	68.64		31.93	3.33
	L0049282	449148.36	3768588.93	864.34	1.50	0.01220	68.64		31.93	3.33
	L0049283	449217.00	3768588.89	873.21	1.50	0.01220	68.64		31.93	3.33
	L0049284	449285.64	3768588.85	882.09	1.50	0.01220	68.64		31.93	3.33
	L0049285	449354.28	3768588.81	890.97	1.50	0.01220	68.64		31.93	3.33
	L0049286	449422.92	3768588.77	899.85	1.50	0.01220	68.64		31.93	3.33
	L0049287	449491.56	3768588.73	908.73	1.50	0.01220	68.64		31.93	3.33
	L0049288	449560.20	3768588.69	917.60	1.50	0.01220	68.64		31.93	3.33
	L0049289	449628.84	3768588.65	926.48	1.50	0.01220	68.64		31.93	3.33
	L0049290	449697.48	3768588.61	935.36	1.50	0.01220	68.64		31.93	3.33
	L0049291	449766.12	3768588.57	944.24	1.50	0.01220	68.64		31.93	3.33
	L0049292	449834.76	3768588.53	953.12	1.50	0.01220	68.64		31.93	3.33
	L0049293	449903.40	3768588.49	961.99	1.50	0.01220	68.64		31.93	3.33
	L0049294	449972.04	3768588.45	970.87	1.50	0.01220	68.64		31.93	3.33
	L0049295	450040.68	3768588.41	979.75	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08LSO	L0049296	450109.32	3768588.37	988.63	1.50	0.01220	68.64		31.93	3.33
	L0049297	450177.96	3768588.33	997.50	1.50	0.01220	68.64		31.93	3.33
	L0049298	450246.60	3768588.29	1006.38	1.50	0.01220	68.64		31.93	3.33

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08RRC	L0049299	445285.27	3768378.17	284.80	1.50	0.01220	68.64		31.93	3.33
	L0049300	445353.91	3768378.38	293.68	1.50	0.01220	68.64		31.93	3.33
	L0049301	445422.55	3768378.58	302.56	1.50	0.01220	68.64		31.93	3.33
	L0049302	445491.19	3768378.79	311.44	1.50	0.01220	68.64		31.93	3.33
	L0049303	445559.83	3768378.99	320.32	1.50	0.01220	68.64		31.93	3.33
	L0049304	445628.47	3768379.20	329.20	1.50	0.01220	68.64		31.93	3.33
	L0049305	445697.11	3768379.40	338.08	1.50	0.01220	68.64		31.93	3.33
	L0049306	445765.75	3768379.61	346.96	1.50	0.01220	68.64		31.93	3.33
	L0049307	445834.39	3768379.81	355.84	1.50	0.01220	68.64		31.93	3.33
	L0049308	445903.03	3768380.02	364.72	1.50	0.01220	68.64		31.93	3.33
	L0049309	445971.67	3768380.22	373.60	1.50	0.01220	68.64		31.93	3.33
	L0049310	446040.31	3768380.43	382.48	1.50	0.01220	68.64		31.93	3.33
	L0049311	446108.95	3768380.63	391.36	1.50	0.01220	68.64		31.93	3.33
	L0049312	446177.59	3768380.84	400.24	1.50	0.01220	68.64		31.93	3.33
	L0049313	446246.23	3768381.04	409.13	1.50	0.01220	68.64		31.93	3.33
	L0049314	446314.87	3768381.25	418.01	1.50	0.01220	68.64		31.93	3.33
	L0049315	446383.51	3768381.45	426.89	1.50	0.01220	68.64		31.93	3.33
	L0049316	446452.15	3768381.66	435.77	1.50	0.01220	68.64		31.93	3.33
	L0049317	446520.78	3768381.86	444.65	1.50	0.01220	68.64		31.93	3.33
	L0049318	446589.42	3768382.07	453.53	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08RRC	L0049319	446658.06	3768382.27	462.41	1.50	0.01220	68.64		31.93	3.33
	L0049320	446726.70	3768382.48	471.29	1.50	0.01220	68.64		31.93	3.33
	L0049321	446795.34	3768382.68	480.17	1.50	0.01220	68.64		31.93	3.33
	L0049322	446860.84	3768363.05	489.03	1.50	0.01220	68.64		31.93	3.33
	L0049323	446926.05	3768341.63	497.90	1.50	0.01220	68.64		31.93	3.33
	L0049324	446991.26	3768320.21	506.76	1.50	0.01220	68.64		31.93	3.33
	L0049325	447056.47	3768298.79	515.63	1.50	0.01220	68.64		31.93	3.33
	L0049326	447120.51	3768274.75	524.50	1.50	0.01220	68.64		31.93	3.33
	L0049327	447179.94	3768240.39	533.37	1.50	0.01220	68.64		31.93	3.33
	L0049328	447239.36	3768206.03	542.24	1.50	0.01220	68.64		31.93	3.33
	L0049329	447298.78	3768171.68	551.12	1.50	0.01220	68.64		31.93	3.33
	L0049330	447358.21	3768137.32	559.99	1.50	0.01220	68.64		31.93	3.33
	L0049331	447417.63	3768102.96	568.87	1.50	0.01220	68.64		31.93	3.33
	L0049332	447477.05	3768068.61	577.74	1.50	0.01220	68.64		31.93	3.33
	L0049333	447536.47	3768034.25	586.62	1.50	0.01220	68.64		31.93	3.33
	L0049334	447595.90	3767999.89	595.49	1.50	0.01220	68.64		31.93	3.33
	L0049335	447655.32	3767965.54	604.37	1.50	0.01220	68.64		31.93	3.33
	L0049336	447704.08	3767917.59	613.25	1.50	0.01220	68.64		31.93	3.33
	L0049337	447751.59	3767868.05	622.12	1.50	0.01220	68.64		31.93	3.33
	L0049338	447799.10	3767818.51	631.00	1.50	0.01220	68.64		31.93	3.33
	L0049339	447846.61	3767768.97	639.88	1.50	0.01220	68.64		31.93	3.33
	L0049340	447894.12	3767719.43	648.76	1.50	0.01220	68.64		31.93	3.33
	L0049341	447941.63	3767669.89	657.64	1.50	0.01220	68.64		31.93	3.33
	L0049342	447989.14	3767620.35	666.52	1.50	0.01220	68.64		31.93	3.33
	L0049343	448036.65	3767570.81	675.40	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08RRC	L0049344	448084.16	3767521.27	684.28	1.50	0.01220	68.64		31.93	3.33
	L0049345	448131.68	3767471.73	693.16	1.50	0.01220	68.64		31.93	3.33
	L0049346	448179.19	3767422.19	702.04	1.50	0.01220	68.64		31.93	3.33
	L0049347	448226.70	3767372.65	710.92	1.50	0.01220	68.64		31.93	3.33
	L0049348	448274.21	3767323.11	719.80	1.50	0.01220	68.64		31.93	3.33
	L0049349	448321.72	3767273.57	728.68	1.50	0.01220	68.64		31.93	3.33
	L0049350	448369.23	3767224.03	737.56	1.50	0.01220	68.64		31.93	3.33
	L0049351	448416.74	3767174.49	746.43	1.50	0.01220	68.64		31.93	3.33
	L0049352	448464.25	3767124.95	755.31	1.50	0.01220	68.64		31.93	3.33
	L0049353	448511.76	3767075.41	764.19	1.50	0.01220	68.64		31.93	3.33
	L0049354	448552.44	3767020.86	773.07	1.50	0.01220	68.64		31.93	3.33
	L0049355	448585.41	3766960.66	781.96	1.50	0.01220	68.64		31.93	3.33
	L0049356	448618.38	3766900.46	790.84	1.50	0.01220	68.64		31.93	3.33
	L0049357	448651.36	3766840.26	799.73	1.50	0.01220	68.64		31.93	3.33
	L0049358	448684.33	3766780.06	808.61	1.50	0.01220	68.64		31.93	3.33
	L0049359	448717.30	3766719.85	817.49	1.50	0.01220	68.64		31.93	3.33
	L0049360	448750.28	3766659.65	826.38	1.50	0.01220	68.64		31.93	3.33
	L0049361	448783.25	3766599.45	835.26	1.50	0.01220	68.64		31.93	3.33
	L0049362	448816.22	3766539.25	844.15	1.50	0.01220	68.64		31.93	3.33
	L0049363	448849.20	3766479.05	853.03	1.50	0.01220	68.64		31.93	3.33
	L0049364	448882.17	3766418.85	861.91	1.50	0.01220	68.64		31.93	3.33
	L0049365	448915.15	3766358.65	870.80	1.50	0.01220	68.64		31.93	3.33
	L0049366	448948.12	3766298.45	879.68	1.50	0.01220	68.64		31.93	3.33
	L0049367	448981.09	3766238.24	888.57	1.50	0.01220	68.64		31.93	3.33
	L0049368	448990.90	3766171.07	897.44	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D08RRC	L0049369	448996.61	3766102.67	906.32	1.50	0.01220	68.64		31.93	3.33
	L0049370	449002.32	3766034.27	915.20	1.50	0.01220	68.64		31.93	3.33
	L0049371	449008.03	3765965.87	924.08	1.50	0.01220	68.64		31.93	3.33
	L0049372	449013.74	3765897.47	932.95	1.50	0.01220	68.64		31.93	3.33
	L0049373	449019.45	3765829.06	941.83	1.50	0.01220	68.64		31.93	3.33
	L0049374	449025.16	3765760.66	950.71	1.50	0.01220	68.64		31.93	3.33
	L0049375	449030.87	3765692.26	959.58	1.50	0.01220	68.64		31.93	3.33
	L0049376	449036.58	3765623.86	968.46	1.50	0.01220	68.64		31.93	3.33
	L0049377	449042.29	3765555.46	977.34	1.50	0.01220	68.64		31.93	3.33
	L0049378	449048.00	3765487.05	986.22	1.50	0.01220	68.64		31.93	3.33
	L0049379	449053.71	3765418.65	995.09	1.50	0.01220	68.64		31.93	3.33
	L0049380	449059.42	3765350.25	1003.97	1.50	0.01220	68.64		31.93	3.33

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LLC	L0049381	443985.13	3768378.65	285.62	1.50	0.01205	68.32		31.78	3.33
	L0049382	443916.81	3768378.98	294.45	1.50	0.01205	68.32		31.78	3.33
	L0049383	443848.49	3768379.31	303.29	1.50	0.01205	68.32		31.78	3.33
	L0049384	443780.17	3768379.64	312.13	1.50	0.01205	68.32		31.78	3.33
	L0049385	443711.85	3768379.97	320.96	1.50	0.01205	68.32		31.78	3.33
	L0049386	443643.53	3768380.30	329.80	1.50	0.01205	68.32		31.78	3.33
	L0049387	443575.21	3768380.63	338.64	1.50	0.01205	68.32		31.78	3.33
	L0049388	443506.89	3768380.96	347.47	1.50	0.01205	68.32		31.78	3.33
	L0049389	443438.57	3768381.29	356.31	1.50	0.01205	68.32		31.78	3.33
	L0049390	443370.25	3768381.62	365.14	1.50	0.01205	68.32		31.78	3.33
	L0049391	443301.93	3768381.95	373.98	1.50	0.01205	68.32		31.78	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LLC	L0049392	443233.62	3768382.28	382.82	1.50	0.01205	68.32		31.78	3.33
	L0049393	443165.30	3768382.61	391.65	1.50	0.01205	68.32		31.78	3.33
	L0049394	443096.98	3768382.94	400.49	1.50	0.01205	68.32		31.78	3.33
	L0049395	443028.66	3768383.27	409.33	1.50	0.01205	68.32		31.78	3.33
	L0049396	442960.34	3768383.60	418.16	1.50	0.01205	68.32		31.78	3.33
	L0049397	442892.02	3768383.93	427.00	1.50	0.01205	68.32		31.78	3.33
	L0049398	442823.70	3768384.26	435.83	1.50	0.01205	68.32		31.78	3.33
	L0049399	442755.38	3768384.59	444.67	1.50	0.01205	68.32		31.78	3.33
	L0049400	442687.06	3768384.92	453.51	1.50	0.01205	68.32		31.78	3.33
	L0049401	442618.74	3768385.25	462.34	1.50	0.01205	68.32		31.78	3.33
	L0049402	442550.42	3768385.58	471.18	1.50	0.01205	68.32		31.78	3.33
	L0049403	442482.10	3768385.91	480.01	1.50	0.01205	68.32		31.78	3.33
	L0049404	442413.78	3768386.24	488.85	1.50	0.01205	68.32		31.78	3.33
	L0049405	442345.47	3768386.57	497.69	1.50	0.01205	68.32		31.78	3.33
	L0049406	442277.15	3768386.90	506.52	1.50	0.01205	68.32		31.78	3.33
	L0049407	442208.83	3768387.23	515.36	1.50	0.01205	68.32		31.78	3.33
	L0049408	442140.51	3768387.56	524.20	1.50	0.01205	68.32		31.78	3.33
	L0049409	442072.19	3768387.89	533.03	1.50	0.01205	68.32		31.78	3.33
	L0049410	442003.87	3768388.22	541.87	1.50	0.01205	68.32		31.78	3.33
	L0049411	441935.55	3768388.55	550.70	1.50	0.01205	68.32		31.78	3.33
	L0049412	441867.23	3768388.88	559.54	1.50	0.01205	68.32		31.78	3.33
	L0049413	441798.91	3768389.21	568.38	1.50	0.01205	68.32		31.78	3.33
	L0049414	441730.59	3768389.54	577.21	1.50	0.01205	68.32		31.78	3.33
	L0049415	441662.64	3768385.49	586.05	1.50	0.01205	68.32		31.78	3.33
	L0049416	441595.30	3768373.92	594.90	1.50	0.01205	68.32		31.78	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LLC	L0049417	441527.97	3768362.34	603.74	1.50	0.01205	68.32		31.78	3.33
	L0049418	441460.64	3768350.77	612.59	1.50	0.01205	68.32		31.78	3.33
	L0049419	441393.31	3768339.20	621.43	1.50	0.01205	68.32		31.78	3.33
	L0049420	441325.97	3768327.63	630.28	1.50	0.01205	68.32		31.78	3.33
	L0049421	441258.64	3768316.05	639.12	1.50	0.01205	68.32		31.78	3.33
	L0049422	441194.89	3768294.79	647.96	1.50	0.01205	68.32		31.78	3.33
	L0049423	441136.18	3768259.84	656.79	1.50	0.01205	68.32		31.78	3.33
	L0049424	441077.47	3768224.90	665.62	1.50	0.01205	68.32		31.78	3.33
	L0049425	441018.76	3768189.95	674.45	1.50	0.01205	68.32		31.78	3.33
	L0049426	440960.06	3768155.01	683.27	1.50	0.01205	68.32		31.78	3.33
	L0049427	440902.91	3768117.98	692.10	1.50	0.01205	68.32		31.78	3.33
	L0049428	440852.78	3768071.56	700.94	1.50	0.01205	68.32		31.78	3.33
	L0049429	440802.65	3768025.15	709.77	1.50	0.01205	68.32		31.78	3.33
	L0049430	440752.52	3767978.73	718.60	1.50	0.01205	68.32		31.78	3.33
	L0049431	440702.38	3767932.31	727.43	1.50	0.01205	68.32		31.78	3.33
	L0049432	440652.25	3767885.90	736.27	1.50	0.01205	68.32		31.78	3.33
	L0049433	440609.25	3767834.70	745.10	1.50	0.01205	68.32		31.78	3.33
	L0049434	440585.36	3767770.69	753.95	1.50	0.01205	68.32		31.78	3.33
	L0049435	440561.46	3767706.69	762.79	1.50	0.01205	68.32		31.78	3.33
	L0049436	440537.57	3767642.68	771.63	1.50	0.01205	68.32		31.78	3.33
	L0049437	440513.67	3767578.68	780.48	1.50	0.01205	68.32		31.78	3.33
	L0049438	440489.78	3767514.67	789.32	1.50	0.01205	68.32		31.78	3.33
	L0049439	440465.88	3767450.67	798.16	1.50	0.01205	68.32		31.78	3.33
	L0049440	440441.99	3767386.66	807.00	1.50	0.01205	68.32		31.78	3.33
	L0049441	440418.09	3767322.66	815.85	1.50	0.01205	68.32		31.78	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LLC	L0049442	440411.79	3767255.64	824.69	1.50	0.01205	68.32		31.78	3.33
	L0049443	440413.04	3767187.33	833.53	1.50	0.01205	68.32		31.78	3.33
	L0049444	440414.28	3767119.02	842.36	1.50	0.01205	68.32		31.78	3.33
	L0049445	440415.52	3767050.72	851.20	1.50	0.01205	68.32		31.78	3.33
	L0049446	440416.76	3766982.41	860.04	1.50	0.01205	68.32		31.78	3.33
	L0049447	440418.01	3766914.10	868.88	1.50	0.01205	68.32		31.78	3.33
	L0049448	440419.25	3766845.79	877.72	1.50	0.01205	68.32		31.78	3.33
	L0049449	440420.49	3766777.48	886.55	1.50	0.01205	68.32		31.78	3.33
	L0049450	440421.74	3766709.17	895.39	1.50	0.01205	68.32		31.78	3.33
	L0049451	440422.98	3766640.86	904.23	1.50	0.01205	68.32		31.78	3.33
	L0049452	440424.22	3766572.55	913.07	1.50	0.01205	68.32		31.78	3.33
	L0049453	440425.46	3766504.25	921.91	1.50	0.01205	68.32		31.78	3.33
	L0049454	440426.71	3766435.94	930.75	1.50	0.01205	68.32		31.78	3.33
	L0049455	440427.95	3766367.63	939.58	1.50	0.01205	68.32		31.78	3.33
	L0049456	440429.19	3766299.32	948.42	1.50	0.01205	68.32		31.78	3.33
	L0049457	440430.44	3766231.01	957.26	1.50	0.01205	68.32		31.78	3.33
	L0049458	440431.68	3766162.70	966.10	1.50	0.01205	68.32		31.78	3.33
	L0049459	440438.53	3766095.02	974.93	1.50	0.01205	68.32		31.78	3.33
	L0049460	440452.37	3766028.11	983.77	1.50	0.01205	68.32		31.78	3.33
	L0049461	440466.20	3765961.21	992.60	1.50	0.01205	68.32		31.78	3.33
	L0049462	440480.04	3765894.31	1001.43	1.50	0.01205	68.32		31.78	3.33
	L0049463	440493.88	3765827.40	1010.27	1.50	0.01205	68.32		31.78	3.33

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LRT	L0049464	443985.30	3768379.30	285.64	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LRT	L0049465	443916.66	3768379.76	294.52	1.50	0.01220	68.64		31.93	3.33
	L0049466	443848.02	3768380.22	303.40	1.50	0.01220	68.64		31.93	3.33
	L0049467	443779.38	3768380.68	312.27	1.50	0.01220	68.64		31.93	3.33
	L0049468	443710.74	3768381.14	321.15	1.50	0.01220	68.64		31.93	3.33
	L0049469	443642.10	3768381.60	330.03	1.50	0.01220	68.64		31.93	3.33
	L0049470	443573.47	3768382.06	338.91	1.50	0.01220	68.64		31.93	3.33
	L0049471	443504.83	3768382.52	347.79	1.50	0.01220	68.64		31.93	3.33
	L0049472	443436.19	3768382.98	356.66	1.50	0.01220	68.64		31.93	3.33
	L0049473	443367.55	3768383.44	365.54	1.50	0.01220	68.64		31.93	3.33
	L0049474	443298.91	3768383.90	374.42	1.50	0.01220	68.64		31.93	3.33
	L0049475	443230.27	3768384.36	383.30	1.50	0.01220	68.64		31.93	3.33
	L0049476	443161.64	3768384.82	392.18	1.50	0.01220	68.64		31.93	3.33
	L0049477	443093.00	3768385.28	401.05	1.50	0.01220	68.64		31.93	3.33
	L0049478	443024.36	3768385.74	409.93	1.50	0.01220	68.64		31.93	3.33
	L0049479	442955.72	3768386.20	418.81	1.50	0.01220	68.64		31.93	3.33
	L0049480	442887.08	3768386.66	427.69	1.50	0.01220	68.64		31.93	3.33
	L0049481	442818.44	3768387.12	436.57	1.50	0.01220	68.64		31.93	3.33
	L0049482	442749.80	3768387.58	445.44	1.50	0.01220	68.64		31.93	3.33
	L0049483	442681.17	3768388.04	454.32	1.50	0.01220	68.64		31.93	3.33
	L0049484	442612.53	3768388.50	463.20	1.50	0.01220	68.64		31.93	3.33
	L0049485	442543.89	3768388.96	472.08	1.50	0.01220	68.64		31.93	3.33
	L0049486	442484.12	3768419.53	480.96	1.50	0.01220	68.64		31.93	3.33
	L0049487	442426.18	3768456.33	489.83	1.50	0.01220	68.64		31.93	3.33
	L0049488	442368.24	3768493.14	498.71	1.50	0.01220	68.64		31.93	3.33
	L0049489	442310.30	3768529.94	507.59	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LRT	L0049490	442252.36	3768566.74	516.47	1.50	0.01220	68.64		31.93	3.33
	L0049491	442194.42	3768603.55	525.35	1.50	0.01220	68.64		31.93	3.33
	L0049492	442136.48	3768640.35	534.22	1.50	0.01220	68.64		31.93	3.33
	L0049493	442078.54	3768677.15	543.10	1.50	0.01220	68.64		31.93	3.33
	L0049494	442020.60	3768713.96	551.98	1.50	0.01220	68.64		31.93	3.33
	L0049495	441962.66	3768750.76	560.86	1.50	0.01220	68.64		31.93	3.33
	L0049496	441904.72	3768787.56	569.74	1.50	0.01220	68.64		31.93	3.33
	L0049497	441846.78	3768824.37	578.61	1.50	0.01220	68.64		31.93	3.33
	L0049498	441788.84	3768861.17	587.49	1.50	0.01220	68.64		31.93	3.33
	L0049499	441730.90	3768897.97	596.37	1.50	0.01220	68.64		31.93	3.33
	L0049500	441672.96	3768934.78	605.25	1.50	0.01220	68.64		31.93	3.33
	L0049501	441615.03	3768971.58	614.13	1.50	0.01220	68.64		31.93	3.33
	L0049502	441557.09	3769008.38	623.00	1.50	0.01220	68.64		31.93	3.33
	L0049503	441499.15	3769045.19	631.88	1.50	0.01220	68.64		31.93	3.33
	L0049504	441441.21	3769081.99	640.76	1.50	0.01220	68.64		31.93	3.33
	L0049505	441383.27	3769118.79	649.64	1.50	0.01220	68.64		31.93	3.33
	L0049506	441325.33	3769155.60	658.52	1.50	0.01220	68.64		31.93	3.33
	L0049507	441267.39	3769192.40	667.40	1.50	0.01220	68.64		31.93	3.33
	L0049508	441209.45	3769229.20	676.27	1.50	0.01220	68.64		31.93	3.33
	L0049509	441151.51	3769266.01	685.15	1.50	0.01220	68.64		31.93	3.33
	L0049510	441093.57	3769302.81	694.03	1.50	0.01220	68.64		31.93	3.33
	L0049511	441035.63	3769339.61	702.91	1.50	0.01220	68.64		31.93	3.33
	L0049512	440977.69	3769376.42	711.79	1.50	0.01220	68.64		31.93	3.33
	L0049513	440919.75	3769413.22	720.66	1.50	0.01220	68.64		31.93	3.33
	L0049514	440861.81	3769450.02	729.54	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LRT	L0049515	440803.88	3769486.83	738.42	1.50	0.01220	68.64		31.93	3.33
	L0049516	440745.94	3769523.63	747.30	1.50	0.01220	68.64		31.93	3.33
	L0049517	440688.00	3769560.43	756.18	1.50	0.01220	68.64		31.93	3.33
	L0049518	440630.06	3769597.24	765.05	1.50	0.01220	68.64		31.93	3.33
	L0049519	440572.12	3769634.04	773.93	1.50	0.01220	68.64		31.93	3.33
	L0049520	440514.18	3769670.84	782.81	1.50	0.01220	68.64		31.93	3.33
	L0049521	440456.24	3769707.65	791.69	1.50	0.01220	68.64		31.93	3.33
	L0049522	440398.30	3769744.45	800.57	1.50	0.01220	68.64		31.93	3.33
	L0049523	440340.36	3769781.25	809.44	1.50	0.01220	68.64		31.93	3.33
	L0049524	440282.42	3769818.06	818.32	1.50	0.01220	68.64		31.93	3.33
	L0049525	440224.48	3769854.86	827.20	1.50	0.01220	68.64		31.93	3.33
	L0049526	440166.54	3769891.66	836.08	1.50	0.01220	68.64		31.93	3.33
	L0049527	440108.60	3769928.47	844.96	1.50	0.01220	68.64		31.93	3.33
	L0049528	440050.66	3769965.27	853.83	1.50	0.01220	68.64		31.93	3.33
	L0049529	439992.72	3770002.07	862.71	1.50	0.01220	68.64		31.93	3.33
	L0049530	439934.79	3770038.88	871.59	1.50	0.01220	68.64		31.93	3.33
	L0049531	439876.85	3770075.68	880.47	1.50	0.01220	68.64		31.93	3.33
	L0049532	439818.91	3770112.48	889.35	1.50	0.01220	68.64		31.93	3.33
	L0049533	439760.97	3770149.29	898.22	1.50	0.01220	68.64		31.93	3.33
	L0049534	439703.03	3770186.09	907.10	1.50	0.01220	68.64		31.93	3.33
	L0049535	439645.09	3770222.89	915.98	1.50	0.01220	68.64		31.93	3.33
	L0049536	439587.15	3770259.70	924.86	1.50	0.01220	68.64		31.93	3.33
	L0049537	439529.21	3770296.50	933.74	1.50	0.01220	68.64		31.93	3.33
	L0049538	439471.27	3770333.30	942.62	1.50	0.01220	68.64		31.93	3.33
	L0049539	439413.33	3770370.11	951.49	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LRT	L0049540	439355.39	3770406.91	960.37	1.50	0.01220	68.64		31.93	3.33
	L0049541	439297.45	3770443.71	969.25	1.50	0.01220	68.64		31.93	3.33
	L0049542	439239.51	3770480.52	978.13	1.50	0.01220	68.64		31.93	3.33
	L0049543	439181.57	3770517.32	987.01	1.50	0.01220	68.64		31.93	3.33
	L0049544	439123.64	3770554.12	995.88	1.50	0.01220	68.64		31.93	3.33
	L0049545	439065.70	3770590.93	1004.76	1.50	0.01220	68.64		31.93	3.33

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LSO	L0049546	443984.25	3768379.07	285.65	1.50	0.01220	68.64		31.93	3.33
	L0049547	443915.61	3768379.11	294.53	1.50	0.01220	68.64		31.93	3.33
	L0049548	443846.97	3768379.15	303.41	1.50	0.01220	68.64		31.93	3.33
	L0049549	443778.33	3768379.19	312.28	1.50	0.01220	68.64		31.93	3.33
	L0049550	443709.69	3768379.23	321.16	1.50	0.01220	68.64		31.93	3.33
	L0049551	443641.05	3768379.27	330.04	1.50	0.01220	68.64		31.93	3.33
	L0049552	443572.41	3768379.31	338.92	1.50	0.01220	68.64		31.93	3.33
	L0049553	443503.77	3768379.35	347.80	1.50	0.01220	68.64		31.93	3.33
	L0049554	443435.13	3768379.39	356.68	1.50	0.01220	68.64		31.93	3.33
	L0049555	443366.49	3768379.43	365.55	1.50	0.01220	68.64		31.93	3.33
	L0049556	443297.85	3768379.47	374.43	1.50	0.01220	68.64		31.93	3.33
	L0049557	443229.21	3768379.51	383.31	1.50	0.01220	68.64		31.93	3.33
	L0049558	443160.57	3768379.55	392.19	1.50	0.01220	68.64		31.93	3.33
	L0049559	443091.93	3768379.59	401.07	1.50	0.01220	68.64		31.93	3.33
	L0049560	443023.29	3768379.63	409.95	1.50	0.01220	68.64		31.93	3.33
	L0049561	442954.65	3768379.67	418.83	1.50	0.01220	68.64		31.93	3.33
	L0049562	442886.01	3768379.71	427.70	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LSO	L0049563	442817.37	3768379.74	436.58	1.50	0.01220	68.64		31.93	3.33
	L0049564	442748.73	3768379.78	445.46	1.50	0.01220	68.64		31.93	3.33
	L0049565	442680.09	3768379.82	454.34	1.50	0.01220	68.64		31.93	3.33
	L0049566	442611.45	3768379.86	463.22	1.50	0.01220	68.64		31.93	3.33
	L0049567	442542.81	3768379.90	472.10	1.50	0.01220	68.64		31.93	3.33
	L0049568	442474.17	3768379.94	480.97	1.50	0.01220	68.64		31.93	3.33
	L0049569	442405.53	3768379.98	489.85	1.50	0.01220	68.64		31.93	3.33
	L0049570	442336.89	3768380.02	498.73	1.50	0.01220	68.64		31.93	3.33
	L0049571	442268.25	3768380.06	507.61	1.50	0.01220	68.64		31.93	3.33
	L0049572	442199.61	3768380.10	516.49	1.50	0.01220	68.64		31.93	3.33
	L0049573	442130.97	3768380.14	525.37	1.50	0.01220	68.64		31.93	3.33
	L0049574	442062.33	3768380.18	534.24	1.50	0.01220	68.64		31.93	3.33
	L0049575	441993.69	3768380.22	543.12	1.50	0.01220	68.64		31.93	3.33
	L0049576	441925.05	3768380.26	552.00	1.50	0.01220	68.64		31.93	3.33
	L0049577	441856.41	3768380.30	560.88	1.50	0.01220	68.64		31.93	3.33
	L0049578	441787.77	3768380.34	569.76	1.50	0.01220	68.64		31.93	3.33
	L0049579	441719.13	3768380.38	578.64	1.50	0.01220	68.64		31.93	3.33
	L0049580	441650.49	3768380.42	587.51	1.50	0.01220	68.64		31.93	3.33
	L0049581	441581.85	3768380.46	596.39	1.50	0.01220	68.64		31.93	3.33
	L0049582	441513.21	3768380.50	605.27	1.50	0.01220	68.64		31.93	3.33
	L0049583	441444.57	3768380.54	614.15	1.50	0.01220	68.64		31.93	3.33
	L0049584	441375.93	3768380.58	623.03	1.50	0.01220	68.64		31.93	3.33
	L0049585	441307.29	3768380.62	631.91	1.50	0.01220	68.64		31.93	3.33
	L0049586	441238.65	3768380.66	640.78	1.50	0.01220	68.64		31.93	3.33
	L0049587	441170.01	3768380.70	649.66	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LSO	L0049588	441101.37	3768380.74	658.54	1.50	0.01220	68.64		31.93	3.33
	L0049589	441032.73	3768380.78	667.42	1.50	0.01220	68.64		31.93	3.33
	L0049590	440964.09	3768380.82	676.30	1.50	0.01220	68.64		31.93	3.33
	L0049591	440895.45	3768380.86	685.18	1.50	0.01220	68.64		31.93	3.33
	L0049592	440826.81	3768380.90	694.06	1.50	0.01220	68.64		31.93	3.33
	L0049593	440758.17	3768380.94	702.93	1.50	0.01220	68.64		31.93	3.33
	L0049594	440689.53	3768380.98	711.81	1.50	0.01220	68.64		31.93	3.33
	L0049595	440620.89	3768381.02	720.69	1.50	0.01220	68.64		31.93	3.33
	L0049596	440552.25	3768381.06	729.57	1.50	0.01220	68.64		31.93	3.33
	L0049597	440483.61	3768381.10	738.45	1.50	0.01220	68.64		31.93	3.33
	L0049598	440414.97	3768381.14	747.33	1.50	0.01220	68.64		31.93	3.33
	L0049599	440346.33	3768381.18	756.20	1.50	0.01220	68.64		31.93	3.33
	L0049600	440277.69	3768381.22	765.08	1.50	0.01220	68.64		31.93	3.33
	L0049601	440209.05	3768381.26	773.96	1.50	0.01220	68.64		31.93	3.33
	L0049602	440140.41	3768381.30	782.84	1.50	0.01220	68.64		31.93	3.33
	L0049603	440071.77	3768381.34	791.72	1.50	0.01220	68.64		31.93	3.33
	L0049604	440003.13	3768381.38	800.60	1.50	0.01220	68.64		31.93	3.33
	L0049605	439934.49	3768381.42	809.47	1.50	0.01220	68.64		31.93	3.33
	L0049606	439865.85	3768381.46	818.35	1.50	0.01220	68.64		31.93	3.33
	L0049607	439797.21	3768381.50	827.23	1.50	0.01220	68.64		31.93	3.33
	L0049608	439728.57	3768381.54	836.11	1.50	0.01220	68.64		31.93	3.33
	L0049609	439659.93	3768381.58	844.99	1.50	0.01220	68.64		31.93	3.33
	L0049610	439591.29	3768381.62	853.87	1.50	0.01220	68.64		31.93	3.33
	L0049611	439522.65	3768381.66	862.74	1.50	0.01220	68.64		31.93	3.33
	L0049612	439454.01	3768381.70	871.62	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26LSO	L0049613	439385.37	3768381.74	880.50	1.50	0.01220	68.64		31.93	3.33
	L0049614	439316.73	3768381.78	889.38	1.50	0.01220	68.64		31.93	3.33
	L0049615	439248.09	3768381.82	898.26	1.50	0.01220	68.64		31.93	3.33
	L0049616	439179.45	3768381.86	907.14	1.50	0.01220	68.64		31.93	3.33
	L0049617	439110.81	3768381.90	916.01	1.50	0.01220	68.64		31.93	3.33
	L0049618	439042.17	3768381.93	924.89	1.50	0.01220	68.64		31.93	3.33
	L0049619	438973.53	3768381.97	933.77	1.50	0.01220	68.64		31.93	3.33
	L0049620	438904.89	3768382.01	942.65	1.50	0.01220	68.64		31.93	3.33
	L0049621	438836.25	3768382.05	951.53	1.50	0.01220	68.64		31.93	3.33
	L0049622	438767.61	3768382.09	960.41	1.50	0.01220	68.64		31.93	3.33
	L0049623	438698.97	3768382.13	969.29	1.50	0.01220	68.64		31.93	3.33
	L0049624	438630.33	3768382.17	978.16	1.50	0.01220	68.64		31.93	3.33
	L0049625	438561.69	3768382.21	987.04	1.50	0.01220	68.64		31.93	3.33
	L0049626	438493.05	3768382.25	995.92	1.50	0.01220	68.64		31.93	3.33
	L0049627	438424.41	3768382.29	1004.80	1.50	0.01220	68.64		31.93	3.33

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RLC	L0049628	443985.19	3768591.35	288.77	0.02	0.01220	68.64		31.93	3.33
	L0049629	443916.55	3768591.49	297.65	0.06	0.01220	68.64		31.93	3.33
	L0049630	443847.91	3768591.63	306.53	0.10	0.01220	68.64		31.93	3.33
	L0049631	443779.27	3768591.77	315.41	0.14	0.01220	68.64		31.93	3.33
	L0049632	443710.64	3768591.91	324.29	0.19	0.01220	68.64		31.93	3.33
	L0049633	443642.00	3768592.04	333.17	0.23	0.01220	68.64		31.93	3.33
	L0049634	443573.36	3768592.18	342.05	0.27	0.01220	68.64		31.93	3.33
	L0049635	443504.72	3768592.32	350.93	0.31	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RLC	L0049636	443436.08	3768592.46	359.81	0.35	0.01220	68.64		31.93	3.33
	L0049637	443367.44	3768592.60	368.69	0.39	0.01220	68.64		31.93	3.33
	L0049638	443298.80	3768592.74	377.57	0.43	0.01220	68.64		31.93	3.33
	L0049639	443230.16	3768592.88	386.45	0.47	0.01220	68.64		31.93	3.33
	L0049640	443161.52	3768593.02	395.32	0.52	0.01220	68.64		31.93	3.33
	L0049641	443092.88	3768593.16	404.20	0.56	0.01220	68.64		31.93	3.33
	L0049642	443024.24	3768593.30	413.08	0.60	0.01220	68.64		31.93	3.33
	L0049643	442955.60	3768593.44	421.96	0.64	0.01220	68.64		31.93	3.33
	L0049644	442886.96	3768593.58	430.84	0.68	0.01220	68.64		31.93	3.33
	L0049645	442818.32	3768593.72	439.72	0.72	0.01220	68.64		31.93	3.33
	L0049646	442749.68	3768593.86	448.60	0.76	0.01220	68.64		31.93	3.33
	L0049647	442681.04	3768593.99	457.48	0.80	0.01220	68.64		31.93	3.33
	L0049648	442612.40	3768594.13	466.36	0.85	0.01220	68.64		31.93	3.33
	L0049649	442543.76	3768594.27	475.24	0.89	0.01220	68.64		31.93	3.33
	L0049650	442475.12	3768594.41	484.12	0.93	0.01220	68.64		31.93	3.33
	L0049651	442406.48	3768594.55	493.00	0.97	0.01220	68.64		31.93	3.33
	L0049652	442337.84	3768594.69	501.88	1.01	0.01220	68.64		31.93	3.33
	L0049653	442269.20	3768594.83	510.76	1.05	0.01220	68.64		31.93	3.33
	L0049654	442200.56	3768594.97	519.64	1.09	0.01220	68.64		31.93	3.33
	L0049655	442131.92	3768595.11	528.52	1.13	0.01220	68.64		31.93	3.33
	L0049656	442063.28	3768595.25	537.40	1.17	0.01220	68.64		31.93	3.33
	L0049657	441994.64	3768595.39	546.28	1.22	0.01220	68.64		31.93	3.33
	L0049658	441926.00	3768595.53	555.16	1.26	0.01220	68.64		31.93	3.33
	L0049659	441857.36	3768595.67	564.04	1.30	0.01220	68.64		31.93	3.33
	L0049660	441788.72	3768595.81	572.92	1.34	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RLC	L0049661	441720.08	3768595.94	581.80	1.38	0.01220	68.64		31.93	3.33
	L0049662	441651.44	3768596.08	590.68	1.42	0.01220	68.64		31.93	3.33
	L0049663	441582.80	3768596.22	599.56	1.46	0.01220	68.64		31.93	3.33
	L0049664	441514.52	3768593.97	608.43	1.50	0.01220	68.64		31.93	3.33
	L0049665	441448.98	3768573.56	617.30	1.50	0.01220	68.64		31.93	3.33
	L0049666	441383.45	3768553.16	626.17	1.50	0.01220	68.64		31.93	3.33
	L0049667	441317.91	3768532.76	635.04	1.50	0.01220	68.64		31.93	3.33
	L0049668	441252.37	3768512.35	643.91	1.50	0.01220	68.64		31.93	3.33
	L0049669	441186.83	3768491.95	652.78	1.50	0.01220	68.64		31.93	3.33
	L0049670	441122.07	3768469.86	661.65	1.50	0.01220	68.64		31.93	3.33
	L0049671	441063.72	3768433.71	670.53	1.50	0.01220	68.64		31.93	3.33
	L0049672	441005.37	3768397.56	679.40	1.50	0.01220	68.64		31.93	3.33
	L0049673	440947.02	3768361.41	688.28	1.50	0.01220	68.64		31.93	3.33
	L0049674	440888.67	3768325.26	697.16	1.50	0.01220	68.64		31.93	3.33
	L0049675	440830.32	3768289.11	706.03	1.50	0.01220	68.64		31.93	3.33
	L0049676	440774.75	3768249.55	714.91	1.50	0.01220	68.64		31.93	3.33
	L0049677	440727.54	3768199.72	723.79	1.50	0.01220	68.64		31.93	3.33
	L0049678	440680.33	3768149.89	732.67	1.50	0.01220	68.64		31.93	3.33
	L0049679	440633.13	3768100.06	741.55	1.50	0.01220	68.64		31.93	3.33
	L0049680	440585.92	3768050.23	750.43	1.50	0.01220	68.64		31.93	3.33
	L0049681	440538.71	3768000.40	759.31	1.50	0.01220	68.64		31.93	3.33
	L0049682	440491.51	3767950.57	768.19	1.50	0.01220	68.64		31.93	3.33
	L0049683	440449.61	3767897.91	777.07	1.50	0.01220	68.64		31.93	3.33
	L0049684	440434.47	3767830.96	785.95	1.50	0.01220	68.64		31.93	3.33
	L0049685	440419.33	3767764.01	794.84	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RLC	L0049686	440404.20	3767697.06	803.72	1.50	0.01220	68.64		31.93	3.33
	L0049687	440389.06	3767630.11	812.61	1.50	0.01220	68.64		31.93	3.33
	L0049688	440373.92	3767563.16	821.49	1.50	0.01220	68.64		31.93	3.33
	L0049689	440358.79	3767496.21	830.38	1.50	0.01220	68.64		31.93	3.33
	L0049690	440356.10	3767427.94	839.25	1.50	0.01220	68.64		31.93	3.33
	L0049691	440356.86	3767359.31	848.13	1.50	0.01220	68.64		31.93	3.33
	L0049692	440357.62	3767290.67	857.01	1.50	0.01220	68.64		31.93	3.33
	L0049693	440358.38	3767222.03	865.89	1.50	0.01220	68.64		31.93	3.33
	L0049694	440359.14	3767153.40	874.76	1.50	0.01220	68.64		31.93	3.33
	L0049695	440359.90	3767084.76	883.64	1.50	0.01220	68.64		31.93	3.33
	L0049696	440360.66	3767016.13	892.52	1.50	0.01220	68.64		31.93	3.33
	L0049697	440361.42	3766947.49	901.39	1.50	0.01220	68.64		31.93	3.33
	L0049698	440362.18	3766878.85	910.27	1.50	0.01220	68.64		31.93	3.33
	L0049699	440362.94	3766810.22	919.15	1.50	0.01220	68.64		31.93	3.33
	L0049700	440363.70	3766741.58	928.03	1.50	0.01220	68.64		31.93	3.33
	L0049701	440364.46	3766672.95	936.90	1.50	0.01220	68.64		31.93	3.33
	L0049702	440365.22	3766604.31	945.78	1.50	0.01220	68.64		31.93	3.33
	L0049703	440365.98	3766535.68	954.66	1.50	0.01220	68.64		31.93	3.33
	L0049704	440366.74	3766467.04	963.53	1.50	0.01220	68.64		31.93	3.33
	L0049705	440367.50	3766398.40	972.41	1.50	0.01220	68.64		31.93	3.33
	L0049706	440368.26	3766329.77	981.29	1.50	0.01220	68.64		31.93	3.33
	L0049707	440369.02	3766261.13	990.17	1.50	0.01220	68.64		31.93	3.33
	L0049708	440374.19	3766192.84	999.03	1.50	0.01220	68.64		31.93	3.33
	L0049709	440383.95	3766124.89	1007.89	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RRT	L0049710	443985.33	3768591.78	288.77	1.50	0.01220	68.64		31.93	3.33
	L0049711	443916.69	3768591.95	297.65	1.50	0.01220	68.64		31.93	3.33
	L0049712	443848.05	3768592.12	306.52	1.50	0.01220	68.64		31.93	3.33
	L0049713	443779.41	3768592.28	315.40	1.50	0.01220	68.64		31.93	3.33
	L0049714	443710.77	3768592.45	324.28	1.50	0.01220	68.64		31.93	3.33
	L0049715	443642.13	3768592.62	333.16	1.50	0.01220	68.64		31.93	3.33
	L0049716	443573.49	3768592.79	342.03	1.50	0.01220	68.64		31.93	3.33
	L0049717	443504.85	3768592.96	350.91	1.50	0.01220	68.64		31.93	3.33
	L0049718	443436.21	3768593.13	359.79	1.50	0.01220	68.64		31.93	3.33
	L0049719	443367.57	3768593.30	368.67	1.50	0.01220	68.64		31.93	3.33
	L0049720	443298.93	3768593.46	377.55	1.50	0.01220	68.64		31.93	3.33
	L0049721	443230.29	3768593.63	386.42	1.50	0.01220	68.64		31.93	3.33
	L0049722	443161.65	3768593.80	395.30	1.50	0.01220	68.64		31.93	3.33
	L0049723	443093.01	3768593.97	404.18	1.50	0.01220	68.64		31.93	3.33
	L0049724	443024.37	3768594.14	413.06	1.50	0.01220	68.64		31.93	3.33
	L0049725	442955.73	3768594.31	421.93	1.50	0.01220	68.64		31.93	3.33
	L0049726	442887.09	3768594.47	430.81	1.50	0.01220	68.64		31.93	3.33
	L0049727	442818.45	3768594.64	439.69	1.50	0.01220	68.64		31.93	3.33
	L0049728	442749.81	3768594.81	448.57	1.50	0.01220	68.64		31.93	3.33
	L0049729	442681.17	3768594.98	457.44	1.50	0.01220	68.64		31.93	3.33
	L0049730	442612.53	3768595.15	466.32	1.50	0.01220	68.64		31.93	3.33
	L0049731	442543.89	3768595.32	475.20	1.50	0.01220	68.64		31.93	3.33
	L0049732	442475.25	3768595.49	484.08	1.50	0.01220	68.64		31.93	3.33
	L0049733	442406.61	3768595.65	492.96	1.50	0.01220	68.64		31.93	3.33
	L0049734	442337.97	3768595.82	501.83	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RRT	L0049735	442269.33	3768595.99	510.71	1.50	0.01220	68.64		31.93	3.33
	L0049736	442200.69	3768596.16	519.59	1.50	0.01220	68.64		31.93	3.33
	L0049737	442132.05	3768596.33	528.47	1.50	0.01220	68.64		31.93	3.33
	L0049738	442068.93	3768619.89	537.34	1.50	0.01220	68.64		31.93	3.33
	L0049739	442007.44	3768650.40	546.22	1.50	0.01220	68.64		31.93	3.33
	L0049740	441945.96	3768680.91	555.10	1.50	0.01220	68.64		31.93	3.33
	L0049741	441884.47	3768711.42	563.98	1.50	0.01220	68.64		31.93	3.33
	L0049742	441822.98	3768741.93	572.86	1.50	0.01220	68.64		31.93	3.33
	L0049743	441761.50	3768772.44	581.73	1.50	0.01220	68.64		31.93	3.33
	L0049744	441700.01	3768802.95	590.61	1.50	0.01220	68.64		31.93	3.33
	L0049745	441638.53	3768833.46	599.49	1.50	0.01220	68.64		31.93	3.33
	L0049746	441577.04	3768863.98	608.37	1.50	0.01220	68.64		31.93	3.33
	L0049747	441515.55	3768894.49	617.24	1.50	0.01220	68.64		31.93	3.33
	L0049748	441454.07	3768925.00	626.12	1.50	0.01220	68.64		31.93	3.33
	L0049749	441392.58	3768955.51	635.00	1.50	0.01220	68.64		31.93	3.33
	L0049750	441331.10	3768986.02	643.88	1.50	0.01220	68.64		31.93	3.33
	L0049751	441269.61	3769016.53	652.75	1.50	0.01220	68.64		31.93	3.33
	L0049752	441208.12	3769047.04	661.63	1.50	0.01220	68.64		31.93	3.33
	L0049753	441146.64	3769077.55	670.51	1.50	0.01220	68.64		31.93	3.33
	L0049754	441085.15	3769108.06	679.39	1.50	0.01220	68.64		31.93	3.33
	L0049755	441023.67	3769138.57	688.27	1.50	0.01220	68.64		31.93	3.33
	L0049756	440962.18	3769169.09	697.14	1.50	0.01220	68.64		31.93	3.33
	L0049757	440900.69	3769199.60	706.02	1.50	0.01220	68.64		31.93	3.33
	L0049758	440839.21	3769230.11	714.90	1.50	0.01220	68.64		31.93	3.33
	L0049759	440777.72	3769260.62	723.78	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RRT	L0049760	440716.24	3769291.13	732.65	1.50	0.01220	68.64		31.93	3.33
	L0049761	440654.75	3769321.64	741.53	1.50	0.01220	68.64		31.93	3.33
	L0049762	440593.26	3769352.15	750.41	1.50	0.01220	68.64		31.93	3.33
	L0049763	440531.78	3769382.66	759.29	1.50	0.01220	68.64		31.93	3.33
	L0049764	440470.29	3769413.17	768.17	1.50	0.01220	68.64		31.93	3.33
	L0049765	440408.81	3769443.68	777.04	1.50	0.01220	68.64		31.93	3.33
	L0049766	440347.32	3769474.20	785.92	1.50	0.01220	68.64		31.93	3.33
	L0049767	440285.83	3769504.71	794.80	1.50	0.01220	68.64		31.93	3.33
	L0049768	440224.35	3769535.22	803.68	1.50	0.01220	68.64		31.93	3.33
	L0049769	440162.86	3769565.73	812.55	1.50	0.01220	68.64		31.93	3.33
	L0049770	440101.38	3769596.24	821.43	1.50	0.01220	68.64		31.93	3.33
	L0049771	440039.89	3769626.75	830.31	1.50	0.01220	68.64		31.93	3.33
	L0049772	439978.40	3769657.26	839.19	1.50	0.01220	68.64		31.93	3.33
	L0049773	439916.92	3769687.77	848.06	1.50	0.01220	68.64		31.93	3.33
	L0049774	439855.43	3769718.28	856.94	1.50	0.01220	68.64		31.93	3.33
	L0049775	439793.95	3769748.79	865.82	1.50	0.01220	68.64		31.93	3.33
	L0049776	439732.46	3769779.31	874.70	1.50	0.01220	68.64		31.93	3.33
	L0049777	439670.97	3769809.82	883.58	1.50	0.01220	68.64		31.93	3.33
	L0049778	439609.49	3769840.33	892.45	1.50	0.01220	68.64		31.93	3.33
	L0049779	439548.00	3769870.84	901.33	1.50	0.01220	68.64		31.93	3.33
	L0049780	439486.52	3769901.35	910.21	1.50	0.01220	68.64		31.93	3.33
	L0049781	439425.03	3769931.86	919.09	1.50	0.01220	68.64		31.93	3.33
	L0049782	439363.54	3769962.37	927.96	1.50	0.01220	68.64		31.93	3.33
	L0049783	439302.06	3769992.88	936.84	1.50	0.01220	68.64		31.93	3.33
	L0049784	439240.57	3770023.39	945.72	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RRT	L0049785	439179.09	3770053.90	954.60	1.50	0.01220	68.64		31.93	3.33
	L0049786	439117.60	3770084.42	963.48	1.50	0.01220	68.64		31.93	3.33
	L0049787	439056.11	3770114.93	972.35	1.50	0.01220	68.64		31.93	3.33
	L0049788	438994.63	3770145.44	981.23	1.50	0.01220	68.64		31.93	3.33
	L0049789	438933.14	3770175.95	990.11	1.50	0.01220	68.64		31.93	3.33
	L0049790	438871.66	3770206.46	998.99	1.50	0.01220	68.64		31.93	3.33
	L0049791	438810.17	3770236.97	1007.86	1.50	0.01220	68.64		31.93	3.33

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RSO	L0049792	443984.86	3768592.24	288.77	1.50	0.01220	68.64		31.93	3.33
	L0049793	443916.22	3768592.28	297.65	1.50	0.01220	68.64		31.93	3.33
	L0049794	443847.58	3768592.31	306.52	1.50	0.01220	68.64		31.93	3.33
	L0049795	443778.94	3768592.35	315.40	1.50	0.01220	68.64		31.93	3.33
	L0049796	443710.30	3768592.38	324.28	1.50	0.01220	68.64		31.93	3.33
	L0049797	443641.66	3768592.42	333.16	1.50	0.01220	68.64		31.93	3.33
	L0049798	443573.02	3768592.46	342.04	1.50	0.01220	68.64		31.93	3.33
	L0049799	443504.38	3768592.49	350.91	1.50	0.01220	68.64		31.93	3.33
	L0049800	443435.74	3768592.53	359.79	1.50	0.01220	68.64		31.93	3.33
	L0049801	443367.10	3768592.56	368.67	1.50	0.01220	68.64		31.93	3.33
	L0049802	443298.46	3768592.60	377.55	1.50	0.01220	68.64		31.93	3.33
	L0049803	443229.82	3768592.63	386.42	1.50	0.01220	68.64		31.93	3.33
	L0049804	443161.18	3768592.67	395.30	1.50	0.01220	68.64		31.93	3.33
	L0049805	443092.54	3768592.70	404.18	1.50	0.01220	68.64		31.93	3.33
	L0049806	443023.90	3768592.74	413.06	1.50	0.01220	68.64		31.93	3.33
	L0049807	442955.26	3768592.78	421.94	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RSO	L0049808	442886.62	3768592.81	430.81	1.50	0.01220	68.64		31.93	3.33
	L0049809	442817.98	3768592.85	439.69	1.50	0.01220	68.64		31.93	3.33
	L0049810	442749.34	3768592.88	448.57	1.50	0.01220	68.64		31.93	3.33
	L0049811	442680.70	3768592.92	457.45	1.50	0.01220	68.64		31.93	3.33
	L0049812	442612.06	3768592.95	466.32	1.50	0.01220	68.64		31.93	3.33
	L0049813	442543.42	3768592.99	475.20	1.50	0.01220	68.64		31.93	3.33
	L0049814	442474.78	3768593.02	484.08	1.50	0.01220	68.64		31.93	3.33
	L0049815	442406.14	3768593.06	492.96	1.50	0.01220	68.64		31.93	3.33
	L0049816	442337.50	3768593.10	501.84	1.50	0.01220	68.64		31.93	3.33
	L0049817	442268.86	3768593.13	510.71	1.50	0.01220	68.64		31.93	3.33
	L0049818	442200.22	3768593.17	519.59	1.50	0.01220	68.64		31.93	3.33
	L0049819	442131.58	3768593.20	528.47	1.50	0.01220	68.64		31.93	3.33
	L0049820	442062.94	3768593.24	537.35	1.50	0.01220	68.64		31.93	3.33
	L0049821	441994.30	3768593.27	546.22	1.50	0.01220	68.64		31.93	3.33
	L0049822	441925.66	3768593.31	555.10	1.50	0.01220	68.64		31.93	3.33
	L0049823	441857.02	3768593.34	563.98	1.50	0.01220	68.64		31.93	3.33
	L0049824	441788.38	3768593.38	572.86	1.50	0.01220	68.64		31.93	3.33
	L0049825	441719.74	3768593.42	581.74	1.50	0.01220	68.64		31.93	3.33
	L0049826	441651.10	3768593.45	590.61	1.50	0.01220	68.64		31.93	3.33
	L0049827	441582.46	3768593.49	599.49	1.50	0.01220	68.64		31.93	3.33
	L0049828	441513.82	3768593.52	608.37	1.50	0.01220	68.64		31.93	3.33
	L0049829	441445.18	3768593.56	617.25	1.50	0.01220	68.64		31.93	3.33
	L0049830	441376.54	3768593.59	626.12	1.50	0.01220	68.64		31.93	3.33
	L0049831	441307.90	3768593.63	635.00	1.50	0.01220	68.64		31.93	3.33
	L0049832	441239.26	3768593.66	643.88	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RSO	L0049833	441170.62	3768593.70	652.76	1.50	0.01220	68.64		31.93	3.33
	L0049834	441101.98	3768593.74	661.64	1.50	0.01220	68.64		31.93	3.33
	L0049835	441033.34	3768593.77	670.51	1.50	0.01220	68.64		31.93	3.33
	L0049836	440964.70	3768593.81	679.39	1.50	0.01220	68.64		31.93	3.33
	L0049837	440896.06	3768593.84	688.27	1.50	0.01220	68.64		31.93	3.33
	L0049838	440827.42	3768593.88	697.15	1.50	0.01220	68.64		31.93	3.33
	L0049839	440758.78	3768593.91	706.02	1.50	0.01220	68.64		31.93	3.33
	L0049840	440690.14	3768593.95	714.90	1.50	0.01220	68.64		31.93	3.33
	L0049841	440621.50	3768593.98	723.78	1.50	0.01220	68.64		31.93	3.33
	L0049842	440552.86	3768594.02	732.66	1.50	0.01220	68.64		31.93	3.33
	L0049843	440484.22	3768594.05	741.54	1.50	0.01220	68.64		31.93	3.33
	L0049844	440415.58	3768594.09	750.41	1.50	0.01220	68.64		31.93	3.33
	L0049845	440346.94	3768594.13	759.29	1.50	0.01220	68.64		31.93	3.33
	L0049846	440278.30	3768594.16	768.17	1.50	0.01220	68.64		31.93	3.33
	L0049847	440209.66	3768594.20	777.05	1.50	0.01220	68.64		31.93	3.33
	L0049848	440141.02	3768594.23	785.93	1.50	0.01220	68.64		31.93	3.33
	L0049849	440072.38	3768594.27	794.80	1.50	0.01220	68.64		31.93	3.33
	L0049850	440003.74	3768594.30	803.68	1.50	0.01220	68.64		31.93	3.33
	L0049851	439935.10	3768594.34	812.56	1.50	0.01220	68.64		31.93	3.33
	L0049852	439866.46	3768594.37	821.44	1.50	0.01220	68.64		31.93	3.33
	L0049853	439797.82	3768594.41	830.31	1.50	0.01220	68.64		31.93	3.33
	L0049854	439729.18	3768594.45	839.19	1.50	0.01220	68.64		31.93	3.33
	L0049855	439660.54	3768594.48	848.07	1.50	0.01220	68.64		31.93	3.33
	L0049856	439591.90	3768594.52	856.95	1.50	0.01220	68.64		31.93	3.33
	L0049857	439523.26	3768594.55	865.83	1.50	0.01220	68.64		31.93	3.33

Source Pathway - Source Inputs

AERMOD

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
D26RSO	L0049858	439454.62	3768594.59	874.70	1.50	0.01220	68.64		31.93	3.33
	L0049859	439385.98	3768594.62	883.58	1.50	0.01220	68.64		31.93	3.33
	L0049860	439317.34	3768594.66	892.46	1.50	0.01220	68.64		31.93	3.33
	L0049861	439248.70	3768594.69	901.34	1.50	0.01220	68.64		31.93	3.33
	L0049862	439180.06	3768594.73	910.21	1.50	0.01220	68.64		31.93	3.33
	L0049863	439111.42	3768594.77	919.09	1.50	0.01220	68.64		31.93	3.33
	L0049864	439042.78	3768594.80	927.97	1.50	0.01220	68.64		31.93	3.33
	L0049865	438974.14	3768594.84	936.85	1.50	0.01220	68.64		31.93	3.33
	L0049866	438905.50	3768594.87	945.73	1.50	0.01220	68.64		31.93	3.33
	L0049867	438836.86	3768594.91	954.60	1.50	0.01220	68.64		31.93	3.33
	L0049868	438768.22	3768594.94	963.48	1.50	0.01220	68.64		31.93	3.33
	L0049869	438699.58	3768594.98	972.36	1.50	0.01220	68.64		31.93	3.33
	L0049870	438630.94	3768595.01	981.24	1.50	0.01220	68.64		31.93	3.33
	L0049871	438562.30	3768595.05	990.11	1.50	0.01220	68.64		31.93	3.33
	L0049872	438493.66	3768595.09	998.99	1.50	0.01220	68.64		31.93	3.33
	L0049873	438425.02	3768595.12	1007.87	1.50	0.01220	68.64		31.93	3.33

Receptor Pathway

Receptor Networks

Note: Terrain Elavations and Flagpole Heights for Network Grids are in Page RE2 - 1 (If applicable)
Generated Discrete Receptors for Multi-Tier (Risk) Grid and Receptor Locations for Fenceline Grid are in Page RE3 - 1 (If applicable)

Uniform Cartesian Grid

Receptor Network ID	Grid Origin X Coordinate [m]	Grid Origin Y Coordinate [m]	No. of X-Axis Receptors	No. of Y-Axis Receptors	Spacing for X-Axis [m]	Spacing for Y-Axis [m]
UCART1	438575.00	3764575.00	50	30	250.00	250.00
UCART2	440900.00	3768000.00	15	15	100.00	100.00

Discrete Receptors

Discrete Cartesian Receptors

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	445946.84	3767789.93		273.18	
2	448001.77	3765079.22		248.95	
3	447122.94	3765379.32		251.23	
4	446042.57	3765649.63		250.24	
5	443818.03	3765934.14		253.44	
6	442937.76	3766057.37		255.79	
7	441491.30	3766217.18		258.01	
8	440398.94	3766842.56		268.12	
9	440262.43	3766643.39		265.69	
10	440295.60	3767639.22		278.22	
11	440503.41	3767876.66		281.09	
12	442036.65	3768089.20		280.91	
13	441322.28	3768350.40		286.84	
14	441344.10	3768445.29		288.25	
15	441157.93	3769147.37		300.10	
16	441198.12	3769179.74		300.15	
17	441523.43	3769228.54		299.16	
18	440612.34	3769925.99		313.15	
19	441198.61	3769729.73		308.67	
20	442119.99	3769274.66		297.66	
21	442529.07	3769329.90		297.49	
22	443919.05	3769724.99		298.56	
23	444881.55	3770085.97		299.97	
24	446023.97	3770078.04		303.94	
25	447309.34	3770459.37		306.88	

26	441112.11	3768749.68		293.84	

Plant Boundary Receptors

Cartesian Plant Boundary

Primary

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	442260.88	3768963.09	FENCEPRI	292.58	
2	442181.78	3768964.81	FENCEPRI	293.01	
3	442365.56	3769146.18	FENCEPRI	295.73	
4	446791.71	3769283.13	FENCEPRI	293.62	
5	446794.47	3769082.24	FENCEPRI	291.10	
6	447195.66	3769079.57	FENCEPRI	290.96	
7	447386.28	3768990.34	FENCEPRI	288.91	
8	447534.40	3768801.48	FENCEPRI	286.06	
9	447545.15	3768699.01	FENCEPRI	284.79	
10	447776.31	3768692.05	FENCEPRI	285.61	
11	447768.92	3768045.53	FENCEPRI	277.96	
12	447887.72	3767858.23	FENCEPRI	276.96	
13	448071.76	3767817.64	FENCEPRI	276.14	
14	448059.13	3767648.53	FENCEPRI	274.65	
15	447599.09	3767650.54	FENCEPRI	273.76	
16	447584.27	3767999.41	FENCEPRI	276.91	
17	447348.99	3767988.50	FENCEPRI	276.41	
18	447364.50	3768043.09	FENCEPRI	276.70	
19	446956.22	3768043.66	FENCEPRI	278.44	
20	446959.95	3767665.91	FENCEPRI	274.41	
21	446839.61	3767666.99	FENCEPRI	273.37	
22	446846.00	3768040.17	FENCEPRI	279.22	
23	445216.66	3768053.99	FENCEPRI	275.96	
24	445196.51	3767654.35	FENCEPRI	272.90	
25	444598.73	3767654.35	FENCEPRI	269.51	
26	444588.65	3767476.36	FENCEPRI	269.75	
27	441621.99	3768640.46	FENCEPRI	289.48	
28	441617.83	3768779.54	FENCEPRI	292.05	
29	441642.12	3768777.12	FENCEPRI	291.80	
30	441640.27	3768801.78	FENCEPRI	291.96	
31	442261.45	3768803.94	FENCEPRI	290.14	

Intermediate

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)

Receptor Pathway

1	442243.04	3769025.27	FENCEINT	293.33	
2	442304.30	3769085.72	FENCEINT	294.54	
3	442463.92	3769149.22	FENCEINT	295.39	
4	442562.28	3769152.27	FENCEINT	294.86	
5	442660.64	3769155.31	FENCEINT	294.85	
6	442759.00	3769158.35	FENCEINT	294.41	
7	442857.35	3769161.40	FENCEINT	294.02	
8	442955.71	3769164.44	FENCEINT	294.27	
9	443054.07	3769167.48	FENCEINT	294.38	
10	443152.43	3769170.53	FENCEINT	294.09	
11	443250.79	3769173.57	FENCEINT	292.41	
12	443349.15	3769176.61	FENCEINT	291.87	
13	443447.51	3769179.66	FENCEINT	290.88	
14	443545.87	3769182.70	FENCEINT	288.18	
15	443644.23	3769185.74	FENCEINT	286.40	
16	443742.58	3769188.79	FENCEINT	288.21	
17	443840.94	3769191.83	FENCEINT	290.78	
18	443939.30	3769194.87	FENCEINT	291.80	
19	444037.66	3769197.92	FENCEINT	291.67	
20	444136.02	3769200.96	FENCEINT	291.57	
21	444234.38	3769204.00	FENCEINT	291.87	
22	444332.74	3769207.05	FENCEINT	291.14	
23	444431.10	3769210.09	FENCEINT	290.61	
24	444529.46	3769213.13	FENCEINT	287.63	
25	444627.81	3769216.18	FENCEINT	290.70	
26	444726.17	3769219.22	FENCEINT	290.45	
27	444824.53	3769222.26	FENCEINT	290.80	
28	444922.89	3769225.31	FENCEINT	290.85	
29	445021.25	3769228.35	FENCEINT	290.68	
30	445119.61	3769231.39	FENCEINT	289.50	
31	445217.97	3769234.44	FENCEINT	286.04	
32	445316.33	3769237.48	FENCEINT	287.63	
33	445414.69	3769240.52	FENCEINT	290.48	
34	445513.04	3769243.57	FENCEINT	291.23	
35	445611.40	3769246.61	FENCEINT	291.74	
36	445709.76	3769249.65	FENCEINT	292.08	
37	445808.12	3769252.70	FENCEINT	292.40	
38	445906.48	3769255.74	FENCEINT	292.55	
39	446004.84	3769258.78	FENCEINT	293.01	
40	446103.20	3769261.83	FENCEINT	293.20	
41	446201.56	3769264.87	FENCEINT	293.45	

42	446299.92	3769267.91	FENCEINT	294.03	
43	446398.27	3769270.96	FENCEINT	294.84	
44	446496.63	3769274.00	FENCEINT	295.54	
45	446594.99	3769277.04	FENCEINT	294.92	
46	446693.35	3769280.09	FENCEINT	294.25	
47	446792.63	3769216.17	FENCEINT	292.52	
48	446793.55	3769149.20	FENCEINT	292.12	
49	446874.71	3769081.71	FENCEINT	290.78	
50	446954.95	3769081.17	FENCEINT	290.94	
51	447035.18	3769080.64	FENCEINT	290.73	
52	447115.42	3769080.10	FENCEINT	290.85	
53	447259.20	3769049.83	FENCEINT	290.40	
54	447322.74	3769020.08	FENCEINT	289.66	
55	447435.65	3768927.39	FENCEINT	287.38	
56	447485.03	3768864.43	FENCEINT	286.93	
57	447539.78	3768750.25	FENCEINT	285.45	
58	447622.20	3768696.69	FENCEINT	284.45	
59	447699.26	3768694.37	FENCEINT	285.48	
60	447775.25	3768599.69	FENCEINT	284.69	
61	447774.20	3768507.33	FENCEINT	283.07	
62	447773.14	3768414.97	FENCEINT	281.86	
63	447772.09	3768322.61	FENCEINT	280.68	
64	447771.03	3768230.25	FENCEINT	279.67	
65	447769.98	3768137.89	FENCEINT	278.75	
66	447808.52	3767983.10	FENCEINT	277.48	
67	447848.12	3767920.66	FENCEINT	277.19	
68	447979.74	3767837.94	FENCEINT	276.44	
69	448065.45	3767733.09	FENCEINT	275.61	
70	447967.12	3767648.93	FENCEINT	275.16	
71	447875.11	3767649.33	FENCEINT	275.41	
72	447783.11	3767649.74	FENCEINT	274.93	
73	447691.10	3767650.14	FENCEINT	274.37	
74	447595.39	3767737.76	FENCEINT	274.51	
75	447591.68	3767824.98	FENCEINT	275.29	
76	447587.98	3767912.19	FENCEINT	275.97	
77	447505.84	3767995.77	FENCEINT	277.00	
78	447427.42	3767992.14	FENCEINT	276.49	
79	447282.84	3768043.20	FENCEINT	276.98	
80	447201.19	3768043.32	FENCEINT	277.48	
81	447119.53	3768043.43	FENCEINT	277.40	
82	447037.88	3768043.55	FENCEINT	277.74	

83	446957.15	3767949.22	FENCEINT	277.54	
84	446958.09	3767854.79	FENCEINT	276.52	
85	446959.02	3767760.35	FENCEINT	275.47	
86	446899.78	3767666.45	FENCEINT	273.78	
87	446841.21	3767760.29	FENCEINT	275.16	
88	446842.81	3767853.58	FENCEINT	276.84	
89	446844.40	3767946.88	FENCEINT	278.04	
90	446750.16	3768040.98	FENCEINT	275.81	
91	446654.31	3768041.80	FENCEINT	275.78	
92	446558.47	3768042.61	FENCEINT	275.69	
93	446462.63	3768043.42	FENCEINT	275.64	
94	446366.78	3768044.23	FENCEINT	275.74	
95	446270.94	3768045.05	FENCEINT	275.79	
96	446175.10	3768045.86	FENCEINT	276.91	
97	446079.25	3768046.67	FENCEINT	277.18	
98	445983.41	3768047.49	FENCEINT	275.79	
99	445887.56	3768048.30	FENCEINT	275.37	
100	445791.72	3768049.11	FENCEINT	274.47	
101	445695.88	3768049.93	FENCEINT	274.46	
102	445600.03	3768050.74	FENCEINT	274.66	
103	445504.19	3768051.55	FENCEINT	275.73	
104	445408.35	3768052.36	FENCEINT	276.44	
105	445312.50	3768053.18	FENCEINT	275.90	
106	445212.63	3767974.06	FENCEINT	275.58	
107	445208.60	3767894.13	FENCEINT	273.96	
108	445204.57	3767814.21	FENCEINT	273.91	
109	445200.54	3767734.28	FENCEINT	273.06	
110	445096.88	3767654.35	FENCEINT	271.93	
111	444997.25	3767654.35	FENCEINT	272.06	
112	444897.62	3767654.35	FENCEINT	271.63	
113	444797.99	3767654.35	FENCEINT	271.47	
114	444698.36	3767654.35	FENCEINT	271.63	
115	444593.69	3767565.36	FENCEINT	269.25	
116	444495.94	3767512.74	FENCEINT	271.23	
117	444403.23	3767549.12	FENCEINT	271.96	
118	444310.53	3767585.49	FENCEINT	272.56	
119	444217.82	3767621.87	FENCEINT	272.92	
120	444125.11	3767658.25	FENCEINT	273.08	
121	444032.40	3767694.63	FENCEINT	273.32	
122	443939.69	3767731.01	FENCEINT	273.66	
123	443846.99	3767767.39	FENCEINT	274.58	

124	443754.28	3767803.76	FENCEINT	275.53	
125	443661.57	3767840.14	FENCEINT	276.22	
126	443568.86	3767876.52	FENCEINT	276.69	
127	443476.15	3767912.90	FENCEINT	277.19	
128	443383.44	3767949.28	FENCEINT	277.98	
129	443290.74	3767985.65	FENCEINT	278.56	
130	443198.03	3768022.03	FENCEINT	279.26	
131	443105.32	3768058.41	FENCEINT	279.54	
132	443012.61	3768094.79	FENCEINT	280.03	
133	442919.90	3768131.17	FENCEINT	280.14	
134	442827.20	3768167.54	FENCEINT	280.72	
135	442734.49	3768203.92	FENCEINT	281.22	
136	442641.78	3768240.30	FENCEINT	281.80	
137	442549.07	3768276.68	FENCEINT	282.77	
138	442456.36	3768313.06	FENCEINT	283.30	
139	442363.66	3768349.44	FENCEINT	284.34	
140	442270.95	3768385.81	FENCEINT	284.85	
141	442178.24	3768422.19	FENCEINT	285.72	
142	442085.53	3768458.57	FENCEINT	286.21	
143	441992.82	3768494.95	FENCEINT	284.46	
144	441900.11	3768531.33	FENCEINT	286.99	
145	441807.41	3768567.70	FENCEINT	287.73	
146	441714.70	3768604.08	FENCEINT	288.78	
147	441619.91	3768710.00	FENCEINT	291.45	
148	441729.01	3768802.09	FENCEINT	291.13	
149	441817.75	3768802.40	FENCEINT	290.49	
150	441906.49	3768802.71	FENCEINT	290.88	
151	441995.23	3768803.01	FENCEINT	290.82	
152	442083.97	3768803.32	FENCEINT	290.64	
153	442172.71	3768803.63	FENCEINT	290.13	
154	442261.17	3768883.52	FENCEINT	291.07	

Receptor Pathway

Fenceline Grid

Grid Settings

Fenceline Spacing [m]:	100.00
Number of Tired Segments:	2

Segment Number	Distance from Fenceline [m]	Spacing [m]
1	100.00	100.00

Segment Number	Distance from Fenceline [m]	Spacing [m]
2	100.00	100.00

Receptor Groups

Record Number	Group ID	Group Description
1	FENCEPRI	Cartesian plant boundary Primary Receptors
2	FENCEINT	Cartesian plant boundary Intermediate Receptors
3	UCART1	Receptors generated from Uniform Cartesian Grid
4	FENCEGRD	Receptors generated from Fenceline Grid
5	UCART2	Receptors generated from Uniform Cartesian Grid

Receptor Pathway

Multi-Tier Grid (Risk)

Fenceline Grid

Grid Settings

Fenceline Spacing [m]:	100.00
Number of Tired Segments:	2

Segment Number	Distance from Fenceline [m]	Spacing [m]
1	100.00	100.00

Segment Number	Distance from Fenceline [m]	Spacing [m]
2	100.00	100.00

Generated Receptor Locations

Record Number	Location: X-Coord. [m]	Location: Y-Coord. [m]	Group Name (Optional)	Terrain Elevations (Optional)	Flagpole Heights [m] (Optional)
1	442100.20	3768981.92	FENCEGRD	293.61	
2	442134.23	3768896.34	FENCEGRD	292.11	
3	442172.80	3769096.44	FENCEGRD	294.88	
4	442295.32	3769217.36	FENCEGRD	296.58	
5	442026.18	3769035.07	FENCEGRD	293.31	
6	442056.44	3768848.89	FENCEGRD	291.36	
7	442102.56	3769167.62	FENCEGRD	296.24	
8	442225.08	3769288.53	FENCEGRD	297.55	
9	442460.83	3769249.18	FENCEGRD	296.47	
10	442559.19	3769252.22	FENCEGRD	296.16	
11	442657.54	3769255.26	FENCEGRD	296.35	
12	442755.90	3769258.31	FENCEGRD	296.07	
13	442854.26	3769261.35	FENCEGRD	295.72	
14	442952.62	3769264.39	FENCEGRD	295.87	
15	443050.98	3769267.44	FENCEGRD	296.07	
16	443149.34	3769270.48	FENCEGRD	295.81	
17	443247.70	3769273.52	FENCEGRD	295.19	
18	443346.06	3769276.57	FENCEGRD	294.80	
19	443444.42	3769279.61	FENCEGRD	295.22	
20	443542.77	3769282.65	FENCEGRD	294.41	
21	443641.13	3769285.70	FENCEGRD	291.95	
22	443739.49	3769288.74	FENCEGRD	293.67	
23	443837.85	3769291.78	FENCEGRD	293.72	
24	443936.21	3769294.83	FENCEGRD	293.79	
25	444034.57	3769297.87	FENCEGRD	293.26	

Receptor Pathway

AERMOD

Record Number	Location: X-Coord. [m]	Location: Y-Coord. [m]	Group Name (Optional)	Terrain Elevations (Optional)	Flagpole Heights [m] (Optional)
26	444132.93	3769300.91	FENCEGRD	293.08	
27	444231.29	3769303.96	FENCEGRD	292.96	
28	444329.65	3769307.00	FENCEGRD	292.14	
29	444428.00	3769310.04	FENCEGRD	291.86	
30	444526.36	3769313.09	FENCEGRD	288.70	
31	444624.72	3769316.13	FENCEGRD	291.40	
32	444723.08	3769319.17	FENCEGRD	291.26	
33	444821.44	3769322.22	FENCEGRD	291.46	
34	444919.80	3769325.26	FENCEGRD	291.53	
35	445018.16	3769328.30	FENCEGRD	291.36	
36	445116.52	3769331.35	FENCEGRD	290.70	
37	445214.88	3769334.39	FENCEGRD	289.57	
38	445313.23	3769337.43	FENCEGRD	291.58	
39	445411.59	3769340.48	FENCEGRD	291.76	
40	445509.95	3769343.52	FENCEGRD	292.57	
41	445608.31	3769346.56	FENCEGRD	293.10	
42	445706.67	3769349.61	FENCEGRD	293.56	
43	445805.03	3769352.65	FENCEGRD	294.01	
44	445903.39	3769355.69	FENCEGRD	294.18	
45	446001.75	3769358.74	FENCEGRD	293.96	
46	446100.11	3769361.78	FENCEGRD	294.26	
47	446198.46	3769364.82	FENCEGRD	294.75	
48	446296.82	3769367.87	FENCEGRD	297.03	
49	446395.18	3769370.91	FENCEGRD	297.05	
50	446493.54	3769373.95	FENCEGRD	296.62	
51	446591.90	3769377.00	FENCEGRD	296.25	
52	446690.26	3769380.04	FENCEGRD	295.39	
53	446788.62	3769383.08	FENCEGRD	295.28	
54	442359.37	3769346.08	FENCEGRD	298.06	
55	442457.73	3769349.13	FENCEGRD	297.98	
56	442556.09	3769352.17	FENCEGRD	297.70	
57	442654.45	3769355.21	FENCEGRD	297.59	
58	442752.81	3769358.26	FENCEGRD	297.41	
59	442851.17	3769361.30	FENCEGRD	297.26	
60	442949.53	3769364.34	FENCEGRD	297.40	
61	443047.89	3769367.39	FENCEGRD	297.39	
62	443146.25	3769370.43	FENCEGRD	297.17	
63	443244.60	3769373.47	FENCEGRD	296.57	
64	443342.96	3769376.52	FENCEGRD	296.52	

Receptor Pathway

Record Number	Location: X-Coord. [m]	Location: Y-Coord. [m]	Group Name (Optional)	Terrain Elevations (Optional)	Flagpole Heights [m] (Optional)
65	443441.32	3769379.56	FENCEGRD	295.76	
66	443539.68	3769382.60	FENCEGRD	295.50	
67	443638.04	3769385.65	FENCEGRD	295.14	
68	443736.40	3769388.69	FENCEGRD	295.15	
69	443834.76	3769391.73	FENCEGRD	295.11	
70	443933.12	3769394.78	FENCEGRD	294.98	
71	444031.48	3769397.82	FENCEGRD	294.34	
72	444129.83	3769400.86	FENCEGRD	294.31	
73	444228.19	3769403.91	FENCEGRD	293.94	
74	444326.55	3769406.95	FENCEGRD	293.60	
75	444424.91	3769409.99	FENCEGRD	293.27	
76	444523.27	3769413.04	FENCEGRD	288.09	
77	444621.63	3769416.08	FENCEGRD	292.43	
78	444719.99	3769419.12	FENCEGRD	292.15	
79	444818.35	3769422.17	FENCEGRD	292.83	
80	444916.71	3769425.21	FENCEGRD	292.58	
81	445015.06	3769428.25	FENCEGRD	292.79	
82	445113.42	3769431.30	FENCEGRD	291.38	
83	445211.78	3769434.34	FENCEGRD	293.34	
84	445310.14	3769437.38	FENCEGRD	293.38	
85	445408.50	3769440.43	FENCEGRD	292.75	
86	445506.86	3769443.47	FENCEGRD	293.64	
87	445605.22	3769446.51	FENCEGRD	293.93	
88	445703.58	3769449.56	FENCEGRD	294.56	
89	445801.94	3769452.60	FENCEGRD	295.44	
90	445900.29	3769455.64	FENCEGRD	295.43	
91	445998.65	3769458.69	FENCEGRD	295.11	
92	446097.01	3769461.73	FENCEGRD	295.54	
93	446195.37	3769464.77	FENCEGRD	295.75	
94	446293.73	3769467.82	FENCEGRD	297.31	
95	446392.09	3769470.86	FENCEGRD	297.08	
96	446490.45	3769473.90	FENCEGRD	297.79	
97	446588.81	3769476.95	FENCEGRD	297.04	
98	446687.17	3769479.99	FENCEGRD	295.90	
99	446785.52	3769483.03	FENCEGRD	296.09	
100	446876.26	3769319.95	FENCEGRD	290.35	
101	446892.62	3769217.54	FENCEGRD	291.71	
102	446894.46	3769083.61	FENCEGRD	290.89	
103	446971.11	3769333.14	FENCEGRD	295.49	

Receptor Pathway

AERMOD

Record Number	Location: X-Coord. [m]	Location: Y-Coord. [m]	Group Name (Optional)	Terrain Elevations (Optional)	Flagpole Heights [m] (Optional)
104	446881.80	3769446.13	FENCEGRD	295.04	
105	446992.61	3769218.91	FENCEGRD	291.42	
106	446994.45	3769084.99	FENCEGRD	290.83	
107	446795.14	3769182.24	FENCEGRD	292.23	
108	447116.09	3769180.10	FENCEGRD	290.96	
109	447116.75	3769280.10	FENCEGRD	292.79	
110	447238.06	3769170.14	FENCEGRD	292.18	
111	447365.14	3769110.65	FENCEGRD	290.47	
112	447238.72	3769270.14	FENCEGRD	292.42	
113	447343.99	3769230.96	FENCEGRD	291.98	
114	447471.07	3769171.48	FENCEGRD	291.31	
115	447464.97	3769052.05	FENCEGRD	289.64	
116	447563.71	3768926.15	FENCEGRD	287.34	
117	447543.65	3769113.77	FENCEGRD	291.35	
118	447642.40	3768987.86	FENCEGRD	287.24	
119	447623.47	3768837.55	FENCEGRD	286.49	
120	447644.60	3768709.44	FENCEGRD	284.96	
121	447719.46	3768856.53	FENCEGRD	286.94	
122	447744.06	3768719.88	FENCEGRD	286.40	
123	447876.30	3768690.91	FENCEGRD	285.73	
124	447875.25	3768598.55	FENCEGRD	285.40	
125	447874.19	3768506.19	FENCEGRD	283.84	
126	447873.14	3768413.83	FENCEGRD	281.99	
127	447872.08	3768321.47	FENCEGRD	280.08	
128	447871.02	3768229.11	FENCEGRD	280.84	
129	447869.97	3768136.75	FENCEGRD	279.60	
130	447868.91	3768044.39	FENCEGRD	278.78	
131	447948.47	3768760.13	FENCEGRD	287.37	
132	447851.48	3768861.23	FENCEGRD	287.79	
133	447975.24	3768597.40	FENCEGRD	285.49	
134	447974.19	3768505.04	FENCEGRD	283.98	
135	447973.13	3768412.68	FENCEGRD	282.52	
136	447972.07	3768320.32	FENCEGRD	280.72	
137	447971.02	3768227.96	FENCEGRD	280.23	
138	447969.96	3768135.60	FENCEGRD	279.55	
139	447968.91	3768043.24	FENCEGRD	279.23	
140	447972.17	3767911.79	FENCEGRD	277.33	
141	448056.61	3767965.35	FENCEGRD	278.21	
142	448171.48	3767810.19	FENCEGRD	276.73	

Receptor Pathway

AERMOD

Record Number	Location: X-Coord. [m]	Location: Y-Coord. [m]	Group Name (Optional)	Terrain Elevations (Optional)	Flagpole Heights [m] (Optional)
143	448158.85	3767641.08	FENCEGRD	275.02	
144	448251.72	3767869.88	FENCEGRD	278.18	
145	448173.53	3767974.98	FENCEGRD	278.54	
146	448264.89	3767718.19	FENCEGRD	276.74	
147	448058.69	3767548.53	FENCEGRD	273.56	
148	447966.69	3767548.93	FENCEGRD	273.44	
149	447874.68	3767549.33	FENCEGRD	273.07	
150	447782.67	3767549.74	FENCEGRD	272.72	
151	447690.66	3767550.14	FENCEGRD	272.28	
152	447598.65	3767550.54	FENCEGRD	272.90	
153	448126.56	3767475.09	FENCEGRD	273.04	
154	448226.72	3767567.64	FENCEGRD	274.86	
155	447966.25	3767448.93	FENCEGRD	272.14	
156	447874.24	3767449.34	FENCEGRD	271.62	
157	447782.23	3767449.74	FENCEGRD	271.18	
158	447690.22	3767450.14	FENCEGRD	270.87	
159	447598.22	3767450.54	FENCEGRD	271.25	
160	447499.18	3767646.30	FENCEGRD	273.51	
161	447491.77	3767820.73	FENCEGRD	274.99	
162	447429.83	3767574.25	FENCEGRD	273.13	
163	447395.57	3767729.27	FENCEGRD	273.53	
164	447388.16	3767903.70	FENCEGRD	275.37	
165	447261.71	3767971.11	FENCEGRD	276.00	
166	447165.51	3767998.44	FENCEGRD	276.78	
167	447183.33	3767909.00	FENCEGRD	275.19	
168	447275.25	3767826.50	FENCEGRD	274.89	
169	447037.74	3767943.55	FENCEGRD	276.11	
170	447119.25	3767843.43	FENCEGRD	275.14	
171	447059.01	3767761.33	FENCEGRD	275.00	
172	447059.95	3767666.90	FENCEGRD	274.76	
173	447159.01	3767762.32	FENCEGRD	274.63	
174	447159.94	3767667.88	FENCEGRD	274.40	
175	446994.87	3767580.57	FENCEGRD	272.90	
176	446898.88	3767566.45	FENCEGRD	272.46	
177	447005.92	3767485.46	FENCEGRD	270.15	
178	447120.94	3767572.33	FENCEGRD	273.72	
179	446897.99	3767466.46	FENCEGRD	269.75	
180	446739.62	3767668.70	FENCEGRD	272.05	
181	446741.22	3767762.00	FENCEGRD	273.02	

Receptor Pathway

AERMOD

Record Number	Location: X-Coord. [m]	Location: Y-Coord. [m]	Group Name (Optional)	Terrain Elevations (Optional)	Flagpole Heights [m] (Optional)
182	446742.82	3767855.29	FENCEGRD	273.97	
183	446744.42	3767948.59	FENCEGRD	274.90	
184	446668.00	3767598.92	FENCEGRD	270.03	
185	446767.09	3767497.21	FENCEGRD	269.85	
186	446641.24	3767763.71	FENCEGRD	273.03	
187	446642.83	3767857.00	FENCEGRD	273.96	
188	446644.43	3767950.30	FENCEGRD	274.89	
189	446461.78	3767943.43	FENCEGRD	274.75	
190	446365.93	3767944.24	FENCEGRD	274.72	
191	446270.09	3767945.05	FENCEGRD	274.68	
192	446174.25	3767945.86	FENCEGRD	275.92	
193	446078.40	3767946.68	FENCEGRD	275.92	
194	445982.56	3767947.49	FENCEGRD	274.67	
195	445886.72	3767948.30	FENCEGRD	273.56	
196	445790.87	3767949.12	FENCEGRD	273.21	
197	445695.03	3767949.93	FENCEGRD	273.33	
198	445599.19	3767950.74	FENCEGRD	272.70	
199	445503.34	3767951.55	FENCEGRD	274.16	
200	445407.50	3767952.37	FENCEGRD	274.39	
201	445311.66	3767953.18	FENCEGRD	273.94	
202	445215.81	3767953.99	FENCEGRD	275.38	
203	446460.93	3767843.43	FENCEGRD	273.77	
204	446365.09	3767844.24	FENCEGRD	273.75	
205	446269.24	3767845.05	FENCEGRD	273.53	
206	446173.40	3767845.87	FENCEGRD	274.90	
207	446077.56	3767846.68	FENCEGRD	274.18	
208	445981.71	3767847.49	FENCEGRD	273.82	
209	445885.87	3767848.31	FENCEGRD	272.63	
210	445790.02	3767849.12	FENCEGRD	272.45	
211	445694.18	3767849.93	FENCEGRD	272.43	
212	445598.34	3767850.75	FENCEGRD	272.20	
213	445502.49	3767851.56	FENCEGRD	273.34	
214	445406.65	3767852.37	FENCEGRD	273.34	
215	445310.81	3767853.18	FENCEGRD	273.42	
216	445214.96	3767854.00	FENCEGRD	274.03	
217	445316.53	3768048.95	FENCEGRD	275.84	
218	445300.41	3767729.24	FENCEGRD	273.28	
219	445416.41	3768043.92	FENCEGRD	276.27	
220	445400.29	3767724.21	FENCEGRD	273.28	

Receptor Pathway

Record Number	Location: X-Coord. [m]	Location: Y-Coord. [m]	Group Name (Optional)	Terrain Elevations (Optional)	Flagpole Heights [m] (Optional)
221	445196.51	3767554.35	FENCEGRD	271.55	
222	445096.88	3767554.35	FENCEGRD	270.81	
223	444997.25	3767554.35	FENCEGRD	270.53	
224	444897.62	3767554.35	FENCEGRD	270.51	
225	444797.99	3767554.35	FENCEGRD	270.72	
226	444698.36	3767554.35	FENCEGRD	271.00	
227	444598.73	3767554.35	FENCEGRD	268.36	
228	445265.42	3767481.88	FENCEGRD	270.05	
229	445365.29	3767576.85	FENCEGRD	270.83	
230	445096.88	3767454.35	FENCEGRD	269.67	
231	444997.25	3767454.35	FENCEGRD	268.83	
232	444897.62	3767454.35	FENCEGRD	269.32	
233	444797.99	3767454.35	FENCEGRD	269.60	
234	444698.36	3767454.35	FENCEGRD	270.76	
235	444598.73	3767454.35	FENCEGRD	268.35	
236	444698.57	3767648.70	FENCEGRD	271.62	
237	444459.41	3767419.65	FENCEGRD	269.73	
238	444366.71	3767456.03	FENCEGRD	270.74	
239	444274.00	3767492.40	FENCEGRD	271.08	
240	444181.29	3767528.78	FENCEGRD	271.23	
241	444088.58	3767565.16	FENCEGRD	271.27	
242	443995.87	3767601.54	FENCEGRD	272.07	
243	443903.17	3767637.92	FENCEGRD	272.30	
244	443810.46	3767674.30	FENCEGRD	273.08	
245	443717.75	3767710.67	FENCEGRD	274.01	
246	443625.04	3767747.05	FENCEGRD	274.06	
247	443532.33	3767783.43	FENCEGRD	274.52	
248	443439.62	3767819.81	FENCEGRD	275.29	
249	443346.92	3767856.19	FENCEGRD	275.85	
250	443254.21	3767892.56	FENCEGRD	276.28	
251	443161.50	3767928.94	FENCEGRD	277.38	
252	443068.79	3767965.32	FENCEGRD	277.28	
253	442976.08	3768001.70	FENCEGRD	277.69	
254	442883.38	3768038.08	FENCEGRD	277.30	
255	442790.67	3768074.45	FENCEGRD	277.90	
256	442697.96	3768110.83	FENCEGRD	279.57	
257	442605.25	3768147.21	FENCEGRD	280.19	
258	442512.54	3768183.59	FENCEGRD	280.75	
259	442419.84	3768219.97	FENCEGRD	282.16	

Receptor Pathway

AERMOD

Record Number	Location: X-Coord. [m]	Location: Y-Coord. [m]	Group Name (Optional)	Terrain Elevations (Optional)	Flagpole Heights [m] (Optional)
260	442327.13	3768256.35	FENCEGRD	282.78	
261	442234.42	3768292.72	FENCEGRD	282.44	
262	442141.71	3768329.10	FENCEGRD	284.38	
263	442049.00	3768365.48	FENCEGRD	284.97	
264	441956.29	3768401.86	FENCEGRD	285.18	
265	441863.59	3768438.24	FENCEGRD	286.53	
266	441770.88	3768474.61	FENCEGRD	286.87	
267	441678.17	3768510.99	FENCEGRD	287.90	
268	441585.46	3768547.37	FENCEGRD	288.72	
269	444606.10	3767299.09	FENCEGRD	267.46	
270	444515.59	3767290.18	FENCEGRD	268.16	
271	444422.89	3767326.56	FENCEGRD	268.40	
272	444330.18	3767362.94	FENCEGRD	268.81	
273	444237.47	3767399.31	FENCEGRD	269.66	
274	444144.76	3767435.69	FENCEGRD	270.11	
275	444052.05	3767472.07	FENCEGRD	269.97	
276	443959.35	3767508.45	FENCEGRD	270.77	
277	443866.64	3767544.83	FENCEGRD	271.51	
278	443773.93	3767581.21	FENCEGRD	272.55	
279	443681.22	3767617.58	FENCEGRD	272.39	
280	443588.51	3767653.96	FENCEGRD	273.26	
281	443495.80	3767690.34	FENCEGRD	273.90	
282	443403.10	3767726.72	FENCEGRD	275.05	
283	443310.39	3767763.10	FENCEGRD	275.34	
284	443217.68	3767799.47	FENCEGRD	275.30	
285	443124.97	3767835.85	FENCEGRD	275.46	
286	443032.26	3767872.23	FENCEGRD	275.86	
287	442939.56	3767908.61	FENCEGRD	276.66	
288	442846.85	3767944.99	FENCEGRD	276.04	
289	442754.14	3767981.36	FENCEGRD	276.27	
290	442661.43	3768017.74	FENCEGRD	275.74	
291	442568.72	3768054.12	FENCEGRD	277.44	
292	442476.02	3768090.50	FENCEGRD	279.80	
293	442383.31	3768126.88	FENCEGRD	281.16	
294	442290.60	3768163.26	FENCEGRD	281.44	
295	442197.89	3768199.63	FENCEGRD	281.69	
296	442105.18	3768236.01	FENCEGRD	283.29	
297	442012.47	3768272.39	FENCEGRD	283.44	
298	441919.77	3768308.77	FENCEGRD	283.63	

Receptor Pathway

AERMOD

Record Number	Location: X-Coord. [m]	Location: Y-Coord. [m]	Group Name (Optional)	Terrain Elevations (Optional)	Flagpole Heights [m] (Optional)
299	441827.06	3768345.15	FENCEGRD	285.27	
300	441734.35	3768381.52	FENCEGRD	286.01	
301	441641.64	3768417.90	FENCEGRD	287.38	
302	441548.93	3768454.28	FENCEGRD	288.18	
303	441522.03	3768637.47	FENCEGRD	290.40	
304	441517.87	3768776.55	FENCEGRD	292.45	
305	441440.26	3768579.91	FENCEGRD	289.83	
306	441420.00	3768704.02	FENCEGRD	291.90	
307	441608.21	3768872.45	FENCEGRD	293.18	
308	441615.34	3768971.02	FENCEGRD	294.51	
309	441526.05	3768940.86	FENCEGRD	294.70	
310	441454.19	3768860.54	FENCEGRD	293.45	
311	441728.66	3768902.09	FENCEGRD	292.71	
312	441906.14	3768902.71	FENCEGRD	292.34	
313	441728.31	3769002.09	FENCEGRD	293.86	
314	441905.79	3769002.70	FENCEGRD	293.65	
315	442258.71	3768863.11	FENCEGRD	290.78	

Meteorology Pathway

Met Input Data

Surface Met Data

Filename: KONT_v9.SFC
Format Type: Default AERMET format

Profile Met Data

Filename: KONT_v9.PFL
Format Type: Default AERMET format

Wind Speed

☐ Wind Speeds are Vector Mean (Not Scalar Means)

Wind Direction

Rotation Adjustment [deg]:

Potential Temperature Profile

Base Elevation above MSL (for Primary Met Tower): 289.00 [m]

Meteorological Station Data

Stations	Station No.	Year	X Coordinate [m]	Y Coordinate [m]	Station Name
Surface		2012			
Upper Air		2012			

Data Period

Data Period to Process

Start Date: 1/1/2012 Start Hour: 1 End Date: 12/31/2016 End Hour: 24

Wind Speed Categories

Stability Category	Wind Speed [m/s]	Stability Category	Wind Speed [m/s]
A	1.54	D	8.23
B	3.09	E	10.8
C	5.14	F	No Upper Bound

Output Pathway

Tabular Printed Outputs

Short Term Averaging Period	RECTABLE Highest Values Table										MAXTABLE Maximum Values Table	DAYTABLE Daily Values Table
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th		
1	■	☐	☐	☐	☐	☐	☐	☐	☐	☐		No

Contour Plot Files (PLOTFILE)

Path for PLOTFILES: ONT Disp.AD

Averaging Period	Source Group ID	High Value	File Name
1	ALL	1st	01H1GALL.PLT
Period	ALL	N/A	PE00GALL.PLT

Appendix B

Risk Modeling Input/Output

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Emissions Inventory 2023 No Action

Piston Operations

	Total Ops	Piston Ops	% Piston
Piston Ops	110368	2642	2.39%

Departures

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Taxi Out	73.1	55184	2.64932	15.51781	0.0281%
Ground Roll	93.5	55184	3.38866	15.51781	0.0281%
Climb to Mix	188	55184	6.81357	15.51781	0.0281%

Arrivals

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Descend from Mix	60.9	55184	0.79016	15.13699	0.0274%
Ground Roll	29.2	55184	1.05828	15.13699	0.0274%
Taxi In	28.6	55184	1.03653	15.13699	0.0274%

2023 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08TX	14032	106990	1,3-Butadiene	0.01687	627.146	0.176354
D08TX	14032	75070	Acetaldehyde	0.04272	1588.126	0.446583
D08TX	14032	107028	Acrolein	0.02449	910.422	0.256012
D08TX	14032	71432	Benzene	0.01681	624.916	0.175727
D08TX	14032	100414	Ethyl benzene	0.00174	64.685	0.018189
D08TX	14032	50000	Formaldehyde	0.1231	4576.272	1.286853
D08TX	14032	67561	Methanol	0.01805	671.013	0.188690
D08TX	14032	108383	m-Xylene	0.00282	104.834	0.029479
D08TX	14032	91203	Naphthalene	0.00541	201.118	0.056555
D08TX	14032	95476	o-Xylene	0.00166	61.711	0.017353
D08TX	14032	108952	Phenol	0.00726	269.892	0.075894
D08TX	14032	123386	Propionaldehyde	0.00727	270.264	0.075999
D08TX	14032	100425	Styrene	0.00309	114.871	0.032302
D08TX	14032	108883	Toluene	0.00642	238.665	0.067113
D08TX	336	7439921	Lead		0.527	0.000148
D26TX	40666	106990	1,3-Butadiene	0.01687	1817.526	0.511091
D26TX	40666	75070	Acetaldehyde	0.04272	4602.533	1.294238
D26TX	40666	107028	Acrolein	0.02449	2638.484	0.741945
D26TX	40666	71432	Benzene	0.01681	1811.062	0.509273
D26TX	40666	100414	Ethyl benzene	0.00174	187.463	0.052715
D26TX	40666	50000	Formaldehyde	0.1231	13262.448	3.729417
D26TX	40666	67561	Methanol	0.01805	1944.656	0.546840
D26TX	40666	108383	m-Xylene	0.00282	303.819	0.085434
D26TX	40666	91203	Naphthalene	0.00541	582.858	0.163900
D26TX	40666	95476	o-Xylene	0.00166	178.844	0.050291

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Emissions Inventory 2023 Project

Piston Operations

	Total Ops	Piston Ops	% Piston
Piston Ops	110368	2642	2.39%

Departures

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Taxi Out	59.6	55184	2.16005	15.51781	0.0281%
Ground Roll	79.9	55184	2.89577	15.51781	0.0281%
Climb to Mix	161	55184	5.83502	15.51781	0.0281%

Arrivals

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Descend from M	65.6	55184	0.85115	15.13699	0.0274%
Ground Roll	31.6	55184	1.14526	15.13699	0.0274%
Taxi In	26.7	55184	0.96767	15.13699	0.0274%

2023 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08TX	5199	106990	1,3-Butadiene	0.01687	189.451	0.053274
D08TX	5199	75070	Acetaldehyde	0.04272	479.749	0.134906
D08TX	5199	107028	Acrolein	0.02449	275.025	0.077337
D08TX	5199	71432	Benzene	0.01681	188.778	0.053085
D08TX	5199	100414	Ethyl benzene	0.00174	19.540	0.005495
D08TX	5199	50000	Formaldehyde	0.1231	1382.423	0.388739
D08TX	5199	67561	Methanol	0.01805	202.703	0.057000
D08TX	5199	108383	m-Xylene	0.00282	31.669	0.008905
D08TX	5199	91203	Naphthalene	0.00541	60.755	0.017084
D08TX	5199	95476	o-Xylene	0.00166	18.642	0.005242
D08TX	5199	108952	Phenol	0.00726	81.530	0.022926
D08TX	5199	123386	Propionaldehyde	0.00727	81.643	0.022958
D08TX	5199	100425	Styrene	0.00309	34.701	0.009758
D08TX	5199	108883	Toluene	0.00642	72.097	0.020274
D08TX	124	7439921	Lead		0.195	0.000055
D26TX	49499	106990	1,3-Butadiene	0.01687	1803.743	0.507215
D26TX	49499	75070	Acetaldehyde	0.04272	4567.628	1.284423
D26TX	49499	107028	Acrolein	0.02449	2618.474	0.736318
D26TX	49499	71432	Benzene	0.01681	1797.327	0.505411
D26TX	49499	100414	Ethyl benzene	0.00174	186.041	0.052315
D26TX	49499	50000	Formaldehyde	0.1231	13161.869	3.701134

2023 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26TX	49499	67561	Methanol	0.01805	1929.908	0.542693
D26TX	49499	108383	m-Xylene	0.00282	301.515	0.084786
D26TX	49499	91203	Naphthalene	0.00541	578.438	0.162657
D26TX	49499	95476	o-Xylene	0.00166	177.487	0.049910
D26TX	49499	108952	Phenol	0.00726	776.240	0.218280
D26TX	49499	123386	Propionaldehyde	0.00727	777.309	0.218580
D26TX	49499	100425	Styrene	0.00309	330.383	0.092904
D26TX	49499	108883	Toluene	0.00642	686.427	0.193024
D26TX	1185	7439921	Lead		1.858	0.000522
D08LGR	2637	106990	1,3-Butadiene	0.01687	128.822	0.036225
D08LGR	2637	75070	Acetaldehyde	0.04272	326.216	0.091732
D08LGR	2637	107028	Acrolein	0.02449	187.009	0.052587
D08LGR	2637	71432	Benzene	0.01681	128.363	0.036096
D08LGR	2637	100414	Ethyl benzene	0.00174	13.287	0.003736
D08LGR	2637	50000	Formaldehyde	0.1231	940.008	0.264332
D08LGR	2637	67561	Methanol	0.01805	137.832	0.038759
D08LGR	2637	108383	m-Xylene	0.00282	21.534	0.006055
D08LGR	2637	91203	Naphthalene	0.00541	41.312	0.011617
D08LGR	2637	95476	o-Xylene	0.00166	12.676	0.003565
D08LGR	2637	108952	Phenol	0.00726	55.438	0.015589
D08LGR	2637	123386	Propionaldehyde	0.00727	55.515	0.015611
D08LGR	2637	100425	Styrene	0.00309	23.596	0.006635
D08LGR	2637	108883	Toluene	0.00642	49.024	0.013786
D08LGR	63	7439921	Lead		0.163	0.000046
D08RGR	2562	106990	1,3-Butadiene	0.01687	125.158	0.035195
D08RGR	2562	75070	Acetaldehyde	0.04272	316.938	0.089123
D08RGR	2562	107028	Acrolein	0.02449	181.690	0.051092
D08RGR	2562	71432	Benzene	0.01681	124.713	0.035069
D08RGR	2562	100414	Ethyl benzene	0.00174	12.909	0.003630
D08RGR	2562	50000	Formaldehyde	0.1231	913.273	0.256814
D08RGR	2562	67561	Methanol	0.01805	133.912	0.037656
D08RGR	2562	108383	m-Xylene	0.00282	20.921	0.005883
D08RGR	2562	91203	Naphthalene	0.00541	40.137	0.011286
D08RGR	2562	95476	o-Xylene	0.00166	12.315	0.003463
D08RGR	2562	108952	Phenol	0.00726	53.862	0.015146
D08RGR	2562	123386	Propionaldehyde	0.00727	53.936	0.015167
D08RGR	2562	100425	Styrene	0.00309	22.925	0.006446
D08RGR	2562	108883	Toluene	0.00642	47.630	0.013394
D08RGR	61	7439921	Lead		0.158	0.000045
D26LGR	21553	106990	1,3-Butadiene	0.01687	1052.898	0.296076
D26LGR	21553	75070	Acetaldehyde	0.04272	2666.260	0.749756
D26LGR	21553	107028	Acrolein	0.02449	1528.481	0.429811
D26LGR	21553	71432	Benzene	0.01681	1049.154	0.295023

2023 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26LGR	21553	100414	Ethyl benzene	0.00174	108.598	0.030538
D26LGR	21553	50000	Formaldehyde	0.1231	7682.974	2.160462
D26LGR	21553	67561	Methanol	0.01805	1126.545	0.316786
D26LGR	21553	108383	m-Xylene	0.00282	176.003	0.049492
D26LGR	21553	91203	Naphthalene	0.00541	337.651	0.094948
D26LGR	21553	95476	o-Xylene	0.00166	103.605	0.029134
D26LGR	21553	108952	Phenol	0.00726	453.114	0.127416
D26LGR	21553	123386	Propionaldehyde	0.00727	453.739	0.127592
D26LGR	21553	100425	Styrene	0.00309	192.855	0.054231
D26LGR	21553	108883	Toluene	0.00642	400.688	0.112674
D26LGR	516	7439921	Lead		1.333	0.000375
D26RGR	27946	106990	1,3-Butadiene	0.01687	1365.206	0.383898
D26RGR	27946	75070	Acetaldehyde	0.04272	3457.120	0.972146
D26RGR	27946	107028	Acrolein	0.02449	1981.856	0.557300
D26RGR	27946	71432	Benzene	0.01681	1360.351	0.382532
D26RGR	27946	100414	Ethyl benzene	0.00174	140.810	0.039596
D26RGR	27946	50000	Formaldehyde	0.1231	9961.880	2.801293
D26RGR	27946	67561	Methanol	0.01805	1460.698	0.410750
D26RGR	27946	108383	m-Xylene	0.00282	228.209	0.064173
D26RGR	27946	91203	Naphthalene	0.00541	437.805	0.123111
D26RGR	27946	95476	o-Xylene	0.00166	134.336	0.037775
D26RGR	27946	108952	Phenol	0.00726	587.516	0.165210
D26RGR	27946	123386	Propionaldehyde	0.00727	588.325	0.165438
D26RGR	27946	100425	Styrene	0.00309	250.059	0.070317
D26RGR	27946	108883	Toluene	0.00642	519.539	0.146095
D26RGR	669	7439921	Lead		1.728	0.000486
D08LRC	2500	106990	1,3-Butadiene	0.01687	246.092	0.069201
D08LRC	2500	75070	Acetaldehyde	0.04272	623.181	0.175239
D08LRC	2500	107028	Acrolein	0.02449	357.249	0.100459
D08LRC	2500	71432	Benzene	0.01681	245.217	0.068955
D08LRC	2500	100414	Ethyl benzene	0.00174	25.382	0.007138
D08LRC	2500	50000	Formaldehyde	0.1231	1795.729	0.504961
D08LRC	2500	67561	Methanol	0.01805	263.305	0.074042
D08LRC	2500	108383	m-Xylene	0.00282	41.137	0.011568
D08LRC	2500	91203	Naphthalene	0.00541	78.919	0.022192
D08LRC	2500	95476	o-Xylene	0.00166	24.215	0.006809
D08LRC	2500	108952	Phenol	0.00726	105.906	0.029781
D08LRC	2500	123386	Propionaldehyde	0.00727	106.052	0.029822
D08LRC	2500	100425	Styrene	0.00309	45.076	0.012675
D08LRC	2500	108883	Toluene	0.00642	93.652	0.026335
D08LRC	60	7439921	Lead		0.416	0.000117
D08LSO	137	106990	1,3-Butadiene	0.01687	13.486	0.003792
D08LSO	137	75070	Acetaldehyde	0.04272	34.150	0.009603

2023 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08LSO	137	107028	Acrolein	0.02449	19.577	0.005505
D08LSO	137	71432	Benzene	0.01681	13.438	0.003779
D08LSO	137	100414	Ethyl benzene	0.00174	1.391	0.000391
D08LSO	137	50000	Formaldehyde	0.1231	98.406	0.027672
D08LSO	137	67561	Methanol	0.01805	14.429	0.004057
D08LSO	137	108383	m-Xylene	0.00282	2.254	0.000634
D08LSO	137	91203	Naphthalene	0.00541	4.325	0.001216
D08LSO	137	95476	o-Xylene	0.00166	1.327	0.000373
D08LSO	137	108952	Phenol	0.00726	5.804	0.001632
D08LSO	137	123386	Propionaldehyde	0.00727	5.812	0.001634
D08LSO	137	100425	Styrene	0.00309	2.470	0.000695
D08LSO	137	108883	Toluene	0.00642	5.132	0.001443
D08LSO	3	7439921	Lead		0.023	0.000006
D08RRC	2562	106990	1,3-Butadiene	0.01687	252.195	0.070918
D08RRC	2562	75070	Acetaldehyde	0.04272	638.636	0.179585
D08RRC	2562	107028	Acrolein	0.02449	366.109	0.102950
D08RRC	2562	71432	Benzene	0.01681	251.298	0.070665
D08RRC	2562	100414	Ethyl benzene	0.00174	26.012	0.007315
D08RRC	2562	50000	Formaldehyde	0.1231	1840.263	0.517484
D08RRC	2562	67561	Methanol	0.01805	269.835	0.075878
D08RRC	2562	108383	m-Xylene	0.00282	42.157	0.011855
D08RRC	2562	91203	Naphthalene	0.00541	80.876	0.022742
D08RRC	2562	95476	o-Xylene	0.00166	24.816	0.006978
D08RRC	2562	108952	Phenol	0.00726	108.532	0.030519
D08RRC	2562	123386	Propionaldehyde	0.00727	108.682	0.030561
D08RRC	2562	100425	Styrene	0.00309	46.193	0.012990
D08RRC	2562	108883	Toluene	0.00642	95.975	0.026988
D08RRC	61	7439921	Lead		0.427	0.000120
D26LLC	9590	106990	1,3-Butadiene	0.01687	944.010	0.265457
D26LLC	9590	75070	Acetaldehyde	0.04272	2390.521	0.672217
D26LLC	9590	107028	Acrolein	0.02449	1370.409	0.385361
D26LLC	9590	71432	Benzene	0.01681	940.652	0.264513
D26LLC	9590	100414	Ethyl benzene	0.00174	97.367	0.027380
D26LLC	9590	50000	Formaldehyde	0.1231	6888.416	1.937031
D26LLC	9590	67561	Methanol	0.01805	1010.040	0.284024
D26LLC	9590	108383	m-Xylene	0.00282	157.801	0.044374
D26LLC	9590	91203	Naphthalene	0.00541	302.732	0.085129
D26LLC	9590	95476	o-Xylene	0.00166	92.890	0.026121
D26LLC	9590	108952	Phenol	0.00726	406.254	0.114239
D26LLC	9590	123386	Propionaldehyde	0.00727	406.814	0.114397
D26LLC	9590	100425	Styrene	0.00309	172.910	0.048622
D26LLC	9590	108883	Toluene	0.00642	359.250	0.101021
D26LLC	230	7439921	Lead		1.597	0.000449

2023 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26LRT	440	106990	1,3-Butadiene	0.01687	43.312	0.012179
D26LRT	440	75070	Acetaldehyde	0.04272	109.680	0.030842
D26LRT	440	107028	Acrolein	0.02449	62.876	0.017681
D26LRT	440	71432	Benzene	0.01681	43.158	0.012136
D26LRT	440	100414	Ethyl benzene	0.00174	4.467	0.001256
D26LRT	440	50000	Formaldehyde	0.1231	316.048	0.088873
D26LRT	440	67561	Methanol	0.01805	46.342	0.013031
D26LRT	440	108383	m-Xylene	0.00282	7.240	0.002036
D26LRT	440	91203	Naphthalene	0.00541	13.890	0.003906
D26LRT	440	95476	o-Xylene	0.00166	4.262	0.001198
D26LRT	440	108952	Phenol	0.00726	18.639	0.005241
D26LRT	440	123386	Propionaldehyde	0.00727	18.665	0.005249
D26LRT	440	100425	Styrene	0.00309	7.933	0.002231
D26LRT	440	108883	Toluene	0.00642	16.483	0.004635
D26LRT	11	7439921	Lead		0.073	0.000021
D26LSO	11523	106990	1,3-Butadiene	0.01687	1134.288	0.318963
D26LSO	11523	75070	Acetaldehyde	0.04272	2872.364	0.807712
D26LSO	11523	107028	Acrolein	0.02449	1646.634	0.463035
D26LSO	11523	71432	Benzene	0.01681	1130.254	0.317829
D26LSO	11523	100414	Ethyl benzene	0.00174	116.992	0.032898
D26LSO	11523	50000	Formaldehyde	0.1231	8276.873	2.327467
D26LSO	11523	67561	Methanol	0.01805	1213.628	0.341274
D26LSO	11523	108383	m-Xylene	0.00282	189.608	0.053318
D26LSO	11523	91203	Naphthalene	0.00541	363.752	0.102288
D26LSO	11523	95476	o-Xylene	0.00166	111.613	0.031386
D26LSO	11523	108952	Phenol	0.00726	488.141	0.137266
D26LSO	11523	123386	Propionaldehyde	0.00727	488.813	0.137455
D26LSO	11523	100425	Styrene	0.00309	207.762	0.058423
D26LSO	11523	108883	Toluene	0.00642	431.661	0.121384
D26LSO	276	7439921	Lead		1.919	0.000540
D26RLC	11928	106990	1,3-Butadiene	0.01687	1174.155	0.330174
D26RLC	11928	75070	Acetaldehyde	0.04272	2973.319	0.836101
D26RLC	11928	107028	Acrolein	0.02449	1704.508	0.479310
D26RLC	11928	71432	Benzene	0.01681	1169.979	0.329000
D26RLC	11928	100414	Ethyl benzene	0.00174	121.104	0.034055
D26RLC	11928	50000	Formaldehyde	0.1231	8567.781	2.409271
D26RLC	11928	67561	Methanol	0.01805	1256.283	0.353268
D26RLC	11928	108383	m-Xylene	0.00282	196.272	0.055192
D26RLC	11928	91203	Naphthalene	0.00541	376.537	0.105883
D26RLC	11928	95476	o-Xylene	0.00166	115.536	0.032489
D26RLC	11928	108952	Phenol	0.00726	505.297	0.142090
D26RLC	11928	123386	Propionaldehyde	0.00727	505.993	0.142286
D26RLC	11928	100425	Styrene	0.00309	215.065	0.060476

2023 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26RLC	11928	108883	Toluene	0.00642	446.833	0.125650
D26RLC	286	7439921	Lead		1.986	0.000559
D26RRT	833	106990	1,3-Butadiene	0.01687	81.998	0.023058
D26RRT	833	75070	Acetaldehyde	0.04272	207.644	0.058390
D26RRT	833	107028	Acrolein	0.02449	119.035	0.033473
D26RRT	833	71432	Benzene	0.01681	81.706	0.022976
D26RRT	833	100414	Ethyl benzene	0.00174	8.457	0.002378
D26RRT	833	50000	Formaldehyde	0.1231	598.337	0.168253
D26RRT	833	67561	Methanol	0.01805	87.733	0.024671
D26RRT	833	108383	m-Xylene	0.00282	13.707	0.003854
D26RRT	833	91203	Naphthalene	0.00541	26.296	0.007394
D26RRT	833	95476	o-Xylene	0.00166	8.069	0.002269
D26RRT	833	108952	Phenol	0.00726	35.288	0.009923
D26RRT	833	123386	Propionaldehyde	0.00727	35.336	0.009937
D26RRT	833	100425	Styrene	0.00309	15.019	0.004223
D26RRT	833	108883	Toluene	0.00642	31.205	0.008775
D26RRT	20	7439921	Lead		0.139	0.000039
D26RSO	15184	106990	1,3-Butadiene	0.01687	1494.665	0.420302
D26RSO	15184	75070	Acetaldehyde	0.04272	3784.950	1.064333
D26RSO	15184	107028	Acrolein	0.02449	2169.790	0.610148
D26RSO	15184	71432	Benzene	0.01681	1489.349	0.418807
D26RSO	15184	100414	Ethyl benzene	0.00174	154.162	0.043351
D26RSO	15184	50000	Formaldehyde	0.1231	10906.539	3.066932
D26RSO	15184	67561	Methanol	0.01805	1599.212	0.449700
D26RSO	15184	108383	m-Xylene	0.00282	249.849	0.070258
D26RSO	15184	91203	Naphthalene	0.00541	479.321	0.134786
D26RSO	15184	95476	o-Xylene	0.00166	147.074	0.041357
D26RSO	15184	108952	Phenol	0.00726	643.229	0.180877
D26RSO	15184	123386	Propionaldehyde	0.00727	644.115	0.181126
D26RSO	15184	100425	Styrene	0.00309	273.771	0.076985
D26RSO	15184	108883	Toluene	0.00642	568.806	0.159949
D26RSO	363	7439921	Lead		2.529	0.000711
A08LSI	1998	106990	1,3-Butadiene	0.01687	10.268	0.002817
A08LSI	1998	75070	Acetaldehyde	0.04272	26.002	0.007132
A08LSI	1998	107028	Acrolein	0.02449	14.906	0.004089
A08LSI	1998	71432	Benzene	0.01681	10.232	0.002807
A08LSI	1998	100414	Ethyl benzene	0.00174	1.059	0.000291
A08LSI	1998	50000	Formaldehyde	0.1231	74.926	0.020552
A08LSI	1998	67561	Methanol	0.01805	10.986	0.003014
A08LSI	1998	108383	m-Xylene	0.00282	1.716	0.000471
A08LSI	1998	91203	Naphthalene	0.00541	3.293	0.000903
A08LSI	1998	95476	o-Xylene	0.00166	1.010	0.000277
A08LSI	1998	108952	Phenol	0.00726	4.419	0.001212

2023 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A08LSI	1998	123386	Propionaldehyde	0.00727	4.425	0.001214
A08LSI	1998	100425	Styrene	0.00309	1.881	0.000516
A08LSI	1998	108883	Toluene	0.00642	3.908	0.001072
A08LSI	48	7439921	Lead		0.056	0.000015
A08RSI	1288	106990	1,3-Butadiene	0.01687	6.619	0.001816
A08RSI	1288	75070	Acetaldehyde	0.04272	16.762	0.004598
A08RSI	1288	107028	Acrolein	0.02449	9.609	0.002636
A08RSI	1288	71432	Benzene	0.01681	6.596	0.001809
A08RSI	1288	100414	Ethyl benzene	0.00174	0.683	0.000187
A08RSI	1288	50000	Formaldehyde	0.1231	48.300	0.013249
A08RSI	1288	67561	Methanol	0.01805	7.082	0.001943
A08RSI	1288	108383	m-Xylene	0.00282	1.106	0.000304
A08RSI	1288	91203	Naphthalene	0.00541	2.123	0.000582
A08RSI	1288	95476	o-Xylene	0.00166	0.651	0.000179
A08RSI	1288	108952	Phenol	0.00726	2.849	0.000781
A08RSI	1288	123386	Propionaldehyde	0.00727	2.853	0.000782
A08RSI	1288	100425	Styrene	0.00309	1.212	0.000333
A08RSI	1288	108883	Toluene	0.00642	2.519	0.000691
A08RSI	31	7439921	Lead		0.036	0.000010
A26LSI	23344	106990	1,3-Butadiene	0.01687	119.969	0.032907
A26LSI	23344	75070	Acetaldehyde	0.04272	303.797	0.083332
A26LSI	23344	107028	Acrolein	0.02449	174.157	0.047771
A26LSI	23344	71432	Benzene	0.01681	119.542	0.032790
A26LSI	23344	100414	Ethyl benzene	0.00174	12.374	0.003394
A26LSI	23344	50000	Formaldehyde	0.1231	875.408	0.240125
A26LSI	23344	67561	Methanol	0.01805	128.360	0.035209
A26LSI	23344	108383	m-Xylene	0.00282	20.054	0.005501
A26LSI	23344	91203	Naphthalene	0.00541	38.472	0.010553
A26LSI	23344	95476	o-Xylene	0.00166	11.805	0.003238
A26LSI	23344	108952	Phenol	0.00726	51.628	0.014162
A26LSI	23344	123386	Propionaldehyde	0.00727	51.700	0.014181
A26LSI	23344	100425	Styrene	0.00309	21.974	0.006028
A26LSI	23344	108883	Toluene	0.00642	45.655	0.012523
A26LSI	559	7439921	Lead		0.659	0.000181
A26RSI	28068	106990	1,3-Butadiene	0.01687	144.246	0.039567
A26RSI	28068	75070	Acetaldehyde	0.04272	365.275	0.100195
A26RSI	28068	107028	Acrolein	0.02449	209.400	0.057439
A26RSI	28068	71432	Benzene	0.01681	143.733	0.039426
A26RSI	28068	100414	Ethyl benzene	0.00174	14.878	0.004081
A26RSI	28068	50000	Formaldehyde	0.1231	1052.560	0.288717
A26RSI	28068	67561	Methanol	0.01805	154.336	0.042334
A26RSI	28068	108383	m-Xylene	0.00282	24.112	0.006614
A26RSI	28068	91203	Naphthalene	0.00541	46.258	0.012689

2023 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26RSI	28068	95476	o-Xylene	0.00166	14.194	0.003893
A26RSI	28068	108952	Phenol	0.00726	62.076	0.017028
A26RSI	28068	123386	Propionaldehyde	0.00727	62.162	0.017051
A26RSI	28068	100425	Styrene	0.00309	26.421	0.007247
A26RSI	28068	108883	Toluene	0.00642	54.894	0.015057
A26RSI	672	7439921	Lead		0.792	0.000217
A08LGR	1998	106990	1,3-Butadiene	0.01687	13.816	0.003790
A08LGR	1998	75070	Acetaldehyde	0.04272	34.987	0.009597
A08LGR	1998	107028	Acrolein	0.02449	20.057	0.005502
A08LGR	1998	71432	Benzene	0.01681	13.767	0.003776
A08LGR	1998	100414	Ethyl benzene	0.00174	1.425	0.000391
A08LGR	1998	50000	Formaldehyde	0.1231	100.816	0.027654
A08LGR	1998	67561	Methanol	0.01805	14.783	0.004055
A08LGR	1998	108383	m-Xylene	0.00282	2.310	0.000634
A08LGR	1998	91203	Naphthalene	0.00541	4.431	0.001215
A08LGR	1998	95476	o-Xylene	0.00166	1.360	0.000373
A08LGR	1998	108952	Phenol	0.00726	5.946	0.001631
A08LGR	1998	123386	Propionaldehyde	0.00727	5.954	0.001633
A08LGR	1998	100425	Styrene	0.00309	2.531	0.000694
A08LGR	1998	108883	Toluene	0.00642	5.258	0.001442
A08LGR	48	7439921	Lead		0.046	0.000013
A08RGR	1288	106990	1,3-Butadiene	0.01687	8.907	0.002443
A08RGR	1288	75070	Acetaldehyde	0.04272	22.554	0.006187
A08RGR	1288	107028	Acrolein	0.02449	12.930	0.003547
A08RGR	1288	71432	Benzene	0.01681	8.875	0.002434
A08RGR	1288	100414	Ethyl benzene	0.00174	0.919	0.000252
A08RGR	1288	50000	Formaldehyde	0.1231	64.991	0.017827
A08RGR	1288	67561	Methanol	0.01805	9.530	0.002614
A08RGR	1288	108383	m-Xylene	0.00282	1.489	0.000408
A08RGR	1288	91203	Naphthalene	0.00541	2.856	0.000783
A08RGR	1288	95476	o-Xylene	0.00166	0.876	0.000240
A08RGR	1288	108952	Phenol	0.00726	3.833	0.001051
A08RGR	1288	123386	Propionaldehyde	0.00727	3.838	0.001053
A08RGR	1288	100425	Styrene	0.00309	1.631	0.000447
A08RGR	1288	108883	Toluene	0.00642	3.389	0.000930
A08RGR	31	7439921	Lead		0.030	0.000008
A26LGR	23344	106990	1,3-Butadiene	0.01687	161.424	0.044279
A26LGR	23344	75070	Acetaldehyde	0.04272	408.775	0.112127
A26LGR	23344	107028	Acrolein	0.02449	234.337	0.064279
A26LGR	23344	71432	Benzene	0.01681	160.850	0.044121
A26LGR	23344	100414	Ethyl benzene	0.00174	16.650	0.004567
A26LGR	23344	50000	Formaldehyde	0.1231	1177.907	0.323100
A26LGR	23344	67561	Methanol	0.01805	172.715	0.047376

2023 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26LGR	23344	108383	m-Xylene	0.00282	26.984	0.007402
A26LGR	23344	91203	Naphthalene	0.00541	51.767	0.014200
A26LGR	23344	95476	o-Xylene	0.00166	15.884	0.004357
A26LGR	23344	108952	Phenol	0.00726	69.469	0.019055
A26LGR	23344	123386	Propionaldehyde	0.00727	69.564	0.019082
A26LGR	23344	100425	Styrene	0.00309	29.567	0.008110
A26LGR	23344	108883	Toluene	0.00642	61.431	0.016851
A26LGR	559	7439921	Lead		0.541	0.000148
A26RGR	28068	106990	1,3-Butadiene	0.01687	194.090	0.053239
A26RGR	28068	75070	Acetaldehyde	0.04272	491.496	0.134818
A26RGR	28068	107028	Acrolein	0.02449	281.759	0.077287
A26RGR	28068	71432	Benzene	0.01681	193.400	0.053050
A26RGR	28068	100414	Ethyl benzene	0.00174	20.019	0.005491
A26RGR	28068	50000	Formaldehyde	0.1231	1416.273	0.388484
A26RGR	28068	67561	Methanol	0.01805	207.666	0.056963
A26RGR	28068	108383	m-Xylene	0.00282	32.444	0.008899
A26RGR	28068	91203	Naphthalene	0.00541	62.242	0.017073
A26RGR	28068	95476	o-Xylene	0.00166	19.098	0.005239
A26RGR	28068	108952	Phenol	0.00726	83.527	0.022911
A26RGR	28068	123386	Propionaldehyde	0.00727	83.642	0.022943
A26RGR	28068	100425	Styrene	0.00309	35.551	0.009752
A26RGR	28068	108883	Toluene	0.00642	73.862	0.020261
A26RGR	672	7439921	Lead		0.650	0.000178
A08TX	3286	106990	1,3-Butadiene	0.01687	19.199	0.005266
A08TX	3286	75070	Acetaldehyde	0.04272	57.541	0.015783
A08TX	3286	107028	Acrolein	0.02449	32.986	0.009048
A08TX	3286	71432	Benzene	0.01681	22.642	0.006211
A08TX	3286	100414	Ethyl benzene	0.00174	2.344	0.000643
A08TX	3286	50000	Formaldehyde	0.1231	165.807	0.045481
A08TX	3286	67561	Methanol	0.01805	24.312	0.006669
A08TX	3286	108383	m-Xylene	0.00282	3.798	0.001042
A08TX	3286	91203	Naphthalene	0.00541	7.287	0.001999
A08TX	3286	95476	o-Xylene	0.00166	2.236	0.000613
A08TX	3286	108952	Phenol	0.00726	9.779	0.002682
A08TX	3286	123386	Propionaldehyde	0.00727	9.792	0.002686
A08TX	3286	100425	Styrene	0.00309	4.162	0.001142
A08TX	3286	108883	Toluene	0.00642	8.647	0.002372
A08TX	79	7439921	Lead		0.064	0.000018
A26TX	51412	106990	1,3-Butadiene	0.01687	300.387	0.082396
A26TX	51412	75070	Acetaldehyde	0.04272	900.271	0.246945
A26TX	51412	107028	Acrolein	0.02449	516.096	0.141565
A26TX	51412	71432	Benzene	0.01681	354.250	0.097171
A26TX	51412	100414	Ethyl benzene	0.00174	36.668	0.010058

2023 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26TX	51412	50000	Formaldehyde	0.1231	2594.180	0.711584
A26TX	51412	67561	Methanol	0.01805	380.381	0.104339
A26TX	51412	108383	m-Xylene	0.00282	59.428	0.016301
A26TX	51412	91203	Naphthalene	0.00541	114.009	0.031273
A26TX	51412	95476	o-Xylene	0.00166	34.982	0.009596
A26TX	51412	108952	Phenol	0.00726	152.995	0.041967
A26TX	51412	123386	Propionaldehyde	0.00727	153.206	0.042025
A26TX	51412	100425	Styrene	0.00309	65.118	0.017862
A26TX	51412	108883	Toluene	0.00642	135.294	0.037111
A26TX	1231	7439921	Lead		1.000	0.000274
2023EV		9901	DieselExhPM		4.140	0.002650
2023PV		9901	DieselExhPM		62.800	0.040275
2024RR		9901	DieselExhPM		0	0
2025PD		9901	DieselExhPM		0	0
Batch		7440382	Arsenic		0.162	0.000104
Batch		7440417	Beryllium		0.017	0.000011
Batch		7440439	Cadmium		0.021	0.000013
Batch		18540299	Cr(VI)		0.468	0.000300
Batch		7439921	Lead		0.179	0.000115
Batch		7439965	Manganese		2.131	0.001366
Batch		7440020	Nickel		0.628	0.000402
Batch		7782492	Selenium		0.016	0.000010

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Emissions Inventory 2023 Project 2 Year Alternative

Piston Operations

	Total Ops	Piston Ops	% Piston
Piston Ops	110368	2642	2.39%

Departures

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Taxi Out	59.6	55184	2.16005	15.51781	0.0281%
Ground Roll	79.9	55184	2.89577	15.51781	0.0281%
Climb to Mix	161	55184	5.83502	15.51781	0.0281%

Arrivals

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Descend from N	65.6	55184	0.85115	15.13699	0.0274%
Ground Roll	31.6	55184	1.14526	15.13699	0.0274%
Taxi In	26.7	55184	0.96767	15.13699	0.0274%

2023 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08TX	5199	106990	1,3-Butadiene	0.01687	189.451	0.053274
D08TX	5199	75070	Acetaldehyde	0.04272	479.749	0.134906
D08TX	5199	107028	Acrolein	0.02449	275.025	0.077337
D08TX	5199	71432	Benzene	0.01681	188.778	0.053085
D08TX	5199	100414	Ethyl benzene	0.00174	19.540	0.005495
D08TX	5199	50000	Formaldehyde	0.1231	1382.423	0.388739
D08TX	5199	67561	Methanol	0.01805	202.703	0.057000
D08TX	5199	108383	m-Xylene	0.00282	31.669	0.008905
D08TX	5199	91203	Naphthalene	0.00541	60.755	0.017084
D08TX	5199	95476	o-Xylene	0.00166	18.642	0.005242
D08TX	5199	108952	Phenol	0.00726	81.530	0.022926
D08TX	5199	123386	Propionaldehyde	0.00727	81.643	0.022958
D08TX	5199	100425	Styrene	0.00309	34.701	0.009758
D08TX	5199	108883	Toluene	0.00642	72.097	0.020274
D08TX	124	7439921	Lead		0.195	0.000055
D26TX	49499	106990	1,3-Butadiene	0.01687	1803.743	0.507215
D26TX	49499	75070	Acetaldehyde	0.04272	4567.628	1.284423
D26TX	49499	107028	Acrolein	0.02449	2618.474	0.736318
D26TX	49499	71432	Benzene	0.01681	1797.327	0.505411
D26TX	49499	100414	Ethyl benzene	0.00174	186.041	0.052315
D26TX	49499	50000	Formaldehyde	0.1231	13161.869	3.701134

D26TX	49499	67561	Methanol	0.01805	1929.908	0.542693
D26TX	49499	108383	m-Xylene	0.00282	301.515	0.084786
D26TX	49499	91203	Naphthalene	0.00541	578.438	0.162657
D26TX	49499	95476	o-Xylene	0.00166	177.487	0.049910
D26TX	49499	108952	Phenol	0.00726	776.240	0.218280
D26TX	49499	123386	Propionaldehyde	0.00727	777.309	0.218580
D26TX	49499	100425	Styrene	0.00309	330.383	0.092904
D26TX	49499	108883	Toluene	0.00642	686.427	0.193024
D26TX	1185	7439921	Lead		1.858	0.000522
D08LGR	2237	106990	1,3-Butadiene	0.01687	109.281	0.030730
D08LGR	2237	75070	Acetaldehyde	0.04272	276.733	0.077818
D08LGR	2237	107028	Acrolein	0.02449	158.642	0.044610
D08LGR	2237	71432	Benzene	0.01681	108.892	0.030621
D08LGR	2237	100414	Ethyl benzene	0.00174	11.271	0.003170
D08LGR	2237	50000	Formaldehyde	0.1231	797.421	0.224236
D08LGR	2237	67561	Methanol	0.01805	116.925	0.032879
D08LGR	2237	108383	m-Xylene	0.00282	18.267	0.005137
D08LGR	2237	91203	Naphthalene	0.00541	35.045	0.009855
D08LGR	2237	95476	o-Xylene	0.00166	10.753	0.003024
D08LGR	2237	108952	Phenol	0.00726	47.029	0.013225
D08LGR	2237	123386	Propionaldehyde	0.00727	47.094	0.013243
D08LGR	2237	100425	Styrene	0.00309	20.016	0.005629
D08LGR	2237	108883	Toluene	0.00642	41.588	0.011695
D08LGR	54	7439921	Lead		0.138	0.000039
D08RGR	2938	106990	1,3-Butadiene	0.01687	143.526	0.040360
D08RGR	2938	75070	Acetaldehyde	0.04272	363.452	0.102203
D08RGR	2938	107028	Acrolein	0.02449	208.355	0.058590
D08RGR	2938	71432	Benzene	0.01681	143.015	0.040216
D08RGR	2938	100414	Ethyl benzene	0.00174	14.804	0.004163
D08RGR	2938	50000	Formaldehyde	0.1231	1047.306	0.294504
D08RGR	2938	67561	Methanol	0.01805	153.565	0.043183
D08RGR	2938	108383	m-Xylene	0.00282	23.992	0.006747
D08RGR	2938	91203	Naphthalene	0.00541	46.027	0.012943
D08RGR	2938	95476	o-Xylene	0.00166	14.123	0.003971
D08RGR	2938	108952	Phenol	0.00726	61.766	0.017369
D08RGR	2938	123386	Propionaldehyde	0.00727	61.851	0.017393
D08RGR	2938	100425	Styrene	0.00309	26.289	0.007392
D08RGR	2938	108883	Toluene	0.00642	54.620	0.015359
D08RGR	70	7439921	Lead		0.182	0.000051
D26LGR	30293	106990	1,3-Butadiene	0.01687	1479.861	0.416139
D26LGR	30293	75070	Acetaldehyde	0.04272	3747.461	1.053791
D26LGR	30293	107028	Acrolein	0.02449	2148.299	0.604104
D26LGR	30293	71432	Benzene	0.01681	1474.598	0.414659
D26LGR	30293	100414	Ethyl benzene	0.00174	152.635	0.042921
D26LGR	30293	50000	Formaldehyde	0.1231	10798.513	3.036555
D26LGR	30293	67561	Methanol	0.01805	1583.372	0.445246
D26LGR	30293	108383	m-Xylene	0.00282	247.375	0.069562

D26LGR	30293	91203	Naphthalene	0.00541	474.573	0.133451
D26LGR	30293	95476	o-Xylene	0.00166	145.618	0.040948
D26LGR	30293	108952	Phenol	0.00726	636.858	0.179085
D26LGR	30293	123386	Propionaldehyde	0.00727	637.735	0.179332
D26LGR	30293	100425	Styrene	0.00309	271.059	0.076222
D26LGR	30293	108883	Toluene	0.00642	563.172	0.158365
D26LGR	725	7439921	Lead		1.873	0.000527
D26RGR	19205	106990	1,3-Butadiene	0.01687	938.195	0.263822
D26RGR	19205	75070	Acetaldehyde	0.04272	2375.796	0.668077
D26RGR	19205	107028	Acrolein	0.02449	1361.967	0.382987
D26RGR	19205	71432	Benzene	0.01681	934.858	0.262883
D26RGR	19205	100414	Ethyl benzene	0.00174	96.767	0.027211
D26RGR	19205	50000	Formaldehyde	0.1231	6845.985	1.925099
D26RGR	19205	67561	Methanol	0.01805	1003.818	0.282275
D26RGR	19205	108383	m-Xylene	0.00282	156.829	0.044101
D26RGR	19205	91203	Naphthalene	0.00541	300.867	0.084604
D26RGR	19205	95476	o-Xylene	0.00166	92.318	0.025960
D26RGR	19205	108952	Phenol	0.00726	403.752	0.113536
D26RGR	19205	123386	Propionaldehyde	0.00727	404.308	0.113692
D26RGR	19205	100425	Styrene	0.00309	171.845	0.048323
D26RGR	19205	108883	Toluene	0.00642	357.037	0.100399
D26RGR	460	7439921	Lead		1.188	0.000334
D08LRC	2170	106990	1,3-Butadiene	0.01687	213.608	0.060067
D08LRC	2170	75070	Acetaldehyde	0.04272	540.921	0.152108
D08LRC	2170	107028	Acrolein	0.02449	310.092	0.087198
D08LRC	2170	71432	Benzene	0.01681	212.848	0.059853
D08LRC	2170	100414	Ethyl benzene	0.00174	22.032	0.006195
D08LRC	2170	50000	Formaldehyde	0.1231	1558.693	0.438306
D08LRC	2170	67561	Methanol	0.01805	228.549	0.064268
D08LRC	2170	108383	m-Xylene	0.00282	35.707	0.010041
D08LRC	2170	91203	Naphthalene	0.00541	68.501	0.019263
D08LRC	2170	95476	o-Xylene	0.00166	21.019	0.005911
D08LRC	2170	108952	Phenol	0.00726	91.926	0.025850
D08LRC	2170	123386	Propionaldehyde	0.00727	92.053	0.025885
D08LRC	2170	100425	Styrene	0.00309	39.126	0.011002
D08LRC	2170	108883	Toluene	0.00642	81.290	0.022859
D08LRC	52	7439921	Lead		0.361	0.000102
D08LSO	91	106990	1,3-Butadiene	0.01687	8.958	0.002519
D08LSO	91	75070	Acetaldehyde	0.04272	22.684	0.006379
D08LSO	91	107028	Acrolein	0.02449	13.004	0.003657
D08LSO	91	71432	Benzene	0.01681	8.926	0.002510
D08LSO	91	100414	Ethyl benzene	0.00174	0.924	0.000260
D08LSO	91	50000	Formaldehyde	0.1231	65.365	0.018381
D08LSO	91	67561	Methanol	0.01805	9.584	0.002695
D08LSO	91	108383	m-Xylene	0.00282	1.497	0.000421
D08LSO	91	91203	Naphthalene	0.00541	2.873	0.000808
D08LSO	91	95476	o-Xylene	0.00166	0.881	0.000248

D08LSO	91	108952	Phenol	0.00726	3.855	0.001084
D08LSO	91	123386	Propionaldehyde	0.00727	3.860	0.001086
D08LSO	91	100425	Styrene	0.00309	1.641	0.000461
D08LSO	91	108883	Toluene	0.00642	3.409	0.000959
D08LSO	2	7439921	Lead		0.015	0.000004
D08RRC	2938	106990	1,3-Butadiene	0.01687	289.208	0.081326
D08RRC	2938	75070	Acetaldehyde	0.04272	732.362	0.205941
D08RRC	2938	107028	Acrolein	0.02449	419.839	0.118059
D08RRC	2938	71432	Benzene	0.01681	288.179	0.081036
D08RRC	2938	100414	Ethyl benzene	0.00174	29.829	0.008388
D08RRC	2938	50000	Formaldehyde	0.1231	2110.341	0.593430
D08RRC	2938	67561	Methanol	0.01805	309.437	0.087014
D08RRC	2938	108383	m-Xylene	0.00282	48.344	0.013594
D08RRC	2938	91203	Naphthalene	0.00541	92.745	0.026080
D08RRC	2938	95476	o-Xylene	0.00166	28.458	0.008002
D08RRC	2938	108952	Phenol	0.00726	124.460	0.034998
D08RRC	2938	123386	Propionaldehyde	0.00727	124.632	0.035047
D08RRC	2938	100425	Styrene	0.00309	52.973	0.014896
D08RRC	2938	108883	Toluene	0.00642	110.060	0.030949
D08RRC	70	7439921	Lead		0.489	0.000138
D26LLC	13606	106990	1,3-Butadiene	0.01687	1339.332	0.376622
D26LLC	13606	75070	Acetaldehyde	0.04272	3391.598	0.953722
D26LLC	13606	107028	Acrolein	0.02449	1944.294	0.546738
D26LLC	13606	71432	Benzene	0.01681	1334.569	0.375282
D26LLC	13606	100414	Ethyl benzene	0.00174	138.141	0.038845
D26LLC	13606	50000	Formaldehyde	0.1231	9773.075	2.748201
D26LLC	13606	67561	Methanol	0.01805	1433.014	0.402965
D26LLC	13606	108383	m-Xylene	0.00282	223.884	0.062956
D26LLC	13606	91203	Naphthalene	0.00541	429.507	0.120778
D26LLC	13606	95476	o-Xylene	0.00166	131.790	0.037059
D26LLC	13606	108952	Phenol	0.00726	576.381	0.162079
D26LLC	13606	123386	Propionaldehyde	0.00727	577.175	0.162302
D26LLC	13606	100425	Styrene	0.00309	245.319	0.068984
D26LLC	13606	108883	Toluene	0.00642	509.692	0.143326
D26LLC	326	7439921	Lead		2.266	0.000637
D26LRT	584	106990	1,3-Butadiene	0.01687	57.487	0.016165
D26LRT	584	75070	Acetaldehyde	0.04272	145.575	0.040936
D26LRT	584	107028	Acrolein	0.02449	83.453	0.023467
D26LRT	584	71432	Benzene	0.01681	57.283	0.016108
D26LRT	584	100414	Ethyl benzene	0.00174	5.929	0.001667
D26LRT	584	50000	Formaldehyde	0.1231	419.482	0.117959
D26LRT	584	67561	Methanol	0.01805	61.508	0.017296
D26LRT	584	108383	m-Xylene	0.00282	9.610	0.002702
D26LRT	584	91203	Naphthalene	0.00541	18.435	0.005184
D26LRT	584	95476	o-Xylene	0.00166	5.657	0.001591
D26LRT	584	108952	Phenol	0.00726	24.740	0.006957
D26LRT	584	123386	Propionaldehyde	0.00727	24.774	0.006966

D26LRT	584	100425	Styrene	0.00309	10.530	0.002961
D26LRT	584	108883	Toluene	0.00642	21.877	0.006152
D26LRT	14	7439921	Lead		0.097	0.000027
D26LSO	16102	106990	1,3-Butadiene	0.01687	1585.030	0.445712
D26LSO	16102	75070	Acetaldehyde	0.04272	4013.782	1.128680
D26LSO	16102	107028	Acrolein	0.02449	2300.972	0.647036
D26LSO	16102	71432	Benzene	0.01681	1579.393	0.444127
D26LSO	16102	100414	Ethyl benzene	0.00174	163.483	0.045972
D26LSO	16102	50000	Formaldehyde	0.1231	11565.930	3.252354
D26LSO	16102	67561	Methanol	0.01805	1695.898	0.476889
D26LSO	16102	108383	m-Xylene	0.00282	264.955	0.074506
D26LSO	16102	91203	Naphthalene	0.00541	508.300	0.142934
D26LSO	16102	95476	o-Xylene	0.00166	155.966	0.043858
D26LSO	16102	108952	Phenol	0.00726	682.117	0.191812
D26LSO	16102	123386	Propionaldehyde	0.00727	683.057	0.192076
D26LSO	16102	100425	Styrene	0.00309	290.323	0.081639
D26LSO	16102	108883	Toluene	0.00642	603.195	0.169619
D26LSO	385	7439921	Lead		2.681	0.000754
D26RLC	8116	106990	1,3-Butadiene	0.01687	798.914	0.224655
D26RLC	8116	75070	Acetaldehyde	0.04272	2023.094	0.568896
D26RLC	8116	107028	Acrolein	0.02449	1159.774	0.326130
D26RLC	8116	71432	Benzene	0.01681	796.072	0.223856
D26RLC	8116	100414	Ethyl benzene	0.00174	82.401	0.023171
D26RLC	8116	50000	Formaldehyde	0.1231	5829.654	1.639306
D26RLC	8116	67561	Methanol	0.01805	854.795	0.240369
D26RLC	8116	108383	m-Xylene	0.00282	133.547	0.037554
D26RLC	8116	91203	Naphthalene	0.00541	256.202	0.072044
D26RLC	8116	95476	o-Xylene	0.00166	78.613	0.022106
D26RLC	8116	108952	Phenol	0.00726	343.812	0.096680
D26RLC	8116	123386	Propionaldehyde	0.00727	344.286	0.096814
D26RLC	8116	100425	Styrene	0.00309	146.333	0.041149
D26RLC	8116	108883	Toluene	0.00642	304.032	0.085494
D26RLC	194	7439921	Lead		1.352	0.000380
D26RRT	551	106990	1,3-Butadiene	0.01687	54.239	0.015252
D26RRT	551	75070	Acetaldehyde	0.04272	137.349	0.038623
D26RRT	551	107028	Acrolein	0.02449	78.738	0.022141
D26RRT	551	71432	Benzene	0.01681	54.046	0.015198
D26RRT	551	100414	Ethyl benzene	0.00174	5.594	0.001573
D26RRT	551	50000	Formaldehyde	0.1231	395.779	0.111293
D26RRT	551	67561	Methanol	0.01805	58.033	0.016319
D26RRT	551	108383	m-Xylene	0.00282	9.067	0.002550
D26RRT	551	91203	Naphthalene	0.00541	17.394	0.004891
D26RRT	551	95476	o-Xylene	0.00166	5.337	0.001501
D26RRT	551	108952	Phenol	0.00726	23.342	0.006564
D26RRT	551	123386	Propionaldehyde	0.00727	23.374	0.006573
D26RRT	551	100425	Styrene	0.00309	9.935	0.002794
D26RRT	551	108883	Toluene	0.00642	20.641	0.005804

D26RRT	13	7439921	Lead		0.092	0.000026
D26RSO	10538	106990	1,3-Butadiene	0.01687	1037.328	0.291698
D26RSO	10538	75070	Acetaldehyde	0.04272	2626.831	0.738668
D26RSO	10538	107028	Acrolein	0.02449	1505.878	0.423455
D26RSO	10538	71432	Benzene	0.01681	1033.638	0.290660
D26RSO	10538	100414	Ethyl benzene	0.00174	106.992	0.030086
D26RSO	10538	50000	Formaldehyde	0.1231	7569.356	2.128512
D26RSO	10538	67561	Methanol	0.01805	1109.885	0.312101
D26RSO	10538	108383	m-Xylene	0.00282	173.400	0.048760
D26RSO	10538	91203	Naphthalene	0.00541	332.658	0.093544
D26RSO	10538	95476	o-Xylene	0.00166	102.073	0.028703
D26RSO	10538	108952	Phenol	0.00726	446.414	0.125532
D26RSO	10538	123386	Propionaldehyde	0.00727	447.029	0.125705
D26RSO	10538	100425	Styrene	0.00309	190.003	0.053429
D26RSO	10538	108883	Toluene	0.00642	394.763	0.111008
D26RSO	252	7439921	Lead		1.755	0.000493
A08LSI	1469	106990	1,3-Butadiene	0.01687	7.549	0.002071
A08LSI	1469	75070	Acetaldehyde	0.04272	19.117	0.005244
A08LSI	1469	107028	Acrolein	0.02449	10.959	0.003006
A08LSI	1469	71432	Benzene	0.01681	7.523	0.002063
A08LSI	1469	100414	Ethyl benzene	0.00174	0.779	0.000214
A08LSI	1469	50000	Formaldehyde	0.1231	55.088	0.015111
A08LSI	1469	67561	Methanol	0.01805	8.077	0.002216
A08LSI	1469	108383	m-Xylene	0.00282	1.262	0.000346
A08LSI	1469	91203	Naphthalene	0.00541	2.421	0.000664
A08LSI	1469	95476	o-Xylene	0.00166	0.743	0.000204
A08LSI	1469	108952	Phenol	0.00726	3.249	0.000891
A08LSI	1469	123386	Propionaldehyde	0.00727	3.253	0.000892
A08LSI	1469	100425	Styrene	0.00309	1.383	0.000379
A08LSI	1469	108883	Toluene	0.00642	2.873	0.000788
A08LSI	35	7439921	Lead		0.041	0.000011
A08RSI	1816	106990	1,3-Butadiene	0.01687	9.333	0.002560
A08RSI	1816	75070	Acetaldehyde	0.04272	23.633	0.006483
A08RSI	1816	107028	Acrolein	0.02449	13.548	0.003716
A08RSI	1816	71432	Benzene	0.01681	9.300	0.002551
A08RSI	1816	100414	Ethyl benzene	0.00174	0.963	0.000264
A08RSI	1816	50000	Formaldehyde	0.1231	68.101	0.018680
A08RSI	1816	67561	Methanol	0.01805	9.986	0.002739
A08RSI	1816	108383	m-Xylene	0.00282	1.560	0.000428
A08RSI	1816	91203	Naphthalene	0.00541	2.993	0.000821
A08RSI	1816	95476	o-Xylene	0.00166	0.918	0.000252
A08RSI	1816	108952	Phenol	0.00726	4.016	0.001102
A08RSI	1816	123386	Propionaldehyde	0.00727	4.022	0.001103
A08RSI	1816	100425	Styrene	0.00309	1.709	0.000469
A08RSI	1816	108883	Toluene	0.00642	3.552	0.000974
A08RSI	43	7439921	Lead		0.051	0.000014
A26LSI	31913	106990	1,3-Butadiene	0.01687	164.006	0.044987

A26LSI	31913	75070	Acetaldehyde	0.04272	415.314	0.113921
A26LSI	31913	107028	Acrolein	0.02449	238.086	0.065307
A26LSI	31913	71432	Benzene	0.01681	163.423	0.044827
A26LSI	31913	100414	Ethyl benzene	0.00174	16.916	0.004640
A26LSI	31913	50000	Formaldehyde	0.1231	1196.749	0.328268
A26LSI	31913	67561	Methanol	0.01805	175.478	0.048134
A26LSI	31913	108383	m-Xylene	0.00282	27.415	0.007520
A26LSI	31913	91203	Naphthalene	0.00541	52.595	0.014427
A26LSI	31913	95476	o-Xylene	0.00166	16.138	0.004427
A26LSI	31913	108952	Phenol	0.00726	70.580	0.019360
A26LSI	31913	123386	Propionaldehyde	0.00727	70.677	0.019387
A26LSI	31913	100425	Styrene	0.00309	30.040	0.008240
A26LSI	31913	108883	Toluene	0.00642	62.414	0.017120
A26LSI	764	7439921	Lead		0.901	0.000247
A26RSI	19499	106990	1,3-Butadiene	0.01687	100.209	0.027487
A26RSI	19499	75070	Acetaldehyde	0.04272	253.759	0.069606
A26RSI	19499	107028	Acrolein	0.02449	145.472	0.039903
A26RSI	19499	71432	Benzene	0.01681	99.852	0.027389
A26RSI	19499	100414	Ethyl benzene	0.00174	10.336	0.002835
A26RSI	19499	50000	Formaldehyde	0.1231	731.219	0.200574
A26RSI	19499	67561	Methanol	0.01805	107.218	0.029410
A26RSI	19499	108383	m-Xylene	0.00282	16.751	0.004595
A26RSI	19499	91203	Naphthalene	0.00541	32.136	0.008815
A26RSI	19499	95476	o-Xylene	0.00166	9.860	0.002705
A26RSI	19499	108952	Phenol	0.00726	43.125	0.011829
A26RSI	19499	123386	Propionaldehyde	0.00727	43.184	0.011845
A26RSI	19499	100425	Styrene	0.00309	18.355	0.005035
A26RSI	19499	108883	Toluene	0.00642	38.135	0.010460
A26RSI	467	7439921	Lead		0.550	0.000151
A08LGR	1469	106990	1,3-Butadiene	0.01687	10.158	0.002786
A08LGR	1469	75070	Acetaldehyde	0.04272	25.724	0.007056
A08LGR	1469	107028	Acrolein	0.02449	14.746	0.004045
A08LGR	1469	71432	Benzene	0.01681	10.122	0.002776
A08LGR	1469	100414	Ethyl benzene	0.00174	1.048	0.000287
A08LGR	1469	50000	Formaldehyde	0.1231	74.124	0.020332
A08LGR	1469	67561	Methanol	0.01805	10.869	0.002981
A08LGR	1469	108383	m-Xylene	0.00282	1.698	0.000466
A08LGR	1469	91203	Naphthalene	0.00541	3.258	0.000894
A08LGR	1469	95476	o-Xylene	0.00166	1.000	0.000274
A08LGR	1469	108952	Phenol	0.00726	4.372	0.001199
A08LGR	1469	123386	Propionaldehyde	0.00727	4.378	0.001201
A08LGR	1469	100425	Styrene	0.00309	1.861	0.000510
A08LGR	1469	108883	Toluene	0.00642	3.866	0.001060
A08LGR	35	7439921	Lead		0.034	0.000009
A08RGR	1816	106990	1,3-Butadiene	0.01687	12.558	0.003445
A08RGR	1816	75070	Acetaldehyde	0.04272	31.800	0.008723
A08RGR	1816	107028	Acrolein	0.02449	18.230	0.005000

A08RGR	1816	71432	Benzene	0.01681	12.513	0.003432
A08RGR	1816	100414	Ethyl benzene	0.00174	1.295	0.000355
A08RGR	1816	50000	Formaldehyde	0.1231	91.633	0.025135
A08RGR	1816	67561	Methanol	0.01805	13.436	0.003686
A08RGR	1816	108383	m-Xylene	0.00282	2.099	0.000576
A08RGR	1816	91203	Naphthalene	0.00541	4.027	0.001105
A08RGR	1816	95476	o-Xylene	0.00166	1.236	0.000339
A08RGR	1816	108952	Phenol	0.00726	5.404	0.001482
A08RGR	1816	123386	Propionaldehyde	0.00727	5.412	0.001484
A08RGR	1816	100425	Styrene	0.00309	2.300	0.000631
A08RGR	1816	108883	Toluene	0.00642	4.779	0.001311
A08RGR	43	7439921	Lead		0.042	0.000012
A26LGR	31913	106990	1,3-Butadiene	0.01687	220.679	0.060532
A26LGR	31913	75070	Acetaldehyde	0.04272	558.826	0.153286
A26LGR	31913	107028	Acrolein	0.02449	320.357	0.087874
A26LGR	31913	71432	Benzene	0.01681	219.894	0.060317
A26LGR	31913	100414	Ethyl benzene	0.00174	22.761	0.006243
A26LGR	31913	50000	Formaldehyde	0.1231	1610.287	0.441702
A26LGR	31913	67561	Methanol	0.01805	236.114	0.064766
A26LGR	31913	108383	m-Xylene	0.00282	36.889	0.010119
A26LGR	31913	91203	Naphthalene	0.00541	70.769	0.019412
A26LGR	31913	95476	o-Xylene	0.00166	21.715	0.005956
A26LGR	31913	108952	Phenol	0.00726	94.969	0.026050
A26LGR	31913	123386	Propionaldehyde	0.00727	95.100	0.026086
A26LGR	31913	100425	Styrene	0.00309	40.421	0.011087
A26LGR	31913	108883	Toluene	0.00642	83.981	0.023036
A26LGR	764	7439921	Lead		0.739	0.000203
A26RGR	19499	106990	1,3-Butadiene	0.01687	134.836	0.036985
A26RGR	19499	75070	Acetaldehyde	0.04272	341.445	0.093659
A26RGR	19499	107028	Acrolein	0.02449	195.740	0.053691
A26RGR	19499	71432	Benzene	0.01681	134.356	0.036854
A26RGR	19499	100414	Ethyl benzene	0.00174	13.907	0.003815
A26RGR	19499	50000	Formaldehyde	0.1231	983.893	0.269882
A26RGR	19499	67561	Methanol	0.01805	144.267	0.039572
A26RGR	19499	108383	m-Xylene	0.00282	22.539	0.006183
A26RGR	19499	91203	Naphthalene	0.00541	43.240	0.011861
A26RGR	19499	95476	o-Xylene	0.00166	13.268	0.003639
A26RGR	19499	108952	Phenol	0.00726	58.027	0.015917
A26RGR	19499	123386	Propionaldehyde	0.00727	58.106	0.015939
A26RGR	19499	100425	Styrene	0.00309	24.697	0.006774
A26RGR	19499	108883	Toluene	0.00642	51.313	0.014075
A26RGR	467	7439921	Lead		0.452	0.000124
A08TX	3286	106990	1,3-Butadiene	0.01687	19.199	0.005266
A08TX	3286	75070	Acetaldehyde	0.04272	57.541	0.015783
A08TX	3286	107028	Acrolein	0.02449	32.986	0.009048
A08TX	3286	71432	Benzene	0.01681	22.642	0.006211
A08TX	3286	100414	Ethyl benzene	0.00174	2.344	0.000643

A08TX	3286	50000	Formaldehyde	0.1231	165.807	0.045481
A08TX	3286	67561	Methanol	0.01805	24.312	0.006669
A08TX	3286	108383	m-Xylene	0.00282	3.798	0.001042
A08TX	3286	91203	Naphthalene	0.00541	7.287	0.001999
A08TX	3286	95476	o-Xylene	0.00166	2.236	0.000613
A08TX	3286	108952	Phenol	0.00726	9.779	0.002682
A08TX	3286	123386	Propionaldehyde	0.00727	9.792	0.002686
A08TX	3286	100425	Styrene	0.00309	4.162	0.001142
A08TX	3286	108883	Toluene	0.00642	8.647	0.002372
A08TX	79	7439921	Lead		0.064	0.000018
A26TX	51412	106990	1,3-Butadiene	0.01687	300.387	0.082396
A26TX	51412	75070	Acetaldehyde	0.04272	900.271	0.246945
A26TX	51412	107028	Acrolein	0.02449	516.096	0.141565
A26TX	51412	71432	Benzene	0.01681	354.250	0.097171
A26TX	51412	100414	Ethyl benzene	0.00174	36.668	0.010058
A26TX	51412	50000	Formaldehyde	0.1231	2594.180	0.711584
A26TX	51412	67561	Methanol	0.01805	380.381	0.104339
A26TX	51412	108383	m-Xylene	0.00282	59.428	0.016301
A26TX	51412	91203	Naphthalene	0.00541	114.009	0.031273
A26TX	51412	95476	o-Xylene	0.00166	34.982	0.009596
A26TX	51412	108952	Phenol	0.00726	152.995	0.041967
A26TX	51412	123386	Propionaldehyde	0.00727	153.206	0.042025
A26TX	51412	100425	Styrene	0.00309	65.118	0.017862
A26TX	51412	108883	Toluene	0.00642	135.294	0.037111
A26TX	1231	7439921	Lead		1.000	0.000274
2023EV		9901	DieselExhPM		4.140	0.002650
2023PV		9901	DieselExhPM		62.800	0.040275
2024RR		9901	DieselExhPM		0	0
2025PD		9901	DieselExhPM		31.6	0.036675
Batch		7440382	Arsenic		0.162	0.000104
Batch		7440417	Beryllium		0.017	0.000011
Batch		7440439	Cadmium		0.021	0.000013
Batch		18540299	Cr(VI)		0.468	0.000300
Batch		7439921	Lead		0.179	0.000115
Batch		7439965	Manganese		2.131	0.001366
Batch		7440020	Nickel		0.628	0.000402
Batch		7782492	Selenium		0.016	0.000010

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Emissions Inventory 2024 No Action

Piston Operations

	Total Ops	Piston Ops	% Piston
Piston Ops	112638	2659	2.36%

Departures

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Taxi Out	73.1	56319	2.59593	16.00548	0.0284%
Ground Roll	93.5	56319	3.32037	16.00548	0.0284%
Climb to Mix	188	56319	6.67625	16.00548	0.0284%

Arrivals

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Descend from M	60.9	56319	0.77424	15.61096	0.0277%
Ground Roll	29.2	56319	1.03695	15.61096	0.0277%
Taxi In	28.6	56319	1.01564	15.61096	0.0277%

2024 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08TX	14515	106990	1,3-Butadiene	0.01687	635.660	0.180650
D08TX	14515	75070	Acetaldehyde	0.04272	1609.684	0.457461
D08TX	14515	107028	Acrolein	0.02449	922.780	0.262248
D08TX	14515	71432	Benzene	0.01681	633.399	0.180008
D08TX	14515	100414	Ethyl benzene	0.00174	65.563	0.018633
D08TX	14515	50000	Formaldehyde	0.1231	4638.393	1.318200
D08TX	14515	67561	Methanol	0.01805	680.122	0.193286
D08TX	14515	108383	m-Xylene	0.00282	106.257	0.030198
D08TX	14515	91203	Naphthalene	0.00541	203.848	0.057932
D08TX	14515	95476	o-Xylene	0.00166	62.549	0.017776
D08TX	14515	108952	Phenol	0.00726	273.556	0.077743
D08TX	14515	123386	Propionaldehyde	0.00727	273.933	0.077850
D08TX	14515	100425	Styrene	0.00309	116.431	0.033089
D08TX	14515	108883	Toluene	0.00642	241.905	0.068748
D08TX	343	7439921	Lead		0.537	0.000153
D26TX	41910	106990	1,3-Butadiene	0.01687	1835.377	0.521602
D26TX	41910	75070	Acetaldehyde	0.04272	4647.735	1.320855
D26TX	41910	107028	Acrolein	0.02449	2664.397	0.757204
D26TX	41910	71432	Benzene	0.01681	1828.849	0.519746
D26TX	41910	100414	Ethyl benzene	0.00174	189.304	0.053799
D26TX	41910	50000	Formaldehyde	0.1231	13392.700	3.806115

2024 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26TX	41910	67561	Methanol	0.01805	1963.755	0.558086
D26TX	41910	108383	m-Xylene	0.00282	306.803	0.087191
D26TX	41910	91203	Naphthalene	0.00541	588.583	0.167271
D26TX	41910	95476	o-Xylene	0.00166	180.600	0.051325
D26TX	41910	108952	Phenol	0.00726	789.854	0.224471
D26TX	41910	123386	Propionaldehyde	0.00727	790.942	0.224780
D26TX	41910	100425	Styrene	0.00309	336.177	0.095539
D26TX	41910	108883	Toluene	0.00642	698.466	0.198499
D26TX	989	7439921	Lead		1.551	0.000441
D08LGR	7039	106990	1,3-Butadiene	0.01687	394.287	0.112054
D08LGR	7039	75070	Acetaldehyde	0.04272	998.456	0.283754
D08LGR	7039	107028	Acrolein	0.02449	572.383	0.162667
D08LGR	7039	71432	Benzene	0.01681	392.885	0.111655
D08LGR	7039	100414	Ethyl benzene	0.00174	40.667	0.011557
D08LGR	7039	50000	Formaldehyde	0.1231	2877.105	0.817654
D08LGR	7039	67561	Methanol	0.01805	421.866	0.119892
D08LGR	7039	108383	m-Xylene	0.00282	65.909	0.018731
D08LGR	7039	91203	Naphthalene	0.00541	126.443	0.035934
D08LGR	7039	95476	o-Xylene	0.00166	38.798	0.011026
D08LGR	7039	108952	Phenol	0.00726	169.681	0.048222
D08LGR	7039	123386	Propionaldehyde	0.00727	169.915	0.048289
D08LGR	7039	100425	Styrene	0.00309	72.220	0.020524
D08LGR	7039	108883	Toluene	0.00642	150.049	0.042643
D08LGR	166	7439921	Lead		0.429	0.000122
D08RGR	7476	106990	1,3-Butadiene	0.01687	418.766	0.119010
D08RGR	7476	75070	Acetaldehyde	0.04272	1060.443	0.301371
D08RGR	7476	107028	Acrolein	0.02449	607.918	0.172766
D08RGR	7476	71432	Benzene	0.01681	417.276	0.118587
D08RGR	7476	100414	Ethyl benzene	0.00174	43.192	0.012275
D08RGR	7476	50000	Formaldehyde	0.1231	3055.723	0.868416
D08RGR	7476	67561	Methanol	0.01805	448.057	0.127335
D08RGR	7476	108383	m-Xylene	0.00282	70.001	0.019894
D08RGR	7476	91203	Naphthalene	0.00541	134.293	0.038165
D08RGR	7476	95476	o-Xylene	0.00166	41.206	0.011711
D08RGR	7476	108952	Phenol	0.00726	180.216	0.051216
D08RGR	7476	123386	Propionaldehyde	0.00727	180.464	0.051287
D08RGR	7476	100425	Styrene	0.00309	76.703	0.021799
D08RGR	7476	108883	Toluene	0.00642	159.364	0.045290
D08RGR	176	7439921	Lead		0.456	0.000130
D26LGR	16755	106990	1,3-Butadiene	0.01687	938.526	0.266723
D26LGR	16755	75070	Acetaldehyde	0.04272	2376.634	0.675423
D26LGR	16755	107028	Acrolein	0.02449	1362.448	0.387198
D26LGR	16755	71432	Benzene	0.01681	935.188	0.265774

2024 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26LGR	16755	100414	Ethyl benzene	0.00174	96.801	0.027510
D26LGR	16755	50000	Formaldehyde	0.1231	6848.401	1.946269
D26LGR	16755	67561	Methanol	0.01805	1004.172	0.285379
D26LGR	16755	108383	m-Xylene	0.00282	156.885	0.044586
D26LGR	16755	91203	Naphthalene	0.00541	300.974	0.085535
D26LGR	16755	95476	o-Xylene	0.00166	92.350	0.026245
D26LGR	16755	108952	Phenol	0.00726	403.894	0.114784
D26LGR	16755	123386	Propionaldehyde	0.00727	404.451	0.114942
D26LGR	16755	100425	Styrene	0.00309	171.905	0.048854
D26LGR	16755	108883	Toluene	0.00642	357.163	0.101503
D26LGR	396	7439921	Lead		1.022	0.000290
D26RGR	25155	106990	1,3-Butadiene	0.01687	1409.049	0.400442
D26RGR	25155	75070	Acetaldehyde	0.04272	3568.143	1.014042
D26RGR	25155	107028	Acrolein	0.02449	2045.501	0.581318
D26RGR	25155	71432	Benzene	0.01681	1404.037	0.399018
D26RGR	25155	100414	Ethyl benzene	0.00174	145.332	0.041302
D26RGR	25155	50000	Formaldehyde	0.1231	10281.798	2.922017
D26RGR	25155	67561	Methanol	0.01805	1507.607	0.428452
D26RGR	25155	108383	m-Xylene	0.00282	235.538	0.066938
D26RGR	25155	91203	Naphthalene	0.00541	451.865	0.128417
D26RGR	25155	95476	o-Xylene	0.00166	138.650	0.039403
D26RGR	25155	108952	Phenol	0.00726	606.384	0.172330
D26RGR	25155	123386	Propionaldehyde	0.00727	607.219	0.172568
D26RGR	25155	100425	Styrene	0.00309	258.089	0.073347
D26RGR	25155	108883	Toluene	0.00642	536.224	0.152391
D26RGR	594	7439921	Lead		1.534	0.000436
D08LRC	6948	106990	1,3-Butadiene	0.01687	782.542	0.222393
D08LRC	6948	75070	Acetaldehyde	0.04272	1981.636	0.563168
D08LRC	6948	107028	Acrolein	0.02449	1136.008	0.322846
D08LRC	6948	71432	Benzene	0.01681	779.759	0.221602
D08LRC	6948	100414	Ethyl benzene	0.00174	80.713	0.022938
D08LRC	6948	50000	Formaldehyde	0.1231	5710.193	1.622798
D08LRC	6948	67561	Methanol	0.01805	837.278	0.237949
D08LRC	6948	108383	m-Xylene	0.00282	130.810	0.037175
D08LRC	6948	91203	Naphthalene	0.00541	250.952	0.071319
D08LRC	6948	95476	o-Xylene	0.00166	77.002	0.021883
D08LRC	6948	108952	Phenol	0.00726	336.767	0.095707
D08LRC	6948	123386	Propionaldehyde	0.00727	337.231	0.095839
D08LRC	6948	100425	Styrene	0.00309	143.335	0.040735
D08LRC	6948	108883	Toluene	0.00642	297.802	0.084633
D08LRC	164	7439921	Lead		1.141	0.000324
D08LSO	91	106990	1,3-Butadiene	0.01687	10.249	0.002913
D08LSO	91	75070	Acetaldehyde	0.04272	25.954	0.007376

2024 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08LSO	91	107028	Acrolein	0.02449	14.879	0.004228
D08LSO	91	71432	Benzene	0.01681	10.213	0.002902
D08LSO	91	100414	Ethyl benzene	0.00174	1.057	0.000300
D08LSO	91	50000	Formaldehyde	0.1231	74.788	0.021254
D08LSO	91	67561	Methanol	0.01805	10.966	0.003116
D08LSO	91	108383	m-Xylene	0.00282	1.713	0.000487
D08LSO	91	91203	Naphthalene	0.00541	3.287	0.000934
D08LSO	91	95476	o-Xylene	0.00166	1.009	0.000287
D08LSO	91	108952	Phenol	0.00726	4.411	0.001254
D08LSO	91	123386	Propionaldehyde	0.00727	4.417	0.001255
D08LSO	91	100425	Styrene	0.00309	1.877	0.000534
D08LSO	91	108883	Toluene	0.00642	3.900	0.001108
D08LSO	2	7439921	Lead		0.015	0.000004
D08RRC	7476	106990	1,3-Butadiene	0.01687	842.010	0.239294
D08RRC	7476	75070	Acetaldehyde	0.04272	2132.227	0.605965
D08RRC	7476	107028	Acrolein	0.02449	1222.337	0.347380
D08RRC	7476	71432	Benzene	0.01681	839.015	0.238443
D08RRC	7476	100414	Ethyl benzene	0.00174	86.846	0.024681
D08RRC	7476	50000	Formaldehyde	0.1231	6144.128	1.746120
D08RRC	7476	67561	Methanol	0.01805	900.906	0.256031
D08RRC	7476	108383	m-Xylene	0.00282	140.751	0.040000
D08RRC	7476	91203	Naphthalene	0.00541	270.022	0.076738
D08RRC	7476	95476	o-Xylene	0.00166	82.853	0.023546
D08RRC	7476	108952	Phenol	0.00726	362.359	0.102980
D08RRC	7476	123386	Propionaldehyde	0.00727	362.858	0.103122
D08RRC	7476	100425	Styrene	0.00309	154.227	0.043830
D08RRC	7476	108883	Toluene	0.00642	320.433	0.091065
D08RRC	176	7439921	Lead		1.228	0.000349
D26LLC	6444	106990	1,3-Butadiene	0.01687	725.778	0.206261
D26LLC	6444	75070	Acetaldehyde	0.04272	1837.891	0.522316
D26LLC	6444	107028	Acrolein	0.02449	1053.604	0.299427
D26LLC	6444	71432	Benzene	0.01681	723.196	0.205527
D26LLC	6444	100414	Ethyl benzene	0.00174	74.858	0.021274
D26LLC	6444	50000	Formaldehyde	0.1231	5295.982	1.505082
D26LLC	6444	67561	Methanol	0.01805	776.543	0.220688
D26LLC	6444	108383	m-Xylene	0.00282	121.321	0.034479
D26LLC	6444	91203	Naphthalene	0.00541	232.748	0.066145
D26LLC	6444	95476	o-Xylene	0.00166	71.416	0.020296
D26LLC	6444	108952	Phenol	0.00726	312.338	0.088764
D26LLC	6444	123386	Propionaldehyde	0.00727	312.768	0.088887
D26LLC	6444	100425	Styrene	0.00309	132.937	0.037780
D26LLC	6444	108883	Toluene	0.00642	276.200	0.078494
D26LLC	152	7439921	Lead		1.058	0.000301

2024 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26LRT	603	106990	1,3-Butadiene	0.01687	67.915	0.019301
D26LRT	603	75070	Acetaldehyde	0.04272	171.981	0.048876
D26LRT	603	107028	Acrolein	0.02449	98.591	0.028019
D26LRT	603	71432	Benzene	0.01681	67.673	0.019232
D26LRT	603	100414	Ethyl benzene	0.00174	7.005	0.001991
D26LRT	603	50000	Formaldehyde	0.1231	495.574	0.140839
D26LRT	603	67561	Methanol	0.01805	72.665	0.020651
D26LRT	603	108383	m-Xylene	0.00282	11.353	0.003226
D26LRT	603	91203	Naphthalene	0.00541	21.779	0.006190
D26LRT	603	95476	o-Xylene	0.00166	6.683	0.001899
D26LRT	603	108952	Phenol	0.00726	29.227	0.008306
D26LRT	603	123386	Propionaldehyde	0.00727	29.267	0.008318
D26LRT	603	100425	Styrene	0.00309	12.440	0.003535
D26LRT	603	108883	Toluene	0.00642	25.846	0.007345
D26LRT	14	7439921	Lead		0.099	0.000028
D26LSO	9708	106990	1,3-Butadiene	0.01687	1093.397	0.310736
D26LSO	9708	75070	Acetaldehyde	0.04272	2768.815	0.786878
D26LSO	9708	107028	Acrolein	0.02449	1587.272	0.451092
D26LSO	9708	71432	Benzene	0.01681	1089.508	0.309631
D26LSO	9708	100414	Ethyl benzene	0.00174	112.775	0.032050
D26LSO	9708	50000	Formaldehyde	0.1231	7978.490	2.267433
D26LSO	9708	67561	Methanol	0.01805	1169.876	0.332471
D26LSO	9708	108383	m-Xylene	0.00282	182.773	0.051943
D26LSO	9708	91203	Naphthalene	0.00541	350.639	0.099649
D26LSO	9708	95476	o-Xylene	0.00166	107.590	0.030576
D26LSO	9708	108952	Phenol	0.00726	470.543	0.133725
D26LSO	9708	123386	Propionaldehyde	0.00727	471.191	0.133909
D26LSO	9708	100425	Styrene	0.00309	200.272	0.056916
D26LSO	9708	108883	Toluene	0.00642	416.100	0.118253
D26LSO	229	7439921	Lead		1.594	0.000453
D26RLC	9895	106990	1,3-Butadiene	0.01687	1114.458	0.316721
D26RLC	9895	75070	Acetaldehyde	0.04272	2822.149	0.802036
D26RLC	9895	107028	Acrolein	0.02449	1617.847	0.459781
D26RLC	9895	71432	Benzene	0.01681	1110.495	0.315595
D26RLC	9895	100414	Ethyl benzene	0.00174	114.947	0.032667
D26RLC	9895	50000	Formaldehyde	0.1231	8132.176	2.311109
D26RLC	9895	67561	Methanol	0.01805	1192.411	0.338875
D26RLC	9895	108383	m-Xylene	0.00282	186.294	0.052943
D26RLC	9895	91203	Naphthalene	0.00541	357.393	0.101569
D26RLC	9895	95476	o-Xylene	0.00166	109.662	0.031165
D26RLC	9895	108952	Phenol	0.00726	479.607	0.136301
D26RLC	9895	123386	Propionaldehyde	0.00727	480.267	0.136489
D26RLC	9895	100425	Styrene	0.00309	204.130	0.058012

2024 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26RLC	9895	108883	Toluene	0.00642	424.115	0.120531
D26RLC	234	7439921	Lead		1.625	0.000462
D26RRT	519	106990	1,3-Butadiene	0.01687	58.454	0.016612
D26RRT	519	75070	Acetaldehyde	0.04272	148.024	0.042067
D26RRT	519	107028	Acrolein	0.02449	84.857	0.024116
D26RRT	519	71432	Benzene	0.01681	58.246	0.016553
D26RRT	519	100414	Ethyl benzene	0.00174	6.029	0.001713
D26RRT	519	50000	Formaldehyde	0.1231	426.539	0.121219
D26RRT	519	67561	Methanol	0.01805	62.543	0.017774
D26RRT	519	108383	m-Xylene	0.00282	9.771	0.002777
D26RRT	519	91203	Naphthalene	0.00541	18.746	0.005327
D26RRT	519	95476	o-Xylene	0.00166	5.752	0.001635
D26RRT	519	108952	Phenol	0.00726	25.156	0.007149
D26RRT	519	123386	Propionaldehyde	0.00727	25.190	0.007159
D26RRT	519	100425	Styrene	0.00309	10.707	0.003043
D26RRT	519	108883	Toluene	0.00642	22.245	0.006322
D26RRT	12	7439921	Lead		0.085	0.000024
D26RSO	14741	106990	1,3-Butadiene	0.01687	1660.256	0.471833
D26RSO	14741	75070	Acetaldehyde	0.04272	4204.275	1.194827
D26RSO	14741	107028	Acrolein	0.02449	2410.175	0.684956
D26RSO	14741	71432	Benzene	0.01681	1654.351	0.470155
D26RSO	14741	100414	Ethyl benzene	0.00174	171.242	0.048666
D26RSO	14741	50000	Formaldehyde	0.1231	12114.846	3.442958
D26RSO	14741	67561	Methanol	0.01805	1776.385	0.504837
D26RSO	14741	108383	m-Xylene	0.00282	277.529	0.078872
D26RSO	14741	91203	Naphthalene	0.00541	532.423	0.151311
D26RSO	14741	95476	o-Xylene	0.00166	163.368	0.046428
D26RSO	14741	108952	Phenol	0.00726	714.491	0.203053
D26RSO	14741	123386	Propionaldehyde	0.00727	715.475	0.203333
D26RSO	14741	100425	Styrene	0.00309	304.101	0.086424
D26RSO	14741	108883	Toluene	0.00642	631.822	0.179560
D26RSO	348	7439921	Lead		2.421	0.000688
A08LSI	2801	106990	1,3-Butadiene	0.01687	13.094	0.003630
A08LSI	2801	75070	Acetaldehyde	0.04272	33.158	0.009191
A08LSI	2801	107028	Acrolein	0.02449	19.009	0.005269
A08LSI	2801	71432	Benzene	0.01681	13.048	0.003617
A08LSI	2801	100414	Ethyl benzene	0.00174	1.351	0.000374
A08LSI	2801	50000	Formaldehyde	0.1231	95.548	0.026485
A08LSI	2801	67561	Methanol	0.01805	14.010	0.003883
A08LSI	2801	108383	m-Xylene	0.00282	2.189	0.000607
A08LSI	2801	91203	Naphthalene	0.00541	4.199	0.001164
A08LSI	2801	95476	o-Xylene	0.00166	1.288	0.000357
A08LSI	2801	108952	Phenol	0.00726	5.635	0.001562

2024 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A08LSI	2801	123386	Propionaldehyde	0.00727	5.643	0.001564
A08LSI	2801	100425	Styrene	0.00309	2.398	0.000665
A08LSI	2801	108883	Toluene	0.00642	4.983	0.001381
A08LSI	66	7439921	Lead		0.078	0.000022
A08RSI	944	106990	1,3-Butadiene	0.01687	4.413	0.001223
A08RSI	944	75070	Acetaldehyde	0.04272	11.175	0.003098
A08RSI	944	107028	Acrolein	0.02449	6.406	0.001776
A08RSI	944	71432	Benzene	0.01681	4.397	0.001219
A08RSI	944	100414	Ethyl benzene	0.00174	0.455	0.000126
A08RSI	944	50000	Formaldehyde	0.1231	32.202	0.008926
A08RSI	944	67561	Methanol	0.01805	4.722	0.001309
A08RSI	944	108383	m-Xylene	0.00282	0.738	0.000204
A08RSI	944	91203	Naphthalene	0.00541	1.415	0.000392
A08RSI	944	95476	o-Xylene	0.00166	0.434	0.000120
A08RSI	944	108952	Phenol	0.00726	1.899	0.000526
A08RSI	944	123386	Propionaldehyde	0.00727	1.902	0.000527
A08RSI	944	100425	Styrene	0.00309	0.808	0.000224
A08RSI	944	108883	Toluene	0.00642	1.679	0.000466
A08RSI	22	7439921	Lead		0.026	0.000007
A26LSI	25559	106990	1,3-Butadiene	0.01687	119.483	0.033119
A26LSI	25559	75070	Acetaldehyde	0.04272	302.569	0.083868
A26LSI	25559	107028	Acrolein	0.02449	173.453	0.048079
A26LSI	25559	71432	Benzene	0.01681	119.059	0.033002
A26LSI	25559	100414	Ethyl benzene	0.00174	12.324	0.003416
A26LSI	25559	50000	Formaldehyde	0.1231	871.868	0.241672
A26LSI	25559	67561	Methanol	0.01805	127.841	0.035436
A26LSI	25559	108383	m-Xylene	0.00282	19.973	0.005536
A26LSI	25559	91203	Naphthalene	0.00541	38.317	0.010621
A26LSI	25559	95476	o-Xylene	0.00166	11.757	0.003259
A26LSI	25559	108952	Phenol	0.00726	51.420	0.014253
A26LSI	25559	123386	Propionaldehyde	0.00727	51.491	0.014273
A26LSI	25559	100425	Styrene	0.00309	21.885	0.006066
A26LSI	25559	108883	Toluene	0.00642	45.470	0.012604
A26LSI	603	7439921	Lead		0.711	0.000197
A26RSI	27122	106990	1,3-Butadiene	0.01687	126.790	0.035145
A26RSI	27122	75070	Acetaldehyde	0.04272	321.072	0.088997
A26RSI	27122	107028	Acrolein	0.02449	184.060	0.051019
A26RSI	27122	71432	Benzene	0.01681	126.339	0.035020
A26RSI	27122	100414	Ethyl benzene	0.00174	13.077	0.003625
A26RSI	27122	50000	Formaldehyde	0.1231	925.185	0.256450
A26RSI	27122	67561	Methanol	0.01805	135.659	0.037603
A26RSI	27122	108383	m-Xylene	0.00282	21.194	0.005875
A26RSI	27122	91203	Naphthalene	0.00541	40.660	0.011270

2024 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26RSI	27122	95476	o-Xylene	0.00166	12.476	0.003458
A26RSI	27122	108952	Phenol	0.00726	54.564	0.015125
A26RSI	27122	123386	Propionaldehyde	0.00727	54.639	0.015145
A26RSI	27122	100425	Styrene	0.00309	23.224	0.006437
A26RSI	27122	108883	Toluene	0.00642	48.251	0.013375
A26RSI	640	7439921	Lead		0.755	0.000209
A08LGR	2801	106990	1,3-Butadiene	0.01687	17.537	0.004861
A08LGR	2801	75070	Acetaldehyde	0.04272	44.409	0.012310
A08LGR	2801	107028	Acrolein	0.02449	25.459	0.007057
A08LGR	2801	71432	Benzene	0.01681	17.475	0.004844
A08LGR	2801	100414	Ethyl benzene	0.00174	1.809	0.000501
A08LGR	2801	50000	Formaldehyde	0.1231	127.968	0.035471
A08LGR	2801	67561	Methanol	0.01805	18.764	0.005201
A08LGR	2801	108383	m-Xylene	0.00282	2.932	0.000813
A08LGR	2801	91203	Naphthalene	0.00541	5.624	0.001559
A08LGR	2801	95476	o-Xylene	0.00166	1.726	0.000478
A08LGR	2801	108952	Phenol	0.00726	7.547	0.002092
A08LGR	2801	123386	Propionaldehyde	0.00727	7.558	0.002095
A08LGR	2801	100425	Styrene	0.00309	3.212	0.000890
A08LGR	2801	108883	Toluene	0.00642	6.674	0.001850
A08LGR	66	7439921	Lead		0.064	0.000018
A08RGR	944	106990	1,3-Butadiene	0.01687	5.910	0.001638
A08RGR	944	75070	Acetaldehyde	0.04272	14.967	0.004149
A08RGR	944	107028	Acrolein	0.02449	8.580	0.002378
A08RGR	944	71432	Benzene	0.01681	5.889	0.001632
A08RGR	944	100414	Ethyl benzene	0.00174	0.610	0.000169
A08RGR	944	50000	Formaldehyde	0.1231	43.128	0.011955
A08RGR	944	67561	Methanol	0.01805	6.324	0.001753
A08RGR	944	108383	m-Xylene	0.00282	0.988	0.000274
A08RGR	944	91203	Naphthalene	0.00541	1.895	0.000525
A08RGR	944	95476	o-Xylene	0.00166	0.582	0.000161
A08RGR	944	108952	Phenol	0.00726	2.544	0.000705
A08RGR	944	123386	Propionaldehyde	0.00727	2.547	0.000706
A08RGR	944	100425	Styrene	0.00309	1.083	0.000300
A08RGR	944	108883	Toluene	0.00642	2.249	0.000623
A08RGR	22	7439921	Lead		0.022	0.000006
A26LGR	25559	106990	1,3-Butadiene	0.01687	160.026	0.044357
A26LGR	25559	75070	Acetaldehyde	0.04272	405.235	0.112326
A26LGR	25559	107028	Acrolein	0.02449	232.308	0.064393
A26LGR	25559	71432	Benzene	0.01681	159.457	0.044200
A26LGR	25559	100414	Ethyl benzene	0.00174	16.505	0.004575
A26LGR	25559	50000	Formaldehyde	0.1231	1167.706	0.323674
A26LGR	25559	67561	Methanol	0.01805	171.219	0.047460

2024 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26LGR	25559	108383	m-Xylene	0.00282	26.750	0.007415
A26LGR	25559	91203	Naphthalene	0.00541	51.318	0.014225
A26LGR	25559	95476	o-Xylene	0.00166	15.746	0.004365
A26LGR	25559	108952	Phenol	0.00726	68.867	0.019089
A26LGR	25559	123386	Propionaldehyde	0.00727	68.962	0.019115
A26LGR	25559	100425	Styrene	0.00309	29.311	0.008125
A26LGR	25559	108883	Toluene	0.00642	60.899	0.016880
A26LGR	603	7439921	Lead		0.584	0.000162
A26RGR	27122	106990	1,3-Butadiene	0.01687	169.812	0.047070
A26RGR	27122	75070	Acetaldehyde	0.04272	430.016	0.119195
A26RGR	27122	107028	Acrolein	0.02449	246.514	0.068331
A26RGR	27122	71432	Benzene	0.01681	169.208	0.046902
A26RGR	27122	100414	Ethyl benzene	0.00174	17.515	0.004855
A26RGR	27122	50000	Formaldehyde	0.1231	1239.114	0.343468
A26RGR	27122	67561	Methanol	0.01805	181.690	0.050362
A26RGR	27122	108383	m-Xylene	0.00282	28.386	0.007868
A26RGR	27122	91203	Naphthalene	0.00541	54.457	0.015095
A26RGR	27122	95476	o-Xylene	0.00166	16.709	0.004632
A26RGR	27122	108952	Phenol	0.00726	73.079	0.020257
A26RGR	27122	123386	Propionaldehyde	0.00727	73.179	0.020284
A26RGR	27122	100425	Styrene	0.00309	31.104	0.008622
A26RGR	27122	108883	Toluene	0.00642	64.623	0.017913
A26RGR	640	7439921	Lead		0.620	0.000172
A08TX	3745	106990	1,3-Butadiene	0.01687	22.966	0.006366
A08TX	3745	75070	Acetaldehyde	0.04272	59.376	0.016458
A08TX	3745	107028	Acrolein	0.02449	34.039	0.009435
A08TX	3745	71432	Benzene	0.01681	23.364	0.006476
A08TX	3745	100414	Ethyl benzene	0.00174	2.418	0.000670
A08TX	3745	50000	Formaldehyde	0.1231	171.097	0.047426
A08TX	3745	67561	Methanol	0.01805	25.088	0.006954
A08TX	3745	108383	m-Xylene	0.00282	3.920	0.001086
A08TX	3745	91203	Naphthalene	0.00541	7.519	0.002084
A08TX	3745	95476	o-Xylene	0.00166	2.307	0.000640
A08TX	3745	108952	Phenol	0.00726	10.091	0.002797
A08TX	3745	123386	Propionaldehyde	0.00727	10.105	0.002801
A08TX	3745	100425	Styrene	0.00309	4.295	0.001190
A08TX	3745	108883	Toluene	0.00642	8.923	0.002473
A08TX	88	7439921	Lead		0.072	0.000020
A26TX	52681	106990	1,3-Butadiene	0.01687	323.060	0.089549
A26TX	52681	75070	Acetaldehyde	0.04272	835.251	0.231522
A26TX	52681	107028	Acrolein	0.02449	478.822	0.132724
A26TX	52681	71432	Benzene	0.01681	328.665	0.091102
A26TX	52681	100414	Ethyl benzene	0.00174	34.020	0.009430

2024 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26TX	52681	50000	Formaldehyde	0.1231	2406.820	0.667142
A26TX	52681	67561	Methanol	0.01805	352.909	0.097822
A26TX	52681	108383	m-Xylene	0.00282	55.136	0.015283
A26TX	52681	91203	Naphthalene	0.00541	105.775	0.029320
A26TX	52681	95476	o-Xylene	0.00166	32.456	0.008996
A26TX	52681	108952	Phenol	0.00726	141.946	0.039346
A26TX	52681	123386	Propionaldehyde	0.00727	142.141	0.039400
A26TX	52681	100425	Styrene	0.00309	60.415	0.016746
A26TX	52681	108883	Toluene	0.00642	125.522	0.034793
A26TX	1244	7439921	Lead		1.010	0.000280
2023EV		9901	DieselExhPM		0	0
2023PV		9901	DieselExhPM		0	0
2024RR		9901	DieselExhPM		0	0
2025PD		9901	DieselExhPM		0	0
Batch		7440382	Arsenic		0	0
Batch		7440417	Beryllium		0	0
Batch		7440439	Cadmium		0	0
Batch		18540299	Cr(VI)		0	0
Batch		7439921	Lead		0	0
Batch		7439965	Manganese		0	0
Batch		7440020	Nickel		0	0
Batch		7782492	Selenium		0	0

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Emissions Inventory 2024 Project

Piston Operations

	Total Ops	Piston Ops	% Piston
Piston Ops	112638	2659	2.36%

Departures

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Taxi Out	73.1	56319	2.59593	16.00548	0.0284%
Ground Roll	93.5	56319	3.32037	16.00548	0.0284%
Climb to Mix	188	56319	6.67625	16.00548	0.0284%

Arrivals

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Descend from M	60.9	56319	0.77424	15.61096	0.0277%
Ground Roll	29.2	56319	1.03695	15.61096	0.0277%
Taxi In	28.6	56319	1.01564	15.61096	0.0277%

2024 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08TX	5371	106990	1,3-Butadiene	0.01687	235.214	0.066846
D08TX	5371	75070	Acetaldehyde	0.04272	595.633	0.169275
D08TX	5371	107028	Acrolein	0.02449	341.457	0.097040
D08TX	5371	71432	Benzene	0.01681	234.377	0.066608
D08TX	5371	100414	Ethyl benzene	0.00174	24.260	0.006895
D08TX	5371	50000	Formaldehyde	0.1231	1716.349	0.487775
D08TX	5371	67561	Methanol	0.01805	251.666	0.071522
D08TX	5371	108383	m-Xylene	0.00282	39.318	0.011174
D08TX	5371	91203	Naphthalene	0.00541	75.430	0.021437
D08TX	5371	95476	o-Xylene	0.00166	23.145	0.006578
D08TX	5371	108952	Phenol	0.00726	101.224	0.028767
D08TX	5371	123386	Propionaldehyde	0.00727	101.364	0.028807
D08TX	5371	100425	Styrene	0.00309	43.083	0.012244
D08TX	5371	108883	Toluene	0.00642	89.512	0.025439
D08TX	127	7439921	Lead		0.199	0.000056
D26TX	51055	106990	1,3-Butadiene	0.01687	2235.866	0.635418
D26TX	51055	75070	Acetaldehyde	0.04272	5661.897	1.609073
D26TX	51055	107028	Acrolein	0.02449	3245.783	0.922430
D26TX	51055	71432	Benzene	0.01681	2227.914	0.633158
D26TX	51055	100414	Ethyl benzene	0.00174	230.611	0.065538
D26TX	51055	50000	Formaldehyde	0.1231	16315.064	4.636631

2024 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26TX	51055	67561	Methanol	0.01805	2392.257	0.679863
D26TX	51055	108383	m-Xylene	0.00282	373.749	0.106217
D26TX	51055	91203	Naphthalene	0.00541	717.015	0.203771
D26TX	51055	95476	o-Xylene	0.00166	220.008	0.062525
D26TX	51055	108952	Phenol	0.00726	962.204	0.273452
D26TX	51055	123386	Propionaldehyde	0.00727	963.530	0.273829
D26TX	51055	100425	Styrene	0.00309	409.533	0.116387
D26TX	51055	108883	Toluene	0.00642	850.875	0.241813
D26TX	1205	7439921	Lead		1.890	0.000537
D08LGR	3502	106990	1,3-Butadiene	0.01687	196.163	0.055748
D08LGR	3502	75070	Acetaldehyde	0.04272	496.746	0.141172
D08LGR	3502	107028	Acrolein	0.02449	284.768	0.080929
D08LGR	3502	71432	Benzene	0.01681	195.466	0.055550
D08LGR	3502	100414	Ethyl benzene	0.00174	20.233	0.005750
D08LGR	3502	50000	Formaldehyde	0.1231	1431.400	0.406794
D08LGR	3502	67561	Methanol	0.01805	209.884	0.059648
D08LGR	3502	108383	m-Xylene	0.00282	32.791	0.009319
D08LGR	3502	91203	Naphthalene	0.00541	62.907	0.017878
D08LGR	3502	95476	o-Xylene	0.00166	19.302	0.005486
D08LGR	3502	108952	Phenol	0.00726	84.419	0.023991
D08LGR	3502	123386	Propionaldehyde	0.00727	84.535	0.024024
D08LGR	3502	100425	Styrene	0.00309	35.930	0.010211
D08LGR	3502	108883	Toluene	0.00642	74.651	0.021215
D08LGR	83	7439921	Lead		0.214	0.000061
D08RGR	1869	106990	1,3-Butadiene	0.01687	104.691	0.029753
D08RGR	1869	75070	Acetaldehyde	0.04272	265.111	0.075343
D08RGR	1869	107028	Acrolein	0.02449	151.979	0.043192
D08RGR	1869	71432	Benzene	0.01681	104.319	0.029647
D08RGR	1869	100414	Ethyl benzene	0.00174	10.798	0.003069
D08RGR	1869	50000	Formaldehyde	0.1231	763.931	0.217104
D08RGR	1869	67561	Methanol	0.01805	112.014	0.031834
D08RGR	1869	108383	m-Xylene	0.00282	17.500	0.004973
D08RGR	1869	91203	Naphthalene	0.00541	33.573	0.009541
D08RGR	1869	95476	o-Xylene	0.00166	10.302	0.002928
D08RGR	1869	108952	Phenol	0.00726	45.054	0.012804
D08RGR	1869	123386	Propionaldehyde	0.00727	45.116	0.012822
D08RGR	1869	100425	Styrene	0.00309	19.176	0.005450
D08RGR	1869	108883	Toluene	0.00642	39.841	0.011323
D08RGR	44	7439921	Lead		0.114	0.000032
D26LGR	4189	106990	1,3-Butadiene	0.01687	234.645	0.066685
D26LGR	4189	75070	Acetaldehyde	0.04272	594.194	0.168866
D26LGR	4189	107028	Acrolein	0.02449	340.632	0.096805
D26LGR	4189	71432	Benzene	0.01681	233.811	0.066447

2024 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26LGR	4189	100414	Ethyl benzene	0.00174	24.202	0.006878
D26LGR	4189	50000	Formaldehyde	0.1231	1712.202	0.486596
D26LGR	4189	67561	Methanol	0.01805	251.058	0.071349
D26LGR	4189	108383	m-Xylene	0.00282	39.223	0.011147
D26LGR	4189	91203	Naphthalene	0.00541	75.248	0.021385
D26LGR	4189	95476	o-Xylene	0.00166	23.089	0.006562
D26LGR	4189	108952	Phenol	0.00726	100.980	0.028698
D26LGR	4189	123386	Propionaldehyde	0.00727	101.119	0.028737
D26LGR	4189	100425	Styrene	0.00309	42.979	0.012214
D26LGR	4189	108883	Toluene	0.00642	89.296	0.025377
D26LGR	99	7439921	Lead		0.255	0.000073
D26RGR	46866	106990	1,3-Butadiene	0.01687	2625.183	0.746059
D26RGR	46866	75070	Acetaldehyde	0.04272	6647.767	1.889251
D26RGR	46866	107028	Acrolein	0.02449	3810.951	1.083046
D26RGR	46866	71432	Benzene	0.01681	2615.847	0.743406
D26RGR	46866	100414	Ethyl benzene	0.00174	270.766	0.076950
D26RGR	46866	50000	Formaldehyde	0.1231	19155.902	5.443978
D26RGR	46866	67561	Methanol	0.01805	2808.806	0.798244
D26RGR	46866	108383	m-Xylene	0.00282	438.827	0.124712
D26RGR	46866	91203	Naphthalene	0.00541	841.864	0.239252
D26RGR	46866	95476	o-Xylene	0.00166	258.317	0.073412
D26RGR	46866	108952	Phenol	0.00726	1129.747	0.321066
D26RGR	46866	123386	Propionaldehyde	0.00727	1131.303	0.321509
D26RGR	46866	100425	Styrene	0.00309	480.843	0.136652
D26RGR	46866	108883	Toluene	0.00642	999.032	0.283918
D26RGR	1106	7439921	Lead		2.858	0.000812
D08LRC	3272	106990	1,3-Butadiene	0.01687	368.520	0.104731
D08LRC	3272	75070	Acetaldehyde	0.04272	933.206	0.265211
D08LRC	3272	107028	Acrolein	0.02449	534.977	0.152037
D08LRC	3272	71432	Benzene	0.01681	367.210	0.104358
D08LRC	3272	100414	Ethyl benzene	0.00174	38.010	0.010802
D08LRC	3272	50000	Formaldehyde	0.1231	2689.083	0.764219
D08LRC	3272	67561	Methanol	0.01805	394.297	0.112057
D08LRC	3272	108383	m-Xylene	0.00282	61.602	0.017507
D08LRC	3272	91203	Naphthalene	0.00541	118.180	0.033586
D08LRC	3272	95476	o-Xylene	0.00166	36.262	0.010305
D08LRC	3272	108952	Phenol	0.00726	158.593	0.045071
D08LRC	3272	123386	Propionaldehyde	0.00727	158.811	0.045133
D08LRC	3272	100425	Styrene	0.00309	67.500	0.019183
D08LRC	3272	108883	Toluene	0.00642	140.243	0.039856
D08LRC	77	7439921	Lead		0.537	0.000153
D08LSO	230	106990	1,3-Butadiene	0.01687	25.905	0.007362
D08LSO	230	75070	Acetaldehyde	0.04272	65.598	0.018643

2024 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08LSO	230	107028	Acrolein	0.02449	37.605	0.010687
D08LSO	230	71432	Benzene	0.01681	25.812	0.007336
D08LSO	230	100414	Ethyl benzene	0.00174	2.672	0.000759
D08LSO	230	50000	Formaldehyde	0.1231	189.025	0.053720
D08LSO	230	67561	Methanol	0.01805	27.716	0.007877
D08LSO	230	108383	m-Xylene	0.00282	4.330	0.001231
D08LSO	230	91203	Naphthalene	0.00541	8.307	0.002361
D08LSO	230	95476	o-Xylene	0.00166	2.549	0.000724
D08LSO	230	108952	Phenol	0.00726	11.148	0.003168
D08LSO	230	123386	Propionaldehyde	0.00727	11.163	0.003173
D08LSO	230	100425	Styrene	0.00309	4.745	0.001348
D08LSO	230	108883	Toluene	0.00642	9.858	0.002802
D08LSO	5	7439921	Lead		0.038	0.000011
D08RRC	1869	106990	1,3-Butadiene	0.01687	210.503	0.059823
D08RRC	1869	75070	Acetaldehyde	0.04272	533.057	0.151491
D08RRC	1869	107028	Acrolein	0.02449	305.584	0.086845
D08RRC	1869	71432	Benzene	0.01681	209.754	0.059611
D08RRC	1869	100414	Ethyl benzene	0.00174	21.712	0.006170
D08RRC	1869	50000	Formaldehyde	0.1231	1536.032	0.436530
D08RRC	1869	67561	Methanol	0.01805	225.226	0.064008
D08RRC	1869	108383	m-Xylene	0.00282	35.188	0.010000
D08RRC	1869	91203	Naphthalene	0.00541	67.506	0.019185
D08RRC	1869	95476	o-Xylene	0.00166	20.713	0.005887
D08RRC	1869	108952	Phenol	0.00726	90.590	0.025745
D08RRC	1869	123386	Propionaldehyde	0.00727	90.714	0.025780
D08RRC	1869	100425	Styrene	0.00309	38.557	0.010958
D08RRC	1869	108883	Toluene	0.00642	80.108	0.022766
D08RRC	44	7439921	Lead		0.307	0.000087
D26LLC	1611	106990	1,3-Butadiene	0.01687	181.444	0.051565
D26LLC	1611	75070	Acetaldehyde	0.04272	459.473	0.130579
D26LLC	1611	107028	Acrolein	0.02449	263.401	0.074857
D26LLC	1611	71432	Benzene	0.01681	180.799	0.051382
D26LLC	1611	100414	Ethyl benzene	0.00174	18.714	0.005319
D26LLC	1611	50000	Formaldehyde	0.1231	1323.995	0.376271
D26LLC	1611	67561	Methanol	0.01805	194.136	0.055172
D26LLC	1611	108383	m-Xylene	0.00282	30.330	0.008620
D26LLC	1611	91203	Naphthalene	0.00541	58.187	0.016536
D26LLC	1611	95476	o-Xylene	0.00166	17.854	0.005074
D26LLC	1611	108952	Phenol	0.00726	78.085	0.022191
D26LLC	1611	123386	Propionaldehyde	0.00727	78.192	0.022222
D26LLC	1611	100425	Styrene	0.00309	33.234	0.009445
D26LLC	1611	108883	Toluene	0.00642	69.050	0.019624
D26LLC	38	7439921	Lead		0.265	0.000075

2024 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26LRT	151	106990	1,3-Butadiene	0.01687	17.007	0.004833
D26LRT	151	75070	Acetaldehyde	0.04272	43.067	0.012239
D26LRT	151	107028	Acrolein	0.02449	24.689	0.007016
D26LRT	151	71432	Benzene	0.01681	16.946	0.004816
D26LRT	151	100414	Ethyl benzene	0.00174	1.754	0.000499
D26LRT	151	50000	Formaldehyde	0.1231	124.099	0.035268
D26LRT	151	67561	Methanol	0.01805	18.196	0.005171
D26LRT	151	108383	m-Xylene	0.00282	2.843	0.000808
D26LRT	151	91203	Naphthalene	0.00541	5.454	0.001550
D26LRT	151	95476	o-Xylene	0.00166	1.673	0.000476
D26LRT	151	108952	Phenol	0.00726	7.319	0.002080
D26LRT	151	123386	Propionaldehyde	0.00727	7.329	0.002083
D26LRT	151	100425	Styrene	0.00309	3.115	0.000885
D26LRT	151	108883	Toluene	0.00642	6.472	0.001839
D26LRT	4	7439921	Lead		0.025	0.000007
D26LSO	2427	106990	1,3-Butadiene	0.01687	273.349	0.077684
D26LSO	2427	75070	Acetaldehyde	0.04272	692.204	0.196720
D26LSO	2427	107028	Acrolein	0.02449	396.818	0.112773
D26LSO	2427	71432	Benzene	0.01681	272.377	0.077408
D26LSO	2427	100414	Ethyl benzene	0.00174	28.194	0.008012
D26LSO	2427	50000	Formaldehyde	0.1231	1994.623	0.566858
D26LSO	2427	67561	Methanol	0.01805	292.469	0.083118
D26LSO	2427	108383	m-Xylene	0.00282	45.693	0.012986
D26LSO	2427	91203	Naphthalene	0.00541	87.660	0.024912
D26LSO	2427	95476	o-Xylene	0.00166	26.897	0.007644
D26LSO	2427	108952	Phenol	0.00726	117.636	0.033431
D26LSO	2427	123386	Propionaldehyde	0.00727	117.798	0.033477
D26LSO	2427	100425	Styrene	0.00309	50.068	0.014229
D26LSO	2427	108883	Toluene	0.00642	104.025	0.029563
D26LSO	57	7439921	Lead		0.399	0.000113
D26RLC	20179	106990	1,3-Butadiene	0.01687	2272.729	0.645894
D26RLC	20179	75070	Acetaldehyde	0.04272	5755.245	1.635602
D26RLC	20179	107028	Acrolein	0.02449	3299.296	0.937638
D26RLC	20179	71432	Benzene	0.01681	2264.646	0.643597
D26RLC	20179	100414	Ethyl benzene	0.00174	234.413	0.066619
D26RLC	20179	50000	Formaldehyde	0.1231	16584.050	4.713075
D26RLC	20179	67561	Methanol	0.01805	2431.699	0.691072
D26RLC	20179	108383	m-Xylene	0.00282	379.911	0.107968
D26RLC	20179	91203	Naphthalene	0.00541	728.836	0.207130
D26RLC	20179	95476	o-Xylene	0.00166	223.635	0.063556
D26RLC	20179	108952	Phenol	0.00726	978.068	0.277960
D26RLC	20179	123386	Propionaldehyde	0.00727	979.415	0.278343
D26RLC	20179	100425	Styrene	0.00309	416.285	0.118305

2024 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26RLC	20179	108883	Toluene	0.00642	864.903	0.245800
D26RLC	476	7439921	Lead		3.314	0.000942
D26RRT	1412	106990	1,3-Butadiene	0.01687	159.031	0.045196
D26RRT	1412	75070	Acetaldehyde	0.04272	402.716	0.114449
D26RRT	1412	107028	Acrolein	0.02449	230.864	0.065610
D26RRT	1412	71432	Benzene	0.01681	158.466	0.045035
D26RRT	1412	100414	Ethyl benzene	0.00174	16.403	0.004662
D26RRT	1412	50000	Formaldehyde	0.1231	1160.448	0.329791
D26RRT	1412	67561	Methanol	0.01805	170.155	0.048357
D26RRT	1412	108383	m-Xylene	0.00282	26.584	0.007555
D26RRT	1412	91203	Naphthalene	0.00541	50.999	0.014494
D26RRT	1412	95476	o-Xylene	0.00166	15.649	0.004447
D26RRT	1412	108952	Phenol	0.00726	68.439	0.019450
D26RRT	1412	123386	Propionaldehyde	0.00727	68.533	0.019477
D26RRT	1412	100425	Styrene	0.00309	29.129	0.008278
D26RRT	1412	108883	Toluene	0.00642	60.521	0.017200
D26RRT	33	7439921	Lead		0.232	0.000066
D26RSO	25274	106990	1,3-Butadiene	0.01687	2846.571	0.808976
D26RSO	25274	75070	Acetaldehyde	0.04272	7208.388	2.048575
D26RSO	25274	107028	Acrolein	0.02449	4132.336	1.174382
D26RSO	25274	71432	Benzene	0.01681	2836.447	0.806099
D26RSO	25274	100414	Ethyl benzene	0.00174	293.600	0.083439
D26RSO	25274	50000	Formaldehyde	0.1231	20771.361	5.903080
D26RSO	25274	67561	Methanol	0.01805	3045.679	0.865561
D26RSO	25274	108383	m-Xylene	0.00282	475.835	0.135229
D26RSO	25274	91203	Naphthalene	0.00541	912.860	0.259429
D26RSO	25274	95476	o-Xylene	0.00166	280.101	0.079603
D26RSO	25274	108952	Phenol	0.00726	1225.021	0.348143
D26RSO	25274	123386	Propionaldehyde	0.00727	1226.708	0.348622
D26RSO	25274	100425	Styrene	0.00309	521.393	0.148176
D26RSO	25274	108883	Toluene	0.00642	1083.283	0.307862
D26RSO	597	7439921	Lead		4.151	0.001180
A08LSI	3155	106990	1,3-Butadiene	0.01687	14.749	0.004088
A08LSI	3155	75070	Acetaldehyde	0.04272	37.349	0.010353
A08LSI	3155	107028	Acrolein	0.02449	21.411	0.005935
A08LSI	3155	71432	Benzene	0.01681	14.697	0.004074
A08LSI	3155	100414	Ethyl benzene	0.00174	1.521	0.000422
A08LSI	3155	50000	Formaldehyde	0.1231	107.623	0.029832
A08LSI	3155	67561	Methanol	0.01805	15.781	0.004374
A08LSI	3155	108383	m-Xylene	0.00282	2.465	0.000683
A08LSI	3155	91203	Naphthalene	0.00541	4.730	0.001311
A08LSI	3155	95476	o-Xylene	0.00166	1.451	0.000402
A08LSI	3155	108952	Phenol	0.00726	6.347	0.001759

2024 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A08LSI	3155	123386	Propionaldehyde	0.00727	6.356	0.001762
A08LSI	3155	100425	Styrene	0.00309	2.702	0.000749
A08LSI	3155	108883	Toluene	0.00642	5.613	0.001556
A08LSI	74	7439921	Lead		0.088	0.000024
A08RSI	236	106990	1,3-Butadiene	0.01687	1.103	0.000306
A08RSI	236	75070	Acetaldehyde	0.04272	2.794	0.000774
A08RSI	236	107028	Acrolein	0.02449	1.602	0.000444
A08RSI	236	71432	Benzene	0.01681	1.099	0.000305
A08RSI	236	100414	Ethyl benzene	0.00174	0.114	0.000032
A08RSI	236	50000	Formaldehyde	0.1231	8.050	0.002231
A08RSI	236	67561	Methanol	0.01805	1.180	0.000327
A08RSI	236	108383	m-Xylene	0.00282	0.184	0.000051
A08RSI	236	91203	Naphthalene	0.00541	0.354	0.000098
A08RSI	236	95476	o-Xylene	0.00166	0.109	0.000030
A08RSI	236	108952	Phenol	0.00726	0.475	0.000132
A08RSI	236	123386	Propionaldehyde	0.00727	0.475	0.000132
A08RSI	236	100425	Styrene	0.00309	0.202	0.000056
A08RSI	236	108883	Toluene	0.00642	0.420	0.000116
A08RSI	6	7439921	Lead		0.007	0.000002
A26LSI	6390	106990	1,3-Butadiene	0.01687	29.872	0.008280
A26LSI	6390	75070	Acetaldehyde	0.04272	75.645	0.020968
A26LSI	6390	107028	Acrolein	0.02449	43.365	0.012020
A26LSI	6390	71432	Benzene	0.01681	29.766	0.008251
A26LSI	6390	100414	Ethyl benzene	0.00174	3.081	0.000854
A26LSI	6390	50000	Formaldehyde	0.1231	217.976	0.060420
A26LSI	6390	67561	Methanol	0.01805	31.961	0.008859
A26LSI	6390	108383	m-Xylene	0.00282	4.993	0.001384
A26LSI	6390	91203	Naphthalene	0.00541	9.580	0.002655
A26LSI	6390	95476	o-Xylene	0.00166	2.939	0.000815
A26LSI	6390	108952	Phenol	0.00726	12.855	0.003563
A26LSI	6390	123386	Propionaldehyde	0.00727	12.873	0.003568
A26LSI	6390	100425	Styrene	0.00309	5.472	0.001517
A26LSI	6390	108883	Toluene	0.00642	11.368	0.003151
A26LSI	151	7439921	Lead		0.178	0.000049
A26RSI	46645	106990	1,3-Butadiene	0.01687	218.057	0.060443
A26RSI	46645	75070	Acetaldehyde	0.04272	552.186	0.153059
A26RSI	46645	107028	Acrolein	0.02449	316.550	0.087744
A26RSI	46645	71432	Benzene	0.01681	217.281	0.060228
A26RSI	46645	100414	Ethyl benzene	0.00174	22.491	0.006234
A26RSI	46645	50000	Formaldehyde	0.1231	1591.154	0.441049
A26RSI	46645	67561	Methanol	0.01805	233.309	0.064670
A26RSI	46645	108383	m-Xylene	0.00282	36.450	0.010104
A26RSI	46645	91203	Naphthalene	0.00541	69.928	0.019383

2024 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26RSI	46645	95476	o-Xylene	0.00166	21.457	0.005948
A26RSI	46645	108952	Phenol	0.00726	93.841	0.026011
A26RSI	46645	123386	Propionaldehyde	0.00727	93.970	0.026047
A26RSI	46645	100425	Styrene	0.00309	39.940	0.011071
A26RSI	46645	108883	Toluene	0.00642	82.983	0.023002
A26RSI	1101	7439921	Lead		1.298	0.000360
A08LGR	3155	106990	1,3-Butadiene	0.01687	19.754	0.005475
A08LGR	3155	75070	Acetaldehyde	0.04272	50.022	0.013866
A08LGR	3155	107028	Acrolein	0.02449	28.676	0.007949
A08LGR	3155	71432	Benzene	0.01681	19.683	0.005456
A08LGR	3155	100414	Ethyl benzene	0.00174	2.037	0.000565
A08LGR	3155	50000	Formaldehyde	0.1231	144.141	0.039954
A08LGR	3155	67561	Methanol	0.01805	21.135	0.005858
A08LGR	3155	108383	m-Xylene	0.00282	3.302	0.000915
A08LGR	3155	91203	Naphthalene	0.00541	6.335	0.001756
A08LGR	3155	95476	o-Xylene	0.00166	1.944	0.000539
A08LGR	3155	108952	Phenol	0.00726	8.501	0.002356
A08LGR	3155	123386	Propionaldehyde	0.00727	8.513	0.002360
A08LGR	3155	100425	Styrene	0.00309	3.618	0.001003
A08LGR	3155	108883	Toluene	0.00642	7.517	0.002084
A08LGR	74	7439921	Lead		0.072	0.000020
A08RGR	236	106990	1,3-Butadiene	0.01687	1.478	0.000410
A08RGR	236	75070	Acetaldehyde	0.04272	3.742	0.001037
A08RGR	236	107028	Acrolein	0.02449	2.145	0.000595
A08RGR	236	71432	Benzene	0.01681	1.472	0.000408
A08RGR	236	100414	Ethyl benzene	0.00174	0.152	0.000042
A08RGR	236	50000	Formaldehyde	0.1231	10.782	0.002989
A08RGR	236	67561	Methanol	0.01805	1.581	0.000438
A08RGR	236	108383	m-Xylene	0.00282	0.247	0.000068
A08RGR	236	91203	Naphthalene	0.00541	0.474	0.000131
A08RGR	236	95476	o-Xylene	0.00166	0.145	0.000040
A08RGR	236	108952	Phenol	0.00726	0.636	0.000176
A08RGR	236	123386	Propionaldehyde	0.00727	0.637	0.000177
A08RGR	236	100425	Styrene	0.00309	0.271	0.000075
A08RGR	236	108883	Toluene	0.00642	0.562	0.000156
A08RGR	6	7439921	Lead		0.005	0.000001
A26LGR	6390	106990	1,3-Butadiene	0.01687	40.008	0.011090
A26LGR	6390	75070	Acetaldehyde	0.04272	101.313	0.028083
A26LGR	6390	107028	Acrolein	0.02449	58.079	0.016099
A26LGR	6390	71432	Benzene	0.01681	39.866	0.011050
A26LGR	6390	100414	Ethyl benzene	0.00174	4.126	0.001144
A26LGR	6390	50000	Formaldehyde	0.1231	291.938	0.080922
A26LGR	6390	67561	Methanol	0.01805	42.806	0.011865

2024 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26LGR	6390	108383	m-Xylene	0.00282	6.688	0.001854
A26LGR	6390	91203	Naphthalene	0.00541	12.830	0.003556
A26LGR	6390	95476	o-Xylene	0.00166	3.937	0.001091
A26LGR	6390	108952	Phenol	0.00726	17.217	0.004772
A26LGR	6390	123386	Propionaldehyde	0.00727	17.241	0.004779
A26LGR	6390	100425	Styrene	0.00309	7.328	0.002031
A26LGR	6390	108883	Toluene	0.00642	15.225	0.004220
A26LGR	151	7439921	Lead		0.146	0.000040
A26RGR	46645	106990	1,3-Butadiene	0.01687	292.046	0.080952
A26RGR	46645	75070	Acetaldehyde	0.04272	739.551	0.204995
A26RGR	46645	107028	Acrolein	0.02449	423.960	0.117517
A26RGR	46645	71432	Benzene	0.01681	291.008	0.080664
A26RGR	46645	100414	Ethyl benzene	0.00174	30.122	0.008350
A26RGR	46645	50000	Formaldehyde	0.1231	2131.055	0.590703
A26RGR	46645	67561	Methanol	0.01805	312.474	0.086614
A26RGR	46645	108383	m-Xylene	0.00282	48.819	0.013532
A26RGR	46645	91203	Naphthalene	0.00541	93.656	0.025960
A26RGR	46645	95476	o-Xylene	0.00166	28.737	0.007966
A26RGR	46645	108952	Phenol	0.00726	125.682	0.034838
A26RGR	46645	123386	Propionaldehyde	0.00727	125.855	0.034886
A26RGR	46645	100425	Styrene	0.00309	53.493	0.014828
A26RGR	46645	108883	Toluene	0.00642	111.140	0.030807
A26RGR	1101	7439921	Lead		1.066	0.000295
A08TX	3391	106990	1,3-Butadiene	0.01687	20.795	0.005764
A08TX	3391	75070	Acetaldehyde	0.04272	53.764	0.014903
A08TX	3391	107028	Acrolein	0.02449	30.821	0.008543
A08TX	3391	71432	Benzene	0.01681	21.156	0.005864
A08TX	3391	100414	Ethyl benzene	0.00174	2.190	0.000607
A08TX	3391	50000	Formaldehyde	0.1231	154.924	0.042943
A08TX	3391	67561	Methanol	0.01805	22.716	0.006297
A08TX	3391	108383	m-Xylene	0.00282	3.549	0.000984
A08TX	3391	91203	Naphthalene	0.00541	6.809	0.001887
A08TX	3391	95476	o-Xylene	0.00166	2.089	0.000579
A08TX	3391	108952	Phenol	0.00726	9.137	0.002533
A08TX	3391	123386	Propionaldehyde	0.00727	9.149	0.002536
A08TX	3391	100425	Styrene	0.00309	3.889	0.001078
A08TX	3391	108883	Toluene	0.00642	8.080	0.002240
A08TX	80	7439921	Lead		0.065	0.000018
A26TX	53035	106990	1,3-Butadiene	0.01687	325.231	0.090150
A26TX	53035	75070	Acetaldehyde	0.04272	840.863	0.233077
A26TX	53035	107028	Acrolein	0.02449	482.040	0.133616
A26TX	53035	71432	Benzene	0.01681	330.873	0.091714
A26TX	53035	100414	Ethyl benzene	0.00174	34.249	0.009493

2024 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26TX	53035	50000	Formaldehyde	0.1231	2422.993	0.671625
A26TX	53035	67561	Methanol	0.01805	355.280	0.098480
A26TX	53035	108383	m-Xylene	0.00282	55.506	0.015386
A26TX	53035	91203	Naphthalene	0.00541	106.486	0.029517
A26TX	53035	95476	o-Xylene	0.00166	32.674	0.009057
A26TX	53035	108952	Phenol	0.00726	142.899	0.039610
A26TX	53035	123386	Propionaldehyde	0.00727	143.096	0.039665
A26TX	53035	100425	Styrene	0.00309	60.821	0.016859
A26TX	53035	108883	Toluene	0.00642	126.366	0.035027
A26TX	1252	7439921	Lead		1.017	0.000282
2023EV		9901	DieselExhPM		0	0
2023PV		9901	DieselExhPM		0	0
2024RR		9901	DieselExhPM		89.8	0.0569375
2025PD		9901	DieselExhPM		0	0
Batch		7440382	Arsenic		0.13306	0.00008
Batch		7440417	Beryllium		0.01363	0.00001
Batch		7440439	Cadmium		0.01707	0.00001
Batch		18540299	Cr(VI)		0.38305	0.00024
Batch		7439921	Lead		0.14672	0.00009
Batch		7439965	Manganese		1.74548	0.00111
Batch		7440020	Nickel		0.51412	0.00033
Batch		7782492	Selenium		0.01297	0.00001

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Emissions Inventory 2024 Project

Piston Operations

	Total Ops	Piston Ops	% Piston
Piston Ops	112638	2659	2.36%

Departures

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Taxi Out	73.1	56319	2.59593	16.00548	0.0284%
Ground Roll	93.5	56319	3.32037	16.00548	0.0284%
Climb to Mix	188	56319	6.67625	16.00548	0.0284%

Arrivals

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Descend from M	60.9	56319	0.77424	15.61096	0.0277%
Ground Roll	29.2	56319	1.03695	15.61096	0.0277%
Taxi In	28.6	56319	1.01564	15.61096	0.0277%

2024 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08TX	5371	106990	1,3-Butadiene	0.01687	235.214	0.066846
D08TX	5371	75070	Acetaldehyde	0.04272	595.633	0.169275
D08TX	5371	107028	Acrolein	0.02449	341.457	0.097040
D08TX	5371	71432	Benzene	0.01681	234.377	0.066608
D08TX	5371	100414	Ethyl benzene	0.00174	24.260	0.006895
D08TX	5371	50000	Formaldehyde	0.1231	1716.349	0.487775
D08TX	5371	67561	Methanol	0.01805	251.666	0.071522
D08TX	5371	108383	m-Xylene	0.00282	39.318	0.011174
D08TX	5371	91203	Naphthalene	0.00541	75.430	0.021437
D08TX	5371	95476	o-Xylene	0.00166	23.145	0.006578
D08TX	5371	108952	Phenol	0.00726	101.224	0.028767
D08TX	5371	123386	Propionaldehyde	0.00727	101.364	0.028807
D08TX	5371	100425	Styrene	0.00309	43.083	0.012244
D08TX	5371	108883	Toluene	0.00642	89.512	0.025439
D08TX	127	7439921	Lead		0.199	0.000056
D26TX	51055	106990	1,3-Butadiene	0.01687	2235.866	0.635418
D26TX	51055	75070	Acetaldehyde	0.04272	5661.897	1.609073
D26TX	51055	107028	Acrolein	0.02449	3245.783	0.922430
D26TX	51055	71432	Benzene	0.01681	2227.914	0.633158
D26TX	51055	100414	Ethyl benzene	0.00174	230.611	0.065538
D26TX	51055	50000	Formaldehyde	0.1231	16315.064	4.636631

D26TX	51055	67561	Methanol	0.01805	2392.257	0.679863
D26TX	51055	108383	m-Xylene	0.00282	373.749	0.106217
D26TX	51055	91203	Naphthalene	0.00541	717.015	0.203771
D26TX	51055	95476	o-Xylene	0.00166	220.008	0.062525
D26TX	51055	108952	Phenol	0.00726	962.204	0.273452
D26TX	51055	123386	Propionaldehyde	0.00727	963.530	0.273829
D26TX	51055	100425	Styrene	0.00309	409.533	0.116387
D26TX	51055	108883	Toluene	0.00642	850.875	0.241813
D26TX	1205	7439921	Lead		1.890	0.000537
D08LGR	3502	106990	1,3-Butadiene	0.01687	196.163	0.055748
D08LGR	3502	75070	Acetaldehyde	0.04272	496.746	0.141172
D08LGR	3502	107028	Acrolein	0.02449	284.768	0.080929
D08LGR	3502	71432	Benzene	0.01681	195.466	0.055550
D08LGR	3502	100414	Ethyl benzene	0.00174	20.233	0.005750
D08LGR	3502	50000	Formaldehyde	0.1231	1431.400	0.406794
D08LGR	3502	67561	Methanol	0.01805	209.884	0.059648
D08LGR	3502	108383	m-Xylene	0.00282	32.791	0.009319
D08LGR	3502	91203	Naphthalene	0.00541	62.907	0.017878
D08LGR	3502	95476	o-Xylene	0.00166	19.302	0.005486
D08LGR	3502	108952	Phenol	0.00726	84.419	0.023991
D08LGR	3502	123386	Propionaldehyde	0.00727	84.535	0.024024
D08LGR	3502	100425	Styrene	0.00309	35.930	0.010211
D08LGR	3502	108883	Toluene	0.00642	74.651	0.021215
D08LGR	83	7439921	Lead		0.214	0.000061
D08RGR	1869	106990	1,3-Butadiene	0.01687	104.691	0.029753
D08RGR	1869	75070	Acetaldehyde	0.04272	265.111	0.075343
D08RGR	1869	107028	Acrolein	0.02449	151.979	0.043192
D08RGR	1869	71432	Benzene	0.01681	104.319	0.029647
D08RGR	1869	100414	Ethyl benzene	0.00174	10.798	0.003069
D08RGR	1869	50000	Formaldehyde	0.1231	763.931	0.217104
D08RGR	1869	67561	Methanol	0.01805	112.014	0.031834
D08RGR	1869	108383	m-Xylene	0.00282	17.500	0.004973
D08RGR	1869	91203	Naphthalene	0.00541	33.573	0.009541
D08RGR	1869	95476	o-Xylene	0.00166	10.302	0.002928
D08RGR	1869	108952	Phenol	0.00726	45.054	0.012804
D08RGR	1869	123386	Propionaldehyde	0.00727	45.116	0.012822
D08RGR	1869	100425	Styrene	0.00309	19.176	0.005450
D08RGR	1869	108883	Toluene	0.00642	39.841	0.011323
D08RGR	44	7439921	Lead		0.114	0.000032
D26LGR	4189	106990	1,3-Butadiene	0.01687	234.645	0.066685
D26LGR	4189	75070	Acetaldehyde	0.04272	594.194	0.168866
D26LGR	4189	107028	Acrolein	0.02449	340.632	0.096805
D26LGR	4189	71432	Benzene	0.01681	233.811	0.066447
D26LGR	4189	100414	Ethyl benzene	0.00174	24.202	0.006878
D26LGR	4189	50000	Formaldehyde	0.1231	1712.202	0.486596
D26LGR	4189	67561	Methanol	0.01805	251.058	0.071349
D26LGR	4189	108383	m-Xylene	0.00282	39.223	0.011147

D26LGR	4189	91203	Naphthalene	0.00541	75.248	0.021385
D26LGR	4189	95476	o-Xylene	0.00166	23.089	0.006562
D26LGR	4189	108952	Phenol	0.00726	100.980	0.028698
D26LGR	4189	123386	Propionaldehyde	0.00727	101.119	0.028737
D26LGR	4189	100425	Styrene	0.00309	42.979	0.012214
D26LGR	4189	108883	Toluene	0.00642	89.296	0.025377
D26LGR	99	7439921	Lead		0.255	0.000073
D26RGR	46866	106990	1,3-Butadiene	0.01687	2625.183	0.746059
D26RGR	46866	75070	Acetaldehyde	0.04272	6647.767	1.889251
D26RGR	46866	107028	Acrolein	0.02449	3810.951	1.083046
D26RGR	46866	71432	Benzene	0.01681	2615.847	0.743406
D26RGR	46866	100414	Ethyl benzene	0.00174	270.766	0.076950
D26RGR	46866	50000	Formaldehyde	0.1231	19155.902	5.443978
D26RGR	46866	67561	Methanol	0.01805	2808.806	0.798244
D26RGR	46866	108383	m-Xylene	0.00282	438.827	0.124712
D26RGR	46866	91203	Naphthalene	0.00541	841.864	0.239252
D26RGR	46866	95476	o-Xylene	0.00166	258.317	0.073412
D26RGR	46866	108952	Phenol	0.00726	1129.747	0.321066
D26RGR	46866	123386	Propionaldehyde	0.00727	1131.303	0.321509
D26RGR	46866	100425	Styrene	0.00309	480.843	0.136652
D26RGR	46866	108883	Toluene	0.00642	999.032	0.283918
D26RGR	1106	7439921	Lead		2.858	0.000812
D08LRC	3272	106990	1,3-Butadiene	0.01687	368.520	0.104731
D08LRC	3272	75070	Acetaldehyde	0.04272	933.206	0.265211
D08LRC	3272	107028	Acrolein	0.02449	534.977	0.152037
D08LRC	3272	71432	Benzene	0.01681	367.210	0.104358
D08LRC	3272	100414	Ethyl benzene	0.00174	38.010	0.010802
D08LRC	3272	50000	Formaldehyde	0.1231	2689.083	0.764219
D08LRC	3272	67561	Methanol	0.01805	394.297	0.112057
D08LRC	3272	108383	m-Xylene	0.00282	61.602	0.017507
D08LRC	3272	91203	Naphthalene	0.00541	118.180	0.033586
D08LRC	3272	95476	o-Xylene	0.00166	36.262	0.010305
D08LRC	3272	108952	Phenol	0.00726	158.593	0.045071
D08LRC	3272	123386	Propionaldehyde	0.00727	158.811	0.045133
D08LRC	3272	100425	Styrene	0.00309	67.500	0.019183
D08LRC	3272	108883	Toluene	0.00642	140.243	0.039856
D08LRC	77	7439921	Lead		0.537	0.000153
D08LSO	230	106990	1,3-Butadiene	0.01687	25.905	0.007362
D08LSO	230	75070	Acetaldehyde	0.04272	65.598	0.018643
D08LSO	230	107028	Acrolein	0.02449	37.605	0.010687
D08LSO	230	71432	Benzene	0.01681	25.812	0.007336
D08LSO	230	100414	Ethyl benzene	0.00174	2.672	0.000759
D08LSO	230	50000	Formaldehyde	0.1231	189.025	0.053720
D08LSO	230	67561	Methanol	0.01805	27.716	0.007877
D08LSO	230	108383	m-Xylene	0.00282	4.330	0.001231
D08LSO	230	91203	Naphthalene	0.00541	8.307	0.002361
D08LSO	230	95476	o-Xylene	0.00166	2.549	0.000724

D08LSO	230	108952	Phenol	0.00726	11.148	0.003168
D08LSO	230	123386	Propionaldehyde	0.00727	11.163	0.003173
D08LSO	230	100425	Styrene	0.00309	4.745	0.001348
D08LSO	230	108883	Toluene	0.00642	9.858	0.002802
D08LSO	5	7439921	Lead		0.038	0.000011
D08RRC	1869	106990	1,3-Butadiene	0.01687	210.503	0.059823
D08RRC	1869	75070	Acetaldehyde	0.04272	533.057	0.151491
D08RRC	1869	107028	Acrolein	0.02449	305.584	0.086845
D08RRC	1869	71432	Benzene	0.01681	209.754	0.059611
D08RRC	1869	100414	Ethyl benzene	0.00174	21.712	0.006170
D08RRC	1869	50000	Formaldehyde	0.1231	1536.032	0.436530
D08RRC	1869	67561	Methanol	0.01805	225.226	0.064008
D08RRC	1869	108383	m-Xylene	0.00282	35.188	0.010000
D08RRC	1869	91203	Naphthalene	0.00541	67.506	0.019185
D08RRC	1869	95476	o-Xylene	0.00166	20.713	0.005887
D08RRC	1869	108952	Phenol	0.00726	90.590	0.025745
D08RRC	1869	123386	Propionaldehyde	0.00727	90.714	0.025780
D08RRC	1869	100425	Styrene	0.00309	38.557	0.010958
D08RRC	1869	108883	Toluene	0.00642	80.108	0.022766
D08RRC	44	7439921	Lead		0.307	0.000087
D26LLC	1611	106990	1,3-Butadiene	0.01687	181.444	0.051565
D26LLC	1611	75070	Acetaldehyde	0.04272	459.473	0.130579
D26LLC	1611	107028	Acrolein	0.02449	263.401	0.074857
D26LLC	1611	71432	Benzene	0.01681	180.799	0.051382
D26LLC	1611	100414	Ethyl benzene	0.00174	18.714	0.005319
D26LLC	1611	50000	Formaldehyde	0.1231	1323.995	0.376271
D26LLC	1611	67561	Methanol	0.01805	194.136	0.055172
D26LLC	1611	108383	m-Xylene	0.00282	30.330	0.008620
D26LLC	1611	91203	Naphthalene	0.00541	58.187	0.016536
D26LLC	1611	95476	o-Xylene	0.00166	17.854	0.005074
D26LLC	1611	108952	Phenol	0.00726	78.085	0.022191
D26LLC	1611	123386	Propionaldehyde	0.00727	78.192	0.022222
D26LLC	1611	100425	Styrene	0.00309	33.234	0.009445
D26LLC	1611	108883	Toluene	0.00642	69.050	0.019624
D26LLC	38	7439921	Lead		0.265	0.000075
D26LRT	151	106990	1,3-Butadiene	0.01687	17.007	0.004833
D26LRT	151	75070	Acetaldehyde	0.04272	43.067	0.012239
D26LRT	151	107028	Acrolein	0.02449	24.689	0.007016
D26LRT	151	71432	Benzene	0.01681	16.946	0.004816
D26LRT	151	100414	Ethyl benzene	0.00174	1.754	0.000499
D26LRT	151	50000	Formaldehyde	0.1231	124.099	0.035268
D26LRT	151	67561	Methanol	0.01805	18.196	0.005171
D26LRT	151	108383	m-Xylene	0.00282	2.843	0.000808
D26LRT	151	91203	Naphthalene	0.00541	5.454	0.001550
D26LRT	151	95476	o-Xylene	0.00166	1.673	0.000476
D26LRT	151	108952	Phenol	0.00726	7.319	0.002080
D26LRT	151	123386	Propionaldehyde	0.00727	7.329	0.002083

D26LRT	151	100425	Styrene	0.00309	3.115	0.000885
D26LRT	151	108883	Toluene	0.00642	6.472	0.001839
D26LRT	4	7439921	Lead		0.025	0.000007
D26LSO	2427	106990	1,3-Butadiene	0.01687	273.349	0.077684
D26LSO	2427	75070	Acetaldehyde	0.04272	692.204	0.196720
D26LSO	2427	107028	Acrolein	0.02449	396.818	0.112773
D26LSO	2427	71432	Benzene	0.01681	272.377	0.077408
D26LSO	2427	100414	Ethyl benzene	0.00174	28.194	0.008012
D26LSO	2427	50000	Formaldehyde	0.1231	1994.623	0.566858
D26LSO	2427	67561	Methanol	0.01805	292.469	0.083118
D26LSO	2427	108383	m-Xylene	0.00282	45.693	0.012986
D26LSO	2427	91203	Naphthalene	0.00541	87.660	0.024912
D26LSO	2427	95476	o-Xylene	0.00166	26.897	0.007644
D26LSO	2427	108952	Phenol	0.00726	117.636	0.033431
D26LSO	2427	123386	Propionaldehyde	0.00727	117.798	0.033477
D26LSO	2427	100425	Styrene	0.00309	50.068	0.014229
D26LSO	2427	108883	Toluene	0.00642	104.025	0.029563
D26LSO	57	7439921	Lead		0.399	0.000113
D26RLC	20179	106990	1,3-Butadiene	0.01687	2272.729	0.645894
D26RLC	20179	75070	Acetaldehyde	0.04272	5755.245	1.635602
D26RLC	20179	107028	Acrolein	0.02449	3299.296	0.937638
D26RLC	20179	71432	Benzene	0.01681	2264.646	0.643597
D26RLC	20179	100414	Ethyl benzene	0.00174	234.413	0.066619
D26RLC	20179	50000	Formaldehyde	0.1231	16584.050	4.713075
D26RLC	20179	67561	Methanol	0.01805	2431.699	0.691072
D26RLC	20179	108383	m-Xylene	0.00282	379.911	0.107968
D26RLC	20179	91203	Naphthalene	0.00541	728.836	0.207130
D26RLC	20179	95476	o-Xylene	0.00166	223.635	0.063556
D26RLC	20179	108952	Phenol	0.00726	978.068	0.277960
D26RLC	20179	123386	Propionaldehyde	0.00727	979.415	0.278343
D26RLC	20179	100425	Styrene	0.00309	416.285	0.118305
D26RLC	20179	108883	Toluene	0.00642	864.903	0.245800
D26RLC	476	7439921	Lead		3.314	0.000942
D26RRT	1412	106990	1,3-Butadiene	0.01687	159.031	0.045196
D26RRT	1412	75070	Acetaldehyde	0.04272	402.716	0.114449
D26RRT	1412	107028	Acrolein	0.02449	230.864	0.065610
D26RRT	1412	71432	Benzene	0.01681	158.466	0.045035
D26RRT	1412	100414	Ethyl benzene	0.00174	16.403	0.004662
D26RRT	1412	50000	Formaldehyde	0.1231	1160.448	0.329791
D26RRT	1412	67561	Methanol	0.01805	170.155	0.048357
D26RRT	1412	108383	m-Xylene	0.00282	26.584	0.007555
D26RRT	1412	91203	Naphthalene	0.00541	50.999	0.014494
D26RRT	1412	95476	o-Xylene	0.00166	15.649	0.004447
D26RRT	1412	108952	Phenol	0.00726	68.439	0.019450
D26RRT	1412	123386	Propionaldehyde	0.00727	68.533	0.019477
D26RRT	1412	100425	Styrene	0.00309	29.129	0.008278
D26RRT	1412	108883	Toluene	0.00642	60.521	0.017200

D26RRT	33	7439921	Lead		0.232	0.000066
D26RSO	25274	106990	1,3-Butadiene	0.01687	2846.571	0.808976
D26RSO	25274	75070	Acetaldehyde	0.04272	7208.388	2.048575
D26RSO	25274	107028	Acrolein	0.02449	4132.336	1.174382
D26RSO	25274	71432	Benzene	0.01681	2836.447	0.806099
D26RSO	25274	100414	Ethyl benzene	0.00174	293.600	0.083439
D26RSO	25274	50000	Formaldehyde	0.1231	20771.361	5.903080
D26RSO	25274	67561	Methanol	0.01805	3045.679	0.865561
D26RSO	25274	108383	m-Xylene	0.00282	475.835	0.135229
D26RSO	25274	91203	Naphthalene	0.00541	912.860	0.259429
D26RSO	25274	95476	o-Xylene	0.00166	280.101	0.079603
D26RSO	25274	108952	Phenol	0.00726	1225.021	0.348143
D26RSO	25274	123386	Propionaldehyde	0.00727	1226.708	0.348622
D26RSO	25274	100425	Styrene	0.00309	521.393	0.148176
D26RSO	25274	108883	Toluene	0.00642	1083.283	0.307862
D26RSO	597	7439921	Lead		4.151	0.001180
A08LSI	3155	106990	1,3-Butadiene	0.01687	14.749	0.004088
A08LSI	3155	75070	Acetaldehyde	0.04272	37.349	0.010353
A08LSI	3155	107028	Acrolein	0.02449	21.411	0.005935
A08LSI	3155	71432	Benzene	0.01681	14.697	0.004074
A08LSI	3155	100414	Ethyl benzene	0.00174	1.521	0.000422
A08LSI	3155	50000	Formaldehyde	0.1231	107.623	0.029832
A08LSI	3155	67561	Methanol	0.01805	15.781	0.004374
A08LSI	3155	108383	m-Xylene	0.00282	2.465	0.000683
A08LSI	3155	91203	Naphthalene	0.00541	4.730	0.001311
A08LSI	3155	95476	o-Xylene	0.00166	1.451	0.000402
A08LSI	3155	108952	Phenol	0.00726	6.347	0.001759
A08LSI	3155	123386	Propionaldehyde	0.00727	6.356	0.001762
A08LSI	3155	100425	Styrene	0.00309	2.702	0.000749
A08LSI	3155	108883	Toluene	0.00642	5.613	0.001556
A08LSI	74	7439921	Lead		0.088	0.000024
A08RSI	236	106990	1,3-Butadiene	0.01687	1.103	0.000306
A08RSI	236	75070	Acetaldehyde	0.04272	2.794	0.000774
A08RSI	236	107028	Acrolein	0.02449	1.602	0.000444
A08RSI	236	71432	Benzene	0.01681	1.099	0.000305
A08RSI	236	100414	Ethyl benzene	0.00174	0.114	0.000032
A08RSI	236	50000	Formaldehyde	0.1231	8.050	0.002231
A08RSI	236	67561	Methanol	0.01805	1.180	0.000327
A08RSI	236	108383	m-Xylene	0.00282	0.184	0.000051
A08RSI	236	91203	Naphthalene	0.00541	0.354	0.000098
A08RSI	236	95476	o-Xylene	0.00166	0.109	0.000030
A08RSI	236	108952	Phenol	0.00726	0.475	0.000132
A08RSI	236	123386	Propionaldehyde	0.00727	0.475	0.000132
A08RSI	236	100425	Styrene	0.00309	0.202	0.000056
A08RSI	236	108883	Toluene	0.00642	0.420	0.000116
A08RSI	6	7439921	Lead		0.007	0.000002
A26LSI	6390	106990	1,3-Butadiene	0.01687	29.872	0.008280

A26LSI	6390	75070	Acetaldehyde	0.04272	75.645	0.020968
A26LSI	6390	107028	Acrolein	0.02449	43.365	0.012020
A26LSI	6390	71432	Benzene	0.01681	29.766	0.008251
A26LSI	6390	100414	Ethyl benzene	0.00174	3.081	0.000854
A26LSI	6390	50000	Formaldehyde	0.1231	217.976	0.060420
A26LSI	6390	67561	Methanol	0.01805	31.961	0.008859
A26LSI	6390	108383	m-Xylene	0.00282	4.993	0.001384
A26LSI	6390	91203	Naphthalene	0.00541	9.580	0.002655
A26LSI	6390	95476	o-Xylene	0.00166	2.939	0.000815
A26LSI	6390	108952	Phenol	0.00726	12.855	0.003563
A26LSI	6390	123386	Propionaldehyde	0.00727	12.873	0.003568
A26LSI	6390	100425	Styrene	0.00309	5.472	0.001517
A26LSI	6390	108883	Toluene	0.00642	11.368	0.003151
A26LSI	151	7439921	Lead		0.178	0.000049
A26RSI	46645	106990	1,3-Butadiene	0.01687	218.057	0.060443
A26RSI	46645	75070	Acetaldehyde	0.04272	552.186	0.153059
A26RSI	46645	107028	Acrolein	0.02449	316.550	0.087744
A26RSI	46645	71432	Benzene	0.01681	217.281	0.060228
A26RSI	46645	100414	Ethyl benzene	0.00174	22.491	0.006234
A26RSI	46645	50000	Formaldehyde	0.1231	1591.154	0.441049
A26RSI	46645	67561	Methanol	0.01805	233.309	0.064670
A26RSI	46645	108383	m-Xylene	0.00282	36.450	0.010104
A26RSI	46645	91203	Naphthalene	0.00541	69.928	0.019383
A26RSI	46645	95476	o-Xylene	0.00166	21.457	0.005948
A26RSI	46645	108952	Phenol	0.00726	93.841	0.026011
A26RSI	46645	123386	Propionaldehyde	0.00727	93.970	0.026047
A26RSI	46645	100425	Styrene	0.00309	39.940	0.011071
A26RSI	46645	108883	Toluene	0.00642	82.983	0.023002
A26RSI	1101	7439921	Lead		1.298	0.000360
A08LGR	3155	106990	1,3-Butadiene	0.01687	19.754	0.005475
A08LGR	3155	75070	Acetaldehyde	0.04272	50.022	0.013866
A08LGR	3155	107028	Acrolein	0.02449	28.676	0.007949
A08LGR	3155	71432	Benzene	0.01681	19.683	0.005456
A08LGR	3155	100414	Ethyl benzene	0.00174	2.037	0.000565
A08LGR	3155	50000	Formaldehyde	0.1231	144.141	0.039954
A08LGR	3155	67561	Methanol	0.01805	21.135	0.005858
A08LGR	3155	108383	m-Xylene	0.00282	3.302	0.000915
A08LGR	3155	91203	Naphthalene	0.00541	6.335	0.001756
A08LGR	3155	95476	o-Xylene	0.00166	1.944	0.000539
A08LGR	3155	108952	Phenol	0.00726	8.501	0.002356
A08LGR	3155	123386	Propionaldehyde	0.00727	8.513	0.002360
A08LGR	3155	100425	Styrene	0.00309	3.618	0.001003
A08LGR	3155	108883	Toluene	0.00642	7.517	0.002084
A08LGR	74	7439921	Lead		0.072	0.000020
A08RGR	236	106990	1,3-Butadiene	0.01687	1.478	0.000410
A08RGR	236	75070	Acetaldehyde	0.04272	3.742	0.001037
A08RGR	236	107028	Acrolein	0.02449	2.145	0.000595

A08RGR	236	71432	Benzene	0.01681	1.472	0.000408
A08RGR	236	100414	Ethyl benzene	0.00174	0.152	0.000042
A08RGR	236	50000	Formaldehyde	0.1231	10.782	0.002989
A08RGR	236	67561	Methanol	0.01805	1.581	0.000438
A08RGR	236	108383	m-Xylene	0.00282	0.247	0.000068
A08RGR	236	91203	Naphthalene	0.00541	0.474	0.000131
A08RGR	236	95476	o-Xylene	0.00166	0.145	0.000040
A08RGR	236	108952	Phenol	0.00726	0.636	0.000176
A08RGR	236	123386	Propionaldehyde	0.00727	0.637	0.000177
A08RGR	236	100425	Styrene	0.00309	0.271	0.000075
A08RGR	236	108883	Toluene	0.00642	0.562	0.000156
A08RGR	6	7439921	Lead		0.005	0.000001
A26LGR	6390	106990	1,3-Butadiene	0.01687	40.008	0.011090
A26LGR	6390	75070	Acetaldehyde	0.04272	101.313	0.028083
A26LGR	6390	107028	Acrolein	0.02449	58.079	0.016099
A26LGR	6390	71432	Benzene	0.01681	39.866	0.011050
A26LGR	6390	100414	Ethyl benzene	0.00174	4.126	0.001144
A26LGR	6390	50000	Formaldehyde	0.1231	291.938	0.080922
A26LGR	6390	67561	Methanol	0.01805	42.806	0.011865
A26LGR	6390	108383	m-Xylene	0.00282	6.688	0.001854
A26LGR	6390	91203	Naphthalene	0.00541	12.830	0.003556
A26LGR	6390	95476	o-Xylene	0.00166	3.937	0.001091
A26LGR	6390	108952	Phenol	0.00726	17.217	0.004772
A26LGR	6390	123386	Propionaldehyde	0.00727	17.241	0.004779
A26LGR	6390	100425	Styrene	0.00309	7.328	0.002031
A26LGR	6390	108883	Toluene	0.00642	15.225	0.004220
A26LGR	151	7439921	Lead		0.146	0.000040
A26RGR	46645	106990	1,3-Butadiene	0.01687	292.046	0.080952
A26RGR	46645	75070	Acetaldehyde	0.04272	739.551	0.204995
A26RGR	46645	107028	Acrolein	0.02449	423.960	0.117517
A26RGR	46645	71432	Benzene	0.01681	291.008	0.080664
A26RGR	46645	100414	Ethyl benzene	0.00174	30.122	0.008350
A26RGR	46645	50000	Formaldehyde	0.1231	2131.055	0.590703
A26RGR	46645	67561	Methanol	0.01805	312.474	0.086614
A26RGR	46645	108383	m-Xylene	0.00282	48.819	0.013532
A26RGR	46645	91203	Naphthalene	0.00541	93.656	0.025960
A26RGR	46645	95476	o-Xylene	0.00166	28.737	0.007966
A26RGR	46645	108952	Phenol	0.00726	125.682	0.034838
A26RGR	46645	123386	Propionaldehyde	0.00727	125.855	0.034886
A26RGR	46645	100425	Styrene	0.00309	53.493	0.014828
A26RGR	46645	108883	Toluene	0.00642	111.140	0.030807
A26RGR	1101	7439921	Lead		1.066	0.000295
A08TX	3391	106990	1,3-Butadiene	0.01687	20.795	0.005764
A08TX	3391	75070	Acetaldehyde	0.04272	53.764	0.014903
A08TX	3391	107028	Acrolein	0.02449	30.821	0.008543
A08TX	3391	71432	Benzene	0.01681	21.156	0.005864
A08TX	3391	100414	Ethyl benzene	0.00174	2.190	0.000607

A08TX	3391	50000	Formaldehyde	0.1231	154.924	0.042943
A08TX	3391	67561	Methanol	0.01805	22.716	0.006297
A08TX	3391	108383	m-Xylene	0.00282	3.549	0.000984
A08TX	3391	91203	Naphthalene	0.00541	6.809	0.001887
A08TX	3391	95476	o-Xylene	0.00166	2.089	0.000579
A08TX	3391	108952	Phenol	0.00726	9.137	0.002533
A08TX	3391	123386	Propionaldehyde	0.00727	9.149	0.002536
A08TX	3391	100425	Styrene	0.00309	3.889	0.001078
A08TX	3391	108883	Toluene	0.00642	8.080	0.002240
A08TX	80	7439921	Lead		0.065	0.000018
A26TX	53035	106990	1,3-Butadiene	0.01687	325.231	0.090150
A26TX	53035	75070	Acetaldehyde	0.04272	840.863	0.233077
A26TX	53035	107028	Acrolein	0.02449	482.040	0.133616
A26TX	53035	71432	Benzene	0.01681	330.873	0.091714
A26TX	53035	100414	Ethyl benzene	0.00174	34.249	0.009493
A26TX	53035	50000	Formaldehyde	0.1231	2422.993	0.671625
A26TX	53035	67561	Methanol	0.01805	355.280	0.098480
A26TX	53035	108383	m-Xylene	0.00282	55.506	0.015386
A26TX	53035	91203	Naphthalene	0.00541	106.486	0.029517
A26TX	53035	95476	o-Xylene	0.00166	32.674	0.009057
A26TX	53035	108952	Phenol	0.00726	142.899	0.039610
A26TX	53035	123386	Propionaldehyde	0.00727	143.096	0.039665
A26TX	53035	100425	Styrene	0.00309	60.821	0.016859
A26TX	53035	108883	Toluene	0.00642	126.366	0.035027
A26TX	1252	7439921	Lead		1.017	0.000282
2023EV		9901	DieselExhPM		0	0
2023PV		9901	DieselExhPM		0	0
2024RR		9901	DieselExhPM		89.8	0.0569375
2025PD		9901	DieselExhPM		0	0
Batch		7440382	Arsenic		0.20822	0.00013
Batch		7440417	Beryllium		0.02133	0.00001
Batch		7440439	Cadmium		0.02671	0.00002
Batch		18540299	Cr(VI)		0.59941	0.00038
Batch		7439921	Lead		0.22960	0.00015
Batch		7439965	Manganese		2.73140	0.00174
Batch		7440020	Nickel		0.80452	0.00051
Batch		7782492	Selenium		0.02029	0.00001

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Emissions Inventory 2025 No Action

Piston Operations

	Total Ops	Piston Ops	% Piston
Piston Ops	117625	2678	2.28%

Departures

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Taxi Out	73.1	58813	2.48584	16.53973	0.0281%
Ground Roll	93.5	58813	3.17957	16.53973	0.0281%
Climb to Mix	188	58813	6.39314	16.53973	0.0281%

Arrivals

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Descend from M	60.9	58813	0.74141	16.13425	0.0274%
Ground Roll	29.2	58813	0.99298	16.13425	0.0274%
Taxi In	28.6	58813	0.97257	16.13425	0.0274%

2025 No Action Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08TX	14797	106990	1,3-Butadiene	0.01687	620.530	0.174509
D08TX	14797	75070	Acetaldehyde	0.04272	1571.372	0.441910
D08TX	14797	107028	Acrolein	0.02449	900.817	0.253333
D08TX	14797	71432	Benzene	0.01681	618.323	0.173888
D08TX	14797	100414	Ethyl benzene	0.00174	64.003	0.017999
D08TX	14797	50000	Formaldehyde	0.1231	4527.993	1.273388
D08TX	14797	67561	Methanol	0.01805	663.934	0.186715
D08TX	14797	108383	m-Xylene	0.00282	103.728	0.029171
D08TX	14797	91203	Naphthalene	0.00541	198.996	0.055963
D08TX	14797	95476	o-Xylene	0.00166	61.060	0.017172
D08TX	14797	108952	Phenol	0.00726	267.045	0.075100
D08TX	14797	123386	Propionaldehyde	0.00727	267.413	0.075203
D08TX	14797	100425	Styrene	0.00309	113.660	0.031964
D08TX	14797	108883	Toluene	0.00642	236.147	0.066411
D08TX	337	7439921	Lead		0.528	0.000149
D26TX	43344	106990	1,3-Butadiene	0.01687	1817.683	0.511179
D26TX	43344	75070	Acetaldehyde	0.04272	4602.929	1.294462
D26TX	43344	107028	Acrolein	0.02449	2638.711	0.742073
D26TX	43344	71432	Benzene	0.01681	1811.218	0.509361
D26TX	43344	100414	Ethyl benzene	0.00174	187.479	0.052724
D26TX	43344	50000	Formaldehyde	0.1231	13263.590	3.730062

D26TX	43344	67561	Methanol	0.01805	1944.824	0.546934
D26TX	43344	108383	m-Xylene	0.00282	303.845	0.085449
D26TX	43344	91203	Naphthalene	0.00541	582.908	0.163929
D26TX	43344	95476	o-Xylene	0.00166	178.859	0.050300
D26TX	43344	108952	Phenol	0.00726	782.239	0.219986
D26TX	43344	123386	Propionaldehyde	0.00727	783.317	0.220289
D26TX	43344	100425	Styrene	0.00309	332.937	0.093630
D26TX	43344	108883	Toluene	0.00642	691.732	0.194533
D26TX	987	7439921	Lead		1.547	0.000435
D08LGR	7256	106990	1,3-Butadiene	0.01687	389.207	0.109455
D08LGR	7256	75070	Acetaldehyde	0.04272	985.591	0.277174
D08LGR	7256	107028	Acrolein	0.02449	565.008	0.158895
D08LGR	7256	71432	Benzene	0.01681	387.823	0.109066
D08LGR	7256	100414	Ethyl benzene	0.00174	40.143	0.011289
D08LGR	7256	50000	Formaldehyde	0.1231	2840.034	0.798691
D08LGR	7256	67561	Methanol	0.01805	416.431	0.117111
D08LGR	7256	108383	m-Xylene	0.00282	65.060	0.018297
D08LGR	7256	91203	Naphthalene	0.00541	124.814	0.035101
D08LGR	7256	95476	o-Xylene	0.00166	38.298	0.010770
D08LGR	7256	108952	Phenol	0.00726	167.495	0.047104
D08LGR	7256	123386	Propionaldehyde	0.00727	167.726	0.047169
D08LGR	7256	100425	Styrene	0.00309	71.289	0.020048
D08LGR	7256	108883	Toluene	0.00642	148.116	0.041654
D08LGR	165	7439921	Lead		0.427	0.000120
D08RGR	7723	106990	1,3-Butadiene	0.01687	414.257	0.116500
D08RGR	7723	75070	Acetaldehyde	0.04272	1049.024	0.295013
D08RGR	7723	107028	Acrolein	0.02449	601.372	0.169121
D08RGR	7723	71432	Benzene	0.01681	412.783	0.116085
D08RGR	7723	100414	Ethyl benzene	0.00174	42.727	0.012016
D08RGR	7723	50000	Formaldehyde	0.1231	3022.821	0.850095
D08RGR	7723	67561	Methanol	0.01805	443.232	0.124648
D08RGR	7723	108383	m-Xylene	0.00282	69.247	0.019474
D08RGR	7723	91203	Naphthalene	0.00541	132.847	0.037360
D08RGR	7723	95476	o-Xylene	0.00166	40.763	0.011464
D08RGR	7723	108952	Phenol	0.00726	178.275	0.050136
D08RGR	7723	123386	Propionaldehyde	0.00727	178.521	0.050205
D08RGR	7723	100425	Styrene	0.00309	75.877	0.021339
D08RGR	7723	108883	Toluene	0.00642	157.648	0.044335
D08RGR	176	7439921	Lead		0.454	0.000128
D26LGR	17191	106990	1,3-Butadiene	0.01687	922.114	0.259322
D26LGR	17191	75070	Acetaldehyde	0.04272	2335.074	0.656683
D26LGR	17191	107028	Acrolein	0.02449	1338.623	0.376455
D26LGR	17191	71432	Benzene	0.01681	918.834	0.258400
D26LGR	17191	100414	Ethyl benzene	0.00174	95.108	0.026747
D26LGR	17191	50000	Formaldehyde	0.1231	6728.643	1.892267
D26LGR	17191	67561	Methanol	0.01805	986.613	0.277461
D26LGR	17191	108383	m-Xylene	0.00282	154.141	0.043348

D26LGR	17191	91203	Naphthalene	0.00541	295.710	0.083161
D26LGR	17191	95476	o-Xylene	0.00166	90.736	0.025517
D26LGR	17191	108952	Phenol	0.00726	396.831	0.111599
D26LGR	17191	123386	Propionaldehyde	0.00727	397.378	0.111753
D26LGR	17191	100425	Styrene	0.00309	168.899	0.047499
D26LGR	17191	108883	Toluene	0.00642	350.917	0.098687
D26LGR	391	7439921	Lead		1.011	0.000284
D26RGR	26153	106990	1,3-Butadiene	0.01687	1402.829	0.394512
D26RGR	26153	75070	Acetaldehyde	0.04272	3552.393	0.999024
D26RGR	26153	107028	Acrolein	0.02449	2036.473	0.572708
D26RGR	26153	71432	Benzene	0.01681	1397.840	0.393109
D26RGR	26153	100414	Ethyl benzene	0.00174	144.690	0.040691
D26RGR	26153	50000	Formaldehyde	0.1231	10236.414	2.878742
D26RGR	26153	67561	Methanol	0.01805	1500.953	0.422106
D26RGR	26153	108383	m-Xylene	0.00282	234.498	0.065947
D26RGR	26153	91203	Naphthalene	0.00541	449.870	0.126515
D26RGR	26153	95476	o-Xylene	0.00166	138.038	0.038820
D26RGR	26153	108952	Phenol	0.00726	603.707	0.169778
D26RGR	26153	123386	Propionaldehyde	0.00727	604.539	0.170012
D26RGR	26153	100425	Styrene	0.00309	256.950	0.072261
D26RGR	26153	108883	Toluene	0.00642	533.857	0.150134
D26RGR	595	7439921	Lead		1.538	0.000433
D08LRC	7165	106990	1,3-Butadiene	0.01687	772.762	0.217321
D08LRC	7165	75070	Acetaldehyde	0.04272	1956.870	0.550322
D08LRC	7165	107028	Acrolein	0.02449	1121.810	0.315482
D08LRC	7165	71432	Benzene	0.01681	770.014	0.216548
D08LRC	7165	100414	Ethyl benzene	0.00174	79.704	0.022415
D08LRC	7165	50000	Formaldehyde	0.1231	5638.827	1.585783
D08LRC	7165	67561	Methanol	0.01805	826.814	0.232521
D08LRC	7165	108383	m-Xylene	0.00282	129.175	0.036327
D08LRC	7165	91203	Naphthalene	0.00541	247.815	0.069692
D08LRC	7165	95476	o-Xylene	0.00166	76.039	0.021384
D08LRC	7165	108952	Phenol	0.00726	332.558	0.093524
D08LRC	7165	123386	Propionaldehyde	0.00727	333.016	0.093653
D08LRC	7165	100425	Styrene	0.00309	141.543	0.039806
D08LRC	7165	108883	Toluene	0.00642	294.080	0.082703
D08LRC	163	7439921	Lead		1.135	0.000319
D08LSO	91	106990	1,3-Butadiene	0.01687	9.815	0.002760
D08LSO	91	75070	Acetaldehyde	0.04272	24.853	0.006989
D08LSO	91	107028	Acrolein	0.02449	14.248	0.004007
D08LSO	91	71432	Benzene	0.01681	9.780	0.002750
D08LSO	91	100414	Ethyl benzene	0.00174	1.012	0.000285
D08LSO	91	50000	Formaldehyde	0.1231	71.617	0.020140
D08LSO	91	67561	Methanol	0.01805	10.501	0.002953
D08LSO	91	108383	m-Xylene	0.00282	1.641	0.000461
D08LSO	91	91203	Naphthalene	0.00541	3.147	0.000885
D08LSO	91	95476	o-Xylene	0.00166	0.966	0.000272

D08LSO	91	108952	Phenol	0.00726	4.224	0.001188
D08LSO	91	123386	Propionaldehyde	0.00727	4.230	0.001189
D08LSO	91	100425	Styrene	0.00309	1.798	0.000506
D08LSO	91	108883	Toluene	0.00642	3.735	0.001050
D08LSO	2	7439921	Lead		0.014	0.000004
D08RRC	7723	106990	1,3-Butadiene	0.01687	832.944	0.234245
D08RRC	7723	75070	Acetaldehyde	0.04272	2109.268	0.593180
D08RRC	7723	107028	Acrolein	0.02449	1209.175	0.340051
D08RRC	7723	71432	Benzene	0.01681	829.981	0.233412
D08RRC	7723	100414	Ethyl benzene	0.00174	85.911	0.024160
D08RRC	7723	50000	Formaldehyde	0.1231	6077.971	1.709281
D08RRC	7723	67561	Methanol	0.01805	891.205	0.250630
D08RRC	7723	108383	m-Xylene	0.00282	139.235	0.039157
D08RRC	7723	91203	Naphthalene	0.00541	267.115	0.075120
D08RRC	7723	95476	o-Xylene	0.00166	81.961	0.023050
D08RRC	7723	108952	Phenol	0.00726	358.457	0.100807
D08RRC	7723	123386	Propionaldehyde	0.00727	358.951	0.100946
D08RRC	7723	100425	Styrene	0.00309	152.566	0.042906
D08RRC	7723	108883	Toluene	0.00642	316.983	0.089144
D08RRC	176	7439921	Lead		1.223	0.000344
D26LLC	6561	106990	1,3-Butadiene	0.01687	707.619	0.199001
D26LLC	6561	75070	Acetaldehyde	0.04272	1791.908	0.503931
D26LLC	6561	107028	Acrolein	0.02449	1027.243	0.288887
D26LLC	6561	71432	Benzene	0.01681	705.103	0.198293
D26LLC	6561	100414	Ethyl benzene	0.00174	72.985	0.020525
D26LLC	6561	50000	Formaldehyde	0.1231	5163.481	1.452104
D26LLC	6561	67561	Methanol	0.01805	757.115	0.212920
D26LLC	6561	108383	m-Xylene	0.00282	118.286	0.033265
D26LLC	6561	91203	Naphthalene	0.00541	226.925	0.063817
D26LLC	6561	95476	o-Xylene	0.00166	69.629	0.019582
D26LLC	6561	108952	Phenol	0.00726	304.524	0.085640
D26LLC	6561	123386	Propionaldehyde	0.00727	304.943	0.085758
D26LLC	6561	100425	Styrene	0.00309	129.611	0.036450
D26LLC	6561	108883	Toluene	0.00642	269.290	0.075731
D26LLC	149	7439921	Lead		1.039	0.000292
D26LRT	604	106990	1,3-Butadiene	0.01687	65.143	0.018320
D26LRT	604	75070	Acetaldehyde	0.04272	164.962	0.046391
D26LRT	604	107028	Acrolein	0.02449	94.567	0.026595
D26LRT	604	71432	Benzene	0.01681	64.911	0.018255
D26LRT	604	100414	Ethyl benzene	0.00174	6.719	0.001890
D26LRT	604	50000	Formaldehyde	0.1231	475.346	0.133679
D26LRT	604	67561	Methanol	0.01805	69.699	0.019601
D26LRT	604	108383	m-Xylene	0.00282	10.889	0.003062
D26LRT	604	91203	Naphthalene	0.00541	20.890	0.005875
D26LRT	604	95476	o-Xylene	0.00166	6.410	0.001803
D26LRT	604	108952	Phenol	0.00726	28.034	0.007884
D26LRT	604	123386	Propionaldehyde	0.00727	28.073	0.007895

D26LRT	604	100425	Styrene	0.00309	11.932	0.003356
D26LRT	604	108883	Toluene	0.00642	24.791	0.006972
D26LRT	14	7439921	Lead		0.096	0.000027
D26LSO	9936	106990	1,3-Butadiene	0.01687	1071.621	0.301367
D26LSO	9936	75070	Acetaldehyde	0.04272	2713.672	0.763154
D26LSO	9936	107028	Acrolein	0.02449	1555.661	0.437492
D26LSO	9936	71432	Benzene	0.01681	1067.810	0.300295
D26LSO	9936	100414	Ethyl benzene	0.00174	110.529	0.031084
D26LSO	9936	50000	Formaldehyde	0.1231	7819.593	2.199070
D26LSO	9936	67561	Methanol	0.01805	1146.577	0.322447
D26LSO	9936	108383	m-Xylene	0.00282	179.133	0.050377
D26LSO	9936	91203	Naphthalene	0.00541	343.656	0.096645
D26LSO	9936	95476	o-Xylene	0.00166	105.447	0.029654
D26LSO	9936	108952	Phenol	0.00726	461.172	0.129693
D26LSO	9936	123386	Propionaldehyde	0.00727	461.807	0.129872
D26LSO	9936	100425	Styrene	0.00309	196.284	0.055200
D26LSO	9936	108883	Toluene	0.00642	407.813	0.114688
D26LSO	226	7439921	Lead		1.574	0.000443
D26RLC	10288	106990	1,3-Butadiene	0.01687	1109.585	0.312044
D26RLC	10288	75070	Acetaldehyde	0.04272	2809.808	0.790190
D26RLC	10288	107028	Acrolein	0.02449	1610.773	0.452991
D26RLC	10288	71432	Benzene	0.01681	1105.639	0.310934
D26RLC	10288	100414	Ethyl benzene	0.00174	114.444	0.032185
D26RLC	10288	50000	Formaldehyde	0.1231	8096.616	2.276976
D26RLC	10288	67561	Methanol	0.01805	1187.197	0.333870
D26RLC	10288	108383	m-Xylene	0.00282	185.479	0.052161
D26RLC	10288	91203	Naphthalene	0.00541	355.830	0.100069
D26RLC	10288	95476	o-Xylene	0.00166	109.183	0.030705
D26RLC	10288	108952	Phenol	0.00726	477.510	0.134288
D26RLC	10288	123386	Propionaldehyde	0.00727	478.167	0.134473
D26RLC	10288	100425	Styrene	0.00309	203.238	0.057156
D26RLC	10288	108883	Toluene	0.00642	422.261	0.118751
D26RLC	234	7439921	Lead		1.629	0.000458
D26RRT	529	106990	1,3-Butadiene	0.01687	57.054	0.016045
D26RRT	529	75070	Acetaldehyde	0.04272	144.478	0.040631
D26RRT	529	107028	Acrolein	0.02449	82.825	0.023292
D26RRT	529	71432	Benzene	0.01681	56.851	0.015988
D26RRT	529	100414	Ethyl benzene	0.00174	5.885	0.001655
D26RRT	529	50000	Formaldehyde	0.1231	416.321	0.117080
D26RRT	529	67561	Methanol	0.01805	61.045	0.017167
D26RRT	529	108383	m-Xylene	0.00282	9.537	0.002682
D26RRT	529	91203	Naphthalene	0.00541	18.296	0.005145
D26RRT	529	95476	o-Xylene	0.00166	5.614	0.001579
D26RRT	529	108952	Phenol	0.00726	24.553	0.006905
D26RRT	529	123386	Propionaldehyde	0.00727	24.587	0.006914
D26RRT	529	100425	Styrene	0.00309	10.450	0.002939
D26RRT	529	108883	Toluene	0.00642	21.712	0.006106

D26RRT	12	7439921	Lead		0.084	0.000024
D26RSO	15337	106990	1,3-Butadiene	0.01687	1654.131	0.465184
D26RSO	15337	75070	Acetaldehyde	0.04272	4188.767	1.177989
D26RSO	15337	107028	Acrolein	0.02449	2401.285	0.675303
D26RSO	15337	71432	Benzene	0.01681	1648.248	0.463530
D26RSO	15337	100414	Ethyl benzene	0.00174	170.610	0.047980
D26RSO	15337	50000	Formaldehyde	0.1231	12070.159	3.394439
D26RSO	15337	67561	Methanol	0.01805	1769.832	0.497722
D26RSO	15337	108383	m-Xylene	0.00282	276.506	0.077760
D26RSO	15337	91203	Naphthalene	0.00541	530.459	0.149179
D26RSO	15337	95476	o-Xylene	0.00166	162.766	0.045774
D26RSO	15337	108952	Phenol	0.00726	711.855	0.200192
D26RSO	15337	123386	Propionaldehyde	0.00727	712.836	0.200468
D26RSO	15337	100425	Styrene	0.00309	302.980	0.085206
D26RSO	15337	108883	Toluene	0.00642	629.492	0.177029
D26RSO	349	7439921	Lead		2.429	0.000683
A08LSI	2904	106990	1,3-Butadiene	0.01687	13.000	0.003566
A08LSI	2904	75070	Acetaldehyde	0.04272	32.920	0.009031
A08LSI	2904	107028	Acrolein	0.02449	18.872	0.005177
A08LSI	2904	71432	Benzene	0.01681	12.954	0.003554
A08LSI	2904	100414	Ethyl benzene	0.00174	1.341	0.000368
A08LSI	2904	50000	Formaldehyde	0.1231	94.860	0.026023
A08LSI	2904	67561	Methanol	0.01805	13.909	0.003816
A08LSI	2904	108383	m-Xylene	0.00282	2.173	0.000596
A08LSI	2904	91203	Naphthalene	0.00541	4.169	0.001144
A08LSI	2904	95476	o-Xylene	0.00166	1.279	0.000351
A08LSI	2904	108952	Phenol	0.00726	5.595	0.001535
A08LSI	2904	123386	Propionaldehyde	0.00727	5.602	0.001537
A08LSI	2904	100425	Styrene	0.00309	2.381	0.000653
A08LSI	2904	108883	Toluene	0.00642	4.947	0.001357
A08LSI	66	7439921	Lead		0.078	0.000021
A08RSI	972	106990	1,3-Butadiene	0.01687	4.351	0.001194
A08RSI	972	75070	Acetaldehyde	0.04272	11.019	0.003023
A08RSI	972	107028	Acrolein	0.02449	6.317	0.001733
A08RSI	972	71432	Benzene	0.01681	4.336	0.001189
A08RSI	972	100414	Ethyl benzene	0.00174	0.449	0.000123
A08RSI	972	50000	Formaldehyde	0.1231	31.751	0.008710
A08RSI	972	67561	Methanol	0.01805	4.656	0.001277
A08RSI	972	108383	m-Xylene	0.00282	0.727	0.000200
A08RSI	972	91203	Naphthalene	0.00541	1.395	0.000383
A08RSI	972	95476	o-Xylene	0.00166	0.428	0.000117
A08RSI	972	108952	Phenol	0.00726	1.873	0.000514
A08RSI	972	123386	Propionaldehyde	0.00727	1.875	0.000514
A08RSI	972	100425	Styrene	0.00309	0.797	0.000219
A08RSI	972	108883	Toluene	0.00642	1.656	0.000454
A08RSI	22	7439921	Lead		0.026	0.000007
A26LSI	26248	106990	1,3-Butadiene	0.01687	117.501	0.032234

A26LSI	26248	75070	Acetaldehyde	0.04272	297.549	0.081627
A26LSI	26248	107028	Acrolein	0.02449	170.575	0.046794
A26LSI	26248	71432	Benzene	0.01681	117.083	0.032120
A26LSI	26248	100414	Ethyl benzene	0.00174	12.119	0.003325
A26LSI	26248	50000	Formaldehyde	0.1231	857.403	0.235212
A26LSI	26248	67561	Methanol	0.01805	125.720	0.034489
A26LSI	26248	108383	m-Xylene	0.00282	19.642	0.005388
A26LSI	26248	91203	Naphthalene	0.00541	37.681	0.010337
A26LSI	26248	95476	o-Xylene	0.00166	11.562	0.003172
A26LSI	26248	108952	Phenol	0.00726	50.567	0.013872
A26LSI	26248	123386	Propionaldehyde	0.00727	50.636	0.013891
A26LSI	26248	100425	Styrene	0.00309	21.522	0.005904
A26LSI	26248	108883	Toluene	0.00642	44.716	0.012267
A26LSI	598	7439921	Lead		0.705	0.000193
A26RSI	28198	106990	1,3-Butadiene	0.01687	126.230	0.034629
A26RSI	28198	75070	Acetaldehyde	0.04272	319.654	0.087691
A26RSI	28198	107028	Acrolein	0.02449	183.247	0.050270
A26RSI	28198	71432	Benzene	0.01681	125.781	0.034506
A26RSI	28198	100414	Ethyl benzene	0.00174	13.020	0.003572
A26RSI	28198	50000	Formaldehyde	0.1231	921.100	0.252687
A26RSI	28198	67561	Methanol	0.01805	135.060	0.037051
A26RSI	28198	108383	m-Xylene	0.00282	21.101	0.005789
A26RSI	28198	91203	Naphthalene	0.00541	40.481	0.011105
A26RSI	28198	95476	o-Xylene	0.00166	12.421	0.003407
A26RSI	28198	108952	Phenol	0.00726	54.323	0.014903
A26RSI	28198	123386	Propionaldehyde	0.00727	54.398	0.014923
A26RSI	28198	100425	Styrene	0.00309	23.121	0.006343
A26RSI	28198	108883	Toluene	0.00642	48.038	0.013178
A26RSI	642	7439921	Lead		0.757	0.000208
A08LGR	2904	106990	1,3-Butadiene	0.01687	17.411	0.004776
A08LGR	2904	75070	Acetaldehyde	0.04272	44.090	0.012095
A08LGR	2904	107028	Acrolein	0.02449	25.275	0.006934
A08LGR	2904	71432	Benzene	0.01681	17.349	0.004759
A08LGR	2904	100414	Ethyl benzene	0.00174	1.796	0.000493
A08LGR	2904	50000	Formaldehyde	0.1231	127.048	0.034853
A08LGR	2904	67561	Methanol	0.01805	18.629	0.005110
A08LGR	2904	108383	m-Xylene	0.00282	2.910	0.000798
A08LGR	2904	91203	Naphthalene	0.00541	5.584	0.001532
A08LGR	2904	95476	o-Xylene	0.00166	1.713	0.000470
A08LGR	2904	108952	Phenol	0.00726	7.493	0.002056
A08LGR	2904	123386	Propionaldehyde	0.00727	7.503	0.002058
A08LGR	2904	100425	Styrene	0.00309	3.189	0.000875
A08LGR	2904	108883	Toluene	0.00642	6.626	0.001818
A08LGR	66	7439921	Lead		0.064	0.000018
A08RGR	972	106990	1,3-Butadiene	0.01687	5.828	0.001599
A08RGR	972	75070	Acetaldehyde	0.04272	14.757	0.004048
A08RGR	972	107028	Acrolein	0.02449	8.460	0.002321

A08RGR	972	71432	Benzene	0.01681	5.807	0.001593
A08RGR	972	100414	Ethyl benzene	0.00174	0.601	0.000165
A08RGR	972	50000	Formaldehyde	0.1231	42.524	0.011666
A08RGR	972	67561	Methanol	0.01805	6.235	0.001711
A08RGR	972	108383	m-Xylene	0.00282	0.974	0.000267
A08RGR	972	91203	Naphthalene	0.00541	1.869	0.000513
A08RGR	972	95476	o-Xylene	0.00166	0.573	0.000157
A08RGR	972	108952	Phenol	0.00726	2.508	0.000688
A08RGR	972	123386	Propionaldehyde	0.00727	2.511	0.000689
A08RGR	972	100425	Styrene	0.00309	1.067	0.000293
A08RGR	972	108883	Toluene	0.00642	2.218	0.000608
A08RGR	22	7439921	Lead		0.021	0.000006
A26LGR	26248	106990	1,3-Butadiene	0.01687	157.371	0.043172
A26LGR	26248	75070	Acetaldehyde	0.04272	398.511	0.109324
A26LGR	26248	107028	Acrolein	0.02449	228.454	0.062672
A26LGR	26248	71432	Benzene	0.01681	156.811	0.043018
A26LGR	26248	100414	Ethyl benzene	0.00174	16.231	0.004453
A26LGR	26248	50000	Formaldehyde	0.1231	1148.332	0.315023
A26LGR	26248	67561	Methanol	0.01805	168.378	0.046191
A26LGR	26248	108383	m-Xylene	0.00282	26.306	0.007217
A26LGR	26248	91203	Naphthalene	0.00541	50.467	0.013845
A26LGR	26248	95476	o-Xylene	0.00166	15.485	0.004248
A26LGR	26248	108952	Phenol	0.00726	67.725	0.018579
A26LGR	26248	123386	Propionaldehyde	0.00727	67.818	0.018605
A26LGR	26248	100425	Styrene	0.00309	28.825	0.007908
A26LGR	26248	108883	Toluene	0.00642	59.889	0.016429
A26LGR	598	7439921	Lead		0.578	0.000159
A26RGR	28198	106990	1,3-Butadiene	0.01687	169.062	0.046379
A26RGR	28198	75070	Acetaldehyde	0.04272	428.117	0.117446
A26RGR	28198	107028	Acrolein	0.02449	245.426	0.067328
A26RGR	28198	71432	Benzene	0.01681	168.461	0.046214
A26RGR	28198	100414	Ethyl benzene	0.00174	17.437	0.004784
A26RGR	28198	50000	Formaldehyde	0.1231	1233.643	0.338427
A26RGR	28198	67561	Methanol	0.01805	180.888	0.049623
A26RGR	28198	108383	m-Xylene	0.00282	28.261	0.007753
A26RGR	28198	91203	Naphthalene	0.00541	54.216	0.014873
A26RGR	28198	95476	o-Xylene	0.00166	16.636	0.004564
A26RGR	28198	108952	Phenol	0.00726	72.756	0.019959
A26RGR	28198	123386	Propionaldehyde	0.00727	72.856	0.019987
A26RGR	28198	100425	Styrene	0.00309	30.966	0.008495
A26RGR	28198	108883	Toluene	0.00642	64.338	0.017650
A26RGR	642	7439921	Lead		0.621	0.000170
A08TX	3876	106990	1,3-Butadiene	0.01687	22.761	0.006244
A08TX	3876	75070	Acetaldehyde	0.04272	58.848	0.016144
A08TX	3876	107028	Acrolein	0.02449	33.735	0.009255
A08TX	3876	71432	Benzene	0.01681	23.156	0.006352
A08TX	3876	100414	Ethyl benzene	0.00174	2.397	0.000658

A08TX	3876	50000	Formaldehyde	0.1231	169.572	0.046519
A08TX	3876	67561	Methanol	0.01805	24.864	0.006821
A08TX	3876	108383	m-Xylene	0.00282	3.885	0.001066
A08TX	3876	91203	Naphthalene	0.00541	7.452	0.002044
A08TX	3876	95476	o-Xylene	0.00166	2.287	0.000627
A08TX	3876	108952	Phenol	0.00726	10.001	0.002744
A08TX	3876	123386	Propionaldehyde	0.00727	10.015	0.002747
A08TX	3876	100425	Styrene	0.00309	4.257	0.001168
A08TX	3876	108883	Toluene	0.00642	8.844	0.002426
A08TX	88	7439921	Lead		0.072	0.000020
A26TX	54476	106990	1,3-Butadiene	0.01687	319.902	0.087759
A26TX	54476	75070	Acetaldehyde	0.04272	827.084	0.226895
A26TX	54476	107028	Acrolein	0.02449	474.141	0.130072
A26TX	54476	71432	Benzene	0.01681	325.451	0.089281
A26TX	54476	100414	Ethyl benzene	0.00174	33.687	0.009242
A26TX	54476	50000	Formaldehyde	0.1231	2383.287	0.653810
A26TX	54476	67561	Methanol	0.01805	349.458	0.095867
A26TX	54476	108383	m-Xylene	0.00282	54.597	0.014978
A26TX	54476	91203	Naphthalene	0.00541	104.741	0.028734
A26TX	54476	95476	o-Xylene	0.00166	32.139	0.008817
A26TX	54476	108952	Phenol	0.00726	140.558	0.038559
A26TX	54476	123386	Propionaldehyde	0.00727	140.751	0.038613
A26TX	54476	100425	Styrene	0.00309	59.824	0.016412
A26TX	54476	108883	Toluene	0.00642	124.295	0.034098
A26TX	1240	7439921	Lead		1.008	0.000276
2023EV		9901	DieselExhPM		0	0
2023PV		9901	DieselExhPM		0	0
2024RR		9901	DieselExhPM		0	0
2025PD		9901	DieselExhPM		0	0
Batch		7440382	Arsenic		0	0
Batch		7440417	Beryllium		0	0
Batch		7440439	Cadmium		0	0
Batch		18540299	Cr(VI)		0	0
Batch		7439921	Lead		0	0
Batch		7439965	Manganese		0	0
Batch		7440020	Nickel		0	0
Batch		7782492	Selenium		0	0

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Emissions Inventory 2025 Project

Piston Operations

	Total Ops	Piston Ops	% Piston
Piston Ops	117626	2678	2.28%

Departures

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Taxi Out	73.1	58813	2.48584	16.53973	0.0281%
Ground Roll	93.5	58813	3.17957	16.53973	0.0281%
Climb to Mix	188	58813	6.39314	16.53973	0.0281%

Arrivals

	TOG (ST)	Ops	TOG (lb./op)	Peak hr. Ops	Pk hr. %
Descend from M	60.9	58813	0.74141	16.13425	0.0274%
Ground Roll	29.2	58813	0.99298	16.13425	0.0274%
Taxi In	28.6	58813	0.97257	16.13425	0.0274%

2025 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08TX	9736	106990	1,3-Butadiene	0.01687	408.291	0.114822
D08TX	9736	75070	Acetaldehyde	0.04272	1033.917	0.290764
D08TX	9736	107028	Acrolein	0.02449	592.712	0.166686
D08TX	9736	71432	Benzene	0.01681	406.839	0.114414
D08TX	9736	100414	Ethyl benzene	0.00174	42.112	0.011843
D08TX	9736	50000	Formaldehyde	0.1231	2979.289	0.837853
D08TX	9736	67561	Methanol	0.01805	436.849	0.122853
D08TX	9736	108383	m-Xylene	0.00282	68.250	0.019194
D08TX	9736	91203	Naphthalene	0.00541	130.934	0.036822
D08TX	9736	95476	o-Xylene	0.00166	40.176	0.011298
D08TX	9736	108952	Phenol	0.00726	175.708	0.049414
D08TX	9736	123386	Propionaldehyde	0.00727	175.950	0.049482
D08TX	9736	100425	Styrene	0.00309	74.785	0.021031
D08TX	9736	108883	Toluene	0.00642	155.378	0.043696
D08TX	222	7439921	Lead		0.348	0.000098
D26TX	48587	106990	1,3-Butadiene	0.01687	2037.554	0.573013
D26TX	48587	75070	Acetaldehyde	0.04272	5159.711	1.451043
D26TX	48587	107028	Acrolein	0.02449	2957.896	0.831836
D26TX	48587	71432	Benzene	0.01681	2030.308	0.570975
D26TX	48587	100414	Ethyl benzene	0.00174	210.157	0.059101
D26TX	48587	50000	Formaldehyde	0.1231	14867.987	4.181260

2025 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26TX	48587	67561	Methanol	0.01805	2180.074	0.613093
D26TX	48587	108383	m-Xylene	0.00282	340.599	0.095785
D26TX	48587	91203	Naphthalene	0.00541	653.418	0.183758
D26TX	48587	95476	o-Xylene	0.00166	200.494	0.056384
D26TX	48587	108952	Phenol	0.00726	876.861	0.246596
D26TX	48587	123386	Propionaldehyde	0.00727	878.069	0.246935
D26TX	48587	100425	Styrene	0.00309	373.209	0.104956
D26TX	48587	108883	Toluene	0.00642	775.406	0.218064
D26TX	1106	7439921	Lead		1.734	0.000488
D08LGR	4232	106990	1,3-Butadiene	0.01687	227.002	0.063839
D08LGR	4232	75070	Acetaldehyde	0.04272	574.838	0.161659
D08LGR	4232	107028	Acrolein	0.02449	329.536	0.092674
D08LGR	4232	71432	Benzene	0.01681	226.194	0.063612
D08LGR	4232	100414	Ethyl benzene	0.00174	23.413	0.006584
D08LGR	4232	50000	Formaldehyde	0.1231	1656.426	0.465829
D08LGR	4232	67561	Methanol	0.01805	242.880	0.068304
D08LGR	4232	108383	m-Xylene	0.00282	37.946	0.010671
D08LGR	4232	91203	Naphthalene	0.00541	72.797	0.020472
D08LGR	4232	95476	o-Xylene	0.00166	22.337	0.006282
D08LGR	4232	108952	Phenol	0.00726	97.690	0.027473
D08LGR	4232	123386	Propionaldehyde	0.00727	97.825	0.027511
D08LGR	4232	100425	Styrene	0.00309	41.579	0.011693
D08LGR	4232	108883	Toluene	0.00642	86.387	0.024294
D08LGR	96	7439921	Lead		0.249	0.000070
D08RGR	5504	106990	1,3-Butadiene	0.01687	295.231	0.083027
D08RGR	5504	75070	Acetaldehyde	0.04272	747.615	0.210249
D08RGR	5504	107028	Acrolein	0.02449	428.584	0.120529
D08RGR	5504	71432	Benzene	0.01681	294.181	0.082731
D08RGR	5504	100414	Ethyl benzene	0.00174	30.451	0.008563
D08RGR	5504	50000	Formaldehyde	0.1231	2154.293	0.605842
D08RGR	5504	67561	Methanol	0.01805	315.881	0.088834
D08RGR	5504	108383	m-Xylene	0.00282	49.351	0.013879
D08RGR	5504	91203	Naphthalene	0.00541	94.677	0.026626
D08RGR	5504	95476	o-Xylene	0.00166	29.051	0.008170
D08RGR	5504	108952	Phenol	0.00726	127.053	0.035730
D08RGR	5504	123386	Propionaldehyde	0.00727	127.228	0.035780
D08RGR	5504	100425	Styrene	0.00309	54.076	0.015208
D08RGR	5504	108883	Toluene	0.00642	112.352	0.031596
D08RGR	125	7439921	Lead		0.324	0.000091
D26LGR	33331	106990	1,3-Butadiene	0.01687	1787.853	0.502790
D26LGR	33331	75070	Acetaldehyde	0.04272	4527.390	1.273218
D26LGR	33331	107028	Acrolein	0.02449	2595.407	0.729895
D26LGR	33331	71432	Benzene	0.01681	1781.494	0.501002

2025 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26LGR	33331	100414	Ethyl benzene	0.00174	184.402	0.051859
D26LGR	33331	50000	Formaldehyde	0.1231	13045.919	3.668847
D26LGR	33331	67561	Methanol	0.01805	1912.907	0.537959
D26LGR	33331	108383	m-Xylene	0.00282	298.859	0.084047
D26LGR	33331	91203	Naphthalene	0.00541	573.342	0.161239
D26LGR	33331	95476	o-Xylene	0.00166	175.924	0.049474
D26LGR	33331	108952	Phenol	0.00726	769.402	0.216376
D26LGR	33331	123386	Propionaldehyde	0.00727	770.462	0.216674
D26LGR	33331	100425	Styrene	0.00309	327.473	0.092094
D26LGR	33331	108883	Toluene	0.00642	680.380	0.191340
D26LGR	759	7439921	Lead		1.961	0.000551
D26RGR	15256	106990	1,3-Butadiene	0.01687	818.322	0.230133
D26RGR	15256	75070	Acetaldehyde	0.04272	2072.241	0.582767
D26RGR	15256	107028	Acrolein	0.02449	1187.949	0.334082
D26RGR	15256	71432	Benzene	0.01681	815.411	0.229315
D26RGR	15256	100414	Ethyl benzene	0.00174	84.403	0.023736
D26RGR	15256	50000	Formaldehyde	0.1231	5971.274	1.679276
D26RGR	15256	67561	Methanol	0.01805	875.560	0.246230
D26RGR	15256	108383	m-Xylene	0.00282	136.791	0.038469
D26RGR	15256	91203	Naphthalene	0.00541	262.426	0.073801
D26RGR	15256	95476	o-Xylene	0.00166	80.522	0.022645
D26RGR	15256	108952	Phenol	0.00726	352.164	0.099038
D26RGR	15256	123386	Propionaldehyde	0.00727	352.650	0.099174
D26RGR	15256	100425	Styrene	0.00309	149.888	0.042152
D26RGR	15256	108883	Toluene	0.00642	311.418	0.087579
D26RGR	347	7439921	Lead		0.897	0.000252
D08LRC	4179	106990	1,3-Butadiene	0.01687	450.715	0.126753
D08LRC	4179	75070	Acetaldehyde	0.04272	1141.348	0.320976
D08LRC	4179	107028	Acrolein	0.02449	654.298	0.184005
D08LRC	4179	71432	Benzene	0.01681	449.112	0.126302
D08LRC	4179	100414	Ethyl benzene	0.00174	46.487	0.013073
D08LRC	4179	50000	Formaldehyde	0.1231	3288.857	0.924911
D08LRC	4179	67561	Methanol	0.01805	482.241	0.135619
D08LRC	4179	108383	m-Xylene	0.00282	75.342	0.021188
D08LRC	4179	91203	Naphthalene	0.00541	144.539	0.040648
D08LRC	4179	95476	o-Xylene	0.00166	44.350	0.012472
D08LRC	4179	108952	Phenol	0.00726	193.965	0.054548
D08LRC	4179	123386	Propionaldehyde	0.00727	194.232	0.054623
D08LRC	4179	100425	Styrene	0.00309	82.555	0.023217
D08LRC	4179	108883	Toluene	0.00642	171.523	0.048237
D08LRC	95	7439921	Lead		0.662	0.000186
D08LSO	53	106990	1,3-Butadiene	0.01687	5.716	0.001608
D08LSO	53	75070	Acetaldehyde	0.04272	14.475	0.004071

2025 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D08LSO	53	107028	Acrolein	0.02449	8.298	0.002334
D08LSO	53	71432	Benzene	0.01681	5.696	0.001602
D08LSO	53	100414	Ethyl benzene	0.00174	0.590	0.000166
D08LSO	53	50000	Formaldehyde	0.1231	41.711	0.011730
D08LSO	53	67561	Methanol	0.01805	6.116	0.001720
D08LSO	53	108383	m-Xylene	0.00282	0.956	0.000269
D08LSO	53	91203	Naphthalene	0.00541	1.833	0.000516
D08LSO	53	95476	o-Xylene	0.00166	0.562	0.000158
D08LSO	53	108952	Phenol	0.00726	2.460	0.000692
D08LSO	53	123386	Propionaldehyde	0.00727	2.463	0.000693
D08LSO	53	100425	Styrene	0.00309	1.047	0.000294
D08LSO	53	108883	Toluene	0.00642	2.175	0.000612
D08LSO	1	7439921	Lead		0.008	0.000002
D08RRC	5504	106990	1,3-Butadiene	0.01687	593.619	0.166941
D08RRC	5504	75070	Acetaldehyde	0.04272	1503.226	0.422746
D08RRC	5504	107028	Acrolein	0.02449	861.751	0.242346
D08RRC	5504	71432	Benzene	0.01681	591.508	0.166347
D08RRC	5504	100414	Ethyl benzene	0.00174	61.227	0.017219
D08RRC	5504	50000	Formaldehyde	0.1231	4331.626	1.218165
D08RRC	5504	67561	Methanol	0.01805	635.141	0.178618
D08RRC	5504	108383	m-Xylene	0.00282	99.230	0.027906
D08RRC	5504	91203	Naphthalene	0.00541	190.366	0.053536
D08RRC	5504	95476	o-Xylene	0.00166	58.412	0.016427
D08RRC	5504	108952	Phenol	0.00726	255.464	0.071843
D08RRC	5504	123386	Propionaldehyde	0.00727	255.816	0.071942
D08RRC	5504	100425	Styrene	0.00309	108.731	0.030578
D08RRC	5504	108883	Toluene	0.00642	225.906	0.063531
D08RRC	125	7439921	Lead		0.872	0.000245
D26LLC	14649	106990	1,3-Butadiene	0.01687	1579.929	0.444317
D26LLC	14649	75070	Acetaldehyde	0.04272	4000.864	1.125146
D26LLC	14649	107028	Acrolein	0.02449	2293.566	0.645010
D26LLC	14649	71432	Benzene	0.01681	1574.310	0.442736
D26LLC	14649	100414	Ethyl benzene	0.00174	162.957	0.045828
D26LLC	14649	50000	Formaldehyde	0.1231	11528.705	3.242168
D26LLC	14649	67561	Methanol	0.01805	1690.440	0.475395
D26LLC	14649	108383	m-Xylene	0.00282	264.102	0.074272
D26LLC	14649	91203	Naphthalene	0.00541	506.664	0.142487
D26LLC	14649	95476	o-Xylene	0.00166	155.464	0.043721
D26LLC	14649	108952	Phenol	0.00726	679.922	0.191212
D26LLC	14649	123386	Propionaldehyde	0.00727	680.859	0.191475
D26LLC	14649	100425	Styrene	0.00309	289.388	0.081383
D26LLC	14649	108883	Toluene	0.00642	601.253	0.169088
D26LLC	334	7439921	Lead		2.320	0.000652

2025 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26LRT	717	106990	1,3-Butadiene	0.01687	77.330	0.021747
D26LRT	717	75070	Acetaldehyde	0.04272	195.824	0.055071
D26LRT	717	107028	Acrolein	0.02449	112.259	0.031570
D26LRT	717	71432	Benzene	0.01681	77.055	0.021670
D26LRT	717	100414	Ethyl benzene	0.00174	7.976	0.002243
D26LRT	717	50000	Formaldehyde	0.1231	564.276	0.158689
D26LRT	717	67561	Methanol	0.01805	82.739	0.023268
D26LRT	717	108383	m-Xylene	0.00282	12.927	0.003635
D26LRT	717	91203	Naphthalene	0.00541	24.799	0.006974
D26LRT	717	95476	o-Xylene	0.00166	7.609	0.002140
D26LRT	717	108952	Phenol	0.00726	33.279	0.009359
D26LRT	717	123386	Propionaldehyde	0.00727	33.325	0.009372
D26LRT	717	100425	Styrene	0.00309	14.164	0.003983
D26LRT	717	108883	Toluene	0.00642	29.429	0.008276
D26LRT	16	7439921	Lead		0.114	0.000032
D26LSO	17965	106990	1,3-Butadiene	0.01687	1937.567	0.544894
D26LSO	17965	75070	Acetaldehyde	0.04272	4906.513	1.379838
D26LSO	17965	107028	Acrolein	0.02449	2812.746	0.791016
D26LSO	17965	71432	Benzene	0.01681	1930.676	0.542956
D26LSO	17965	100414	Ethyl benzene	0.00174	199.844	0.056201
D26LSO	17965	50000	Formaldehyde	0.1231	14138.384	3.976077
D26LSO	17965	67561	Methanol	0.01805	2073.094	0.583007
D26LSO	17965	108383	m-Xylene	0.00282	323.885	0.091085
D26LSO	17965	91203	Naphthalene	0.00541	621.354	0.174741
D26LSO	17965	95476	o-Xylene	0.00166	190.656	0.053617
D26LSO	17965	108952	Phenol	0.00726	833.832	0.234495
D26LSO	17965	123386	Propionaldehyde	0.00727	834.980	0.234818
D26LSO	17965	100425	Styrene	0.00309	354.895	0.099806
D26LSO	17965	108883	Toluene	0.00642	737.355	0.207363
D26LSO	409	7439921	Lead		2.845	0.000800
D26RLC	6001	106990	1,3-Butadiene	0.01687	647.222	0.182015
D26RLC	6001	75070	Acetaldehyde	0.04272	1638.964	0.460919
D26RLC	6001	107028	Acrolein	0.02449	939.565	0.264230
D26RLC	6001	71432	Benzene	0.01681	644.920	0.181368
D26RLC	6001	100414	Ethyl benzene	0.00174	66.756	0.018773
D26RLC	6001	50000	Formaldehyde	0.1231	4722.763	1.328162
D26RLC	6001	67561	Methanol	0.01805	692.493	0.194747
D26RLC	6001	108383	m-Xylene	0.00282	108.190	0.030426
D26RLC	6001	91203	Naphthalene	0.00541	207.556	0.058370
D26RLC	6001	95476	o-Xylene	0.00166	63.686	0.017910
D26RLC	6001	108952	Phenol	0.00726	278.532	0.078330
D26RLC	6001	123386	Propionaldehyde	0.00727	278.915	0.078438
D26RLC	6001	100425	Styrene	0.00309	118.549	0.033339

2025 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
D26RLC	6001	108883	Toluene	0.00642	246.305	0.069267
D26RLC	137	7439921	Lead		0.950	0.000267
D26RRT	308	106990	1,3-Butadiene	0.01687	33.219	0.009342
D26RRT	308	75070	Acetaldehyde	0.04272	84.119	0.023657
D26RRT	308	107028	Acrolein	0.02449	48.223	0.013562
D26RRT	308	71432	Benzene	0.01681	33.100	0.009309
D26RRT	308	100414	Ethyl benzene	0.00174	3.426	0.000964
D26RRT	308	50000	Formaldehyde	0.1231	242.395	0.068168
D26RRT	308	67561	Methanol	0.01805	35.542	0.009995
D26RRT	308	108383	m-Xylene	0.00282	5.553	0.001562
D26RRT	308	91203	Naphthalene	0.00541	10.653	0.002996
D26RRT	308	95476	o-Xylene	0.00166	3.269	0.000919
D26RRT	308	108952	Phenol	0.00726	14.296	0.004020
D26RRT	308	123386	Propionaldehyde	0.00727	14.315	0.004026
D26RRT	308	100425	Styrene	0.00309	6.084	0.001711
D26RRT	308	108883	Toluene	0.00642	12.642	0.003555
D26RRT	7	7439921	Lead		0.049	0.000014
D26RSO	8947	106990	1,3-Butadiene	0.01687	964.955	0.271370
D26RSO	8947	75070	Acetaldehyde	0.04272	2443.561	0.687192
D26RSO	8947	107028	Acrolein	0.02449	1400.815	0.393945
D26RSO	8947	71432	Benzene	0.01681	961.523	0.270405
D26RSO	8947	100414	Ethyl benzene	0.00174	99.527	0.027990
D26RSO	8947	50000	Formaldehyde	0.1231	7041.254	1.980181
D26RSO	8947	67561	Methanol	0.01805	1032.450	0.290352
D26RSO	8947	108383	m-Xylene	0.00282	161.302	0.045362
D26RSO	8947	91203	Naphthalene	0.00541	309.449	0.087025
D26RSO	8947	95476	o-Xylene	0.00166	94.951	0.026703
D26RSO	8947	108952	Phenol	0.00726	415.268	0.116784
D26RSO	8947	123386	Propionaldehyde	0.00727	415.840	0.116945
D26RSO	8947	100425	Styrene	0.00309	176.746	0.049706
D26RSO	8947	108883	Toluene	0.00642	367.221	0.103272
D26RSO	204	7439921	Lead		1.417	0.000399
A08LSI	1694	106990	1,3-Butadiene	0.01687	7.583	0.002080
A08LSI	1694	75070	Acetaldehyde	0.04272	19.203	0.005268
A08LSI	1694	107028	Acrolein	0.02449	11.009	0.003020
A08LSI	1694	71432	Benzene	0.01681	7.556	0.002073
A08LSI	1694	100414	Ethyl benzene	0.00174	0.782	0.000215
A08LSI	1694	50000	Formaldehyde	0.1231	55.335	0.015180
A08LSI	1694	67561	Methanol	0.01805	8.114	0.002226
A08LSI	1694	108383	m-Xylene	0.00282	1.268	0.000348
A08LSI	1694	91203	Naphthalene	0.00541	2.432	0.000667
A08LSI	1694	95476	o-Xylene	0.00166	0.746	0.000205
A08LSI	1694	108952	Phenol	0.00726	3.263	0.000895

2025 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A08LSI	1694	123386	Propionaldehyde	0.00727	3.268	0.000897
A08LSI	1694	100425	Styrene	0.00309	1.389	0.000381
A08LSI	1694	108883	Toluene	0.00642	2.886	0.000792
A08LSI	39	7439921	Lead		0.045	0.000012
A08RSI	1977	106990	1,3-Butadiene	0.01687	8.850	0.002428
A08RSI	1977	75070	Acetaldehyde	0.04272	22.411	0.006148
A08RSI	1977	107028	Acrolein	0.02449	12.848	0.003525
A08RSI	1977	71432	Benzene	0.01681	8.819	0.002419
A08RSI	1977	100414	Ethyl benzene	0.00174	0.913	0.000250
A08RSI	1977	50000	Formaldehyde	0.1231	64.580	0.017716
A08RSI	1977	67561	Methanol	0.01805	9.469	0.002598
A08RSI	1977	108383	m-Xylene	0.00282	1.479	0.000406
A08RSI	1977	91203	Naphthalene	0.00541	2.838	0.000779
A08RSI	1977	95476	o-Xylene	0.00166	0.871	0.000239
A08RSI	1977	108952	Phenol	0.00726	3.809	0.001045
A08RSI	1977	123386	Propionaldehyde	0.00727	3.814	0.001046
A08RSI	1977	100425	Styrene	0.00309	1.621	0.000445
A08RSI	1977	108883	Toluene	0.00642	3.368	0.000924
A08RSI	45	7439921	Lead		0.053	0.000015
A26LSI	38156	106990	1,3-Butadiene	0.01687	170.808	0.046858
A26LSI	38156	75070	Acetaldehyde	0.04272	432.538	0.118659
A26LSI	38156	107028	Acrolein	0.02449	247.960	0.068023
A26LSI	38156	71432	Benzene	0.01681	170.201	0.046691
A26LSI	38156	100414	Ethyl benzene	0.00174	17.617	0.004833
A26LSI	38156	50000	Formaldehyde	0.1231	1246.383	0.341922
A26LSI	38156	67561	Methanol	0.01805	182.756	0.050136
A26LSI	38156	108383	m-Xylene	0.00282	28.552	0.007833
A26LSI	38156	91203	Naphthalene	0.00541	54.776	0.015027
A26LSI	38156	95476	o-Xylene	0.00166	16.807	0.004611
A26LSI	38156	108952	Phenol	0.00726	73.507	0.020165
A26LSI	38156	123386	Propionaldehyde	0.00727	73.608	0.020193
A26LSI	38156	100425	Styrene	0.00309	31.286	0.008583
A26LSI	38156	108883	Toluene	0.00642	65.002	0.017832
A26LSI	869	7439921	Lead		1.024	0.000281
A26RSI	16496	106990	1,3-Butadiene	0.01687	73.846	0.020258
A26RSI	16496	75070	Acetaldehyde	0.04272	187.000	0.051300
A26RSI	16496	107028	Acrolein	0.02449	107.201	0.029409
A26RSI	16496	71432	Benzene	0.01681	73.583	0.020186
A26RSI	16496	100414	Ethyl benzene	0.00174	7.617	0.002089
A26RSI	16496	50000	Formaldehyde	0.1231	538.849	0.147823
A26RSI	16496	67561	Methanol	0.01805	79.011	0.021675
A26RSI	16496	108383	m-Xylene	0.00282	12.344	0.003386
A26RSI	16496	91203	Naphthalene	0.00541	23.681	0.006497

2025 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26RSI	16496	95476	o-Xylene	0.00166	7.266	0.001993
A26RSI	16496	108952	Phenol	0.00726	31.779	0.008718
A26RSI	16496	123386	Propionaldehyde	0.00727	31.823	0.008730
A26RSI	16496	100425	Styrene	0.00309	13.526	0.003711
A26RSI	16496	108883	Toluene	0.00642	28.102	0.007709
A26RSI	376	7439921	Lead		0.443	0.000121
A08LGR	1694	106990	1,3-Butadiene	0.01687	10.156	0.002786
A08LGR	1694	75070	Acetaldehyde	0.04272	25.719	0.007056
A08LGR	1694	107028	Acrolein	0.02449	14.744	0.004045
A08LGR	1694	71432	Benzene	0.01681	10.120	0.002776
A08LGR	1694	100414	Ethyl benzene	0.00174	1.048	0.000287
A08LGR	1694	50000	Formaldehyde	0.1231	74.111	0.020331
A08LGR	1694	67561	Methanol	0.01805	10.867	0.002981
A08LGR	1694	108383	m-Xylene	0.00282	1.698	0.000466
A08LGR	1694	91203	Naphthalene	0.00541	3.257	0.000894
A08LGR	1694	95476	o-Xylene	0.00166	0.999	0.000274
A08LGR	1694	108952	Phenol	0.00726	4.371	0.001199
A08LGR	1694	123386	Propionaldehyde	0.00727	4.377	0.001201
A08LGR	1694	100425	Styrene	0.00309	1.860	0.000510
A08LGR	1694	108883	Toluene	0.00642	3.865	0.001060
A08LGR	39	7439921	Lead		0.037	0.000010
A08RGR	1977	106990	1,3-Butadiene	0.01687	11.853	0.003252
A08RGR	1977	75070	Acetaldehyde	0.04272	30.016	0.008234
A08RGR	1977	107028	Acrolein	0.02449	17.207	0.004720
A08RGR	1977	71432	Benzene	0.01681	11.811	0.003240
A08RGR	1977	100414	Ethyl benzene	0.00174	1.223	0.000335
A08RGR	1977	50000	Formaldehyde	0.1231	86.492	0.023728
A08RGR	1977	67561	Methanol	0.01805	12.682	0.003479
A08RGR	1977	108383	m-Xylene	0.00282	1.981	0.000544
A08RGR	1977	91203	Naphthalene	0.00541	3.801	0.001043
A08RGR	1977	95476	o-Xylene	0.00166	1.166	0.000320
A08RGR	1977	108952	Phenol	0.00726	5.101	0.001399
A08RGR	1977	123386	Propionaldehyde	0.00727	5.108	0.001401
A08RGR	1977	100425	Styrene	0.00309	2.171	0.000596
A08RGR	1977	108883	Toluene	0.00642	4.511	0.001237
A08RGR	45	7439921	Lead		0.044	0.000012
A26LGR	38156	106990	1,3-Butadiene	0.01687	228.766	0.062758
A26LGR	38156	75070	Acetaldehyde	0.04272	579.305	0.158921
A26LGR	38156	107028	Acrolein	0.02449	332.097	0.091105
A26LGR	38156	71432	Benzene	0.01681	227.952	0.062534
A26LGR	38156	100414	Ethyl benzene	0.00174	23.595	0.006473
A26LGR	38156	50000	Formaldehyde	0.1231	1669.299	0.457941
A26LGR	38156	67561	Methanol	0.01805	244.767	0.067147

2025 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26LGR	38156	108383	m-Xylene	0.00282	38.241	0.010491
A26LGR	38156	91203	Naphthalene	0.00541	73.362	0.020126
A26LGR	38156	95476	o-Xylene	0.00166	22.510	0.006175
A26LGR	38156	108952	Phenol	0.00726	98.449	0.027008
A26LGR	38156	123386	Propionaldehyde	0.00727	98.585	0.027045
A26LGR	38156	100425	Styrene	0.00309	41.902	0.011495
A26LGR	38156	108883	Toluene	0.00642	87.058	0.023883
A26LGR	869	7439921	Lead		0.841	0.000231
A26RGR	16496	106990	1,3-Butadiene	0.01687	98.902	0.027132
A26RGR	16496	75070	Acetaldehyde	0.04272	250.451	0.068707
A26RGR	16496	107028	Acrolein	0.02449	143.576	0.039387
A26RGR	16496	71432	Benzene	0.01681	98.551	0.027036
A26RGR	16496	100414	Ethyl benzene	0.00174	10.201	0.002798
A26RGR	16496	50000	Formaldehyde	0.1231	721.689	0.197982
A26RGR	16496	67561	Methanol	0.01805	105.820	0.029030
A26RGR	16496	108383	m-Xylene	0.00282	16.533	0.004535
A26RGR	16496	91203	Naphthalene	0.00541	31.717	0.008701
A26RGR	16496	95476	o-Xylene	0.00166	9.732	0.002670
A26RGR	16496	108952	Phenol	0.00726	42.563	0.011676
A26RGR	16496	123386	Propionaldehyde	0.00727	42.621	0.011692
A26RGR	16496	100425	Styrene	0.00309	18.115	0.004970
A26RGR	16496	108883	Toluene	0.00642	37.638	0.010325
A26RGR	376	7439921	Lead		0.364	0.000100
A08TX	3671	106990	1,3-Butadiene	0.01687	21.557	0.005914
A08TX	3671	75070	Acetaldehyde	0.04272	55.735	0.015290
A08TX	3671	107028	Acrolein	0.02449	31.951	0.008765
A08TX	3671	71432	Benzene	0.01681	21.931	0.006016
A08TX	3671	100414	Ethyl benzene	0.00174	2.270	0.000623
A08TX	3671	50000	Formaldehyde	0.1231	160.604	0.044059
A08TX	3671	67561	Methanol	0.01805	23.549	0.006460
A08TX	3671	108383	m-Xylene	0.00282	3.679	0.001009
A08TX	3671	91203	Naphthalene	0.00541	7.058	0.001936
A08TX	3671	95476	o-Xylene	0.00166	2.166	0.000594
A08TX	3671	108952	Phenol	0.00726	9.472	0.002598
A08TX	3671	123386	Propionaldehyde	0.00727	9.485	0.002602
A08TX	3671	100425	Styrene	0.00309	4.031	0.001106
A08TX	3671	108883	Toluene	0.00642	8.376	0.002298
A08TX	84	7439921	Lead		0.068	0.000019
A26TX	54562	106990	1,3-Butadiene	0.01687	320.407	0.087898
A26TX	54562	75070	Acetaldehyde	0.04272	828.390	0.227253
A26TX	54562	107028	Acrolein	0.02449	474.889	0.130277
A26TX	54562	71432	Benzene	0.01681	325.965	0.089422
A26TX	54562	100414	Ethyl benzene	0.00174	33.741	0.009256

2025 Project Emissions by Source

Source ID	Ops	CAS	Desc.	Mass Fraction	lbs./yr.	lbs./hr.
A26TX	54562	50000	Formaldehyde	0.1231	2387.050	0.654842
A26TX	54562	67561	Methanol	0.01805	350.010	0.096019
A26TX	54562	108383	m-Xylene	0.00282	54.683	0.015001
A26TX	54562	91203	Naphthalene	0.00541	104.906	0.028779
A26TX	54562	95476	o-Xylene	0.00166	32.189	0.008831
A26TX	54562	108952	Phenol	0.00726	140.780	0.038620
A26TX	54562	123386	Propionaldehyde	0.00727	140.974	0.038673
A26TX	54562	100425	Styrene	0.00309	59.919	0.016438
A26TX	54562	108883	Toluene	0.00642	124.491	0.034152
A26TX	1242	7439921	Lead		1.009	0.000277
2023EV		9901	DieselExhPM		0	0
2023PV		9901	DieselExhPM		0	0
2024RR		9901	DieselExhPM		0	0
2025PD		9901	DieselExhPM		31.6	0.036675
Batch		7440382	Arsenic		0.07516	0.00005
Batch		7440417	Beryllium		0.00770	0.00000
Batch		7440439	Cadmium		0.00964	0.00001
Batch		18540299	Cr(VI)		0.21636	0.00014
Batch		7439921	Lead		0.08287	0.00005
Batch		7439965	Manganese		0.98592	0.00063
Batch		7440020	Nickel		0.29040	0.00019
Batch		7782492	Selenium		0.00733	0.00000

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Concrete Throughput

Year	CY	Days
2023	44,291	195
2024	36,272	197
2025	20,488	196

Batch Plant Emissions Calculations

1 CY Concrete (lbs.)	4024
Dry Material (lbs.)	3857
Tons loaded per CY	1.9285

	Emission Factor (lb./ton dry)	Emissions Factor (lb./CY Concrete)	2023 lbs./yr.	2023 lbs./hr.	2024 lbs./yr.	2024 lbs./hr.	2025 lbs./yr.	2025 lbs./hr.
Arsenic	1.90224E-06	3.66847E-06	0.16248	1.0415E-04	0.13306	8.4431E-05	0.07516	4.7933E-05
Beryllium	1.94886E-07	3.75838E-07	0.01665	1.0671E-05	0.01363	8.6500E-06	0.00770	4.9108E-06
Cadmium	2.43968E-07	4.70492E-07	0.02084	1.3358E-05	0.01707	1.0828E-05	0.00964	6.1476E-06
Cr(VI)	5.47600E-06	1.05605E-05	0.46773	2.9983E-04	0.38305	2.4305E-04	0.21636	1.3799E-04
Lead	2.09750E-06	4.04503E-06	0.17916	1.1485E-04	0.14672	9.3097E-05	0.08287	5.2854E-05
Manganese	2.49530E-05	4.81219E-05	2.13137	1.3663E-03	1.74548	1.1075E-03	0.98592	6.2878E-04
Nickel	7.34980E-06	1.41741E-05	0.62778	4.0243E-04	0.51412	3.2622E-04	0.29040	1.8520E-04
Selenium	1.85400E-07	3.57544E-07	0.01584	1.0151E-05	0.01297	8.2290E-06	0.00733	4.6718E-06

Notes:
1. Concrete throughput from HNTB.
2. Emissions factors (pounds per ton of loaded dry material) from U.S. EPA AP-42 Chapter 11.12, *Concrete Batching*, Table 11.12-8 *Concrete Batch Plant Metal Emissions Factors*. Loaded dry material includes course aggregate, sand, cement, cement supplement and the surface moisture associated with these materials.
3. Where data for controlled emissions was available, emissions factors assume fugitive dust control from fabric filters (e.g., baghouse).

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

	g/LTO	lb/LTO
Lead Emissions per LTO	7.34	0.01618

Aircraft Exhaust Lead Emissions Calculations

	Jet Fuel (tons)	% of total	Lead (lb/op)
Taxi Out	9795.93	9.69%	1.5679E-03
Dep Ground Roll	16141.06	15.97%	2.5835E-03
Climb Below 1000 ft AFE	18127.39	17.93%	
Climb Below Mixing Height	25335.82	25.06%	
Climb to mix subtotal		42.99%	6.9567E-03
Descend Below Mixing Height	14187.35	14.03%	
Descend Below 1000 ft AFE	6387.97	6.32%	
Descend from mix subtotal		20.35%	3.2933E-03
Descend from 5km (35.8% of mix)		7.29%	1.1790E-03
App Ground Roll	6047.74	5.98%	9.6800E-04
Taxi In	5075.53	5.02%	8.1238E-04
Total	101098.79		

Notes:
1. Lead emissions in aircraft pitson engine exhaust calculated from the U.S. EPA *Calculating Piston-Engine Aircraft Airport Inventories for Lead for the 2008 National Emissions Inventory* (USEPA 2010, p. 14): 7.34 grams of lead per landing takeoff operation (LTO).
2. Lead emissions per modeled source activity calcuated assuming leaded avgas comsumption per acttivity is proportional to the jet fuel burned. Jet fuel burned

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

On-site Construction Equipment DPM Emissions Calculations

Max Daily Emissions

	Exhaust PM10 (lb/day)
3.2 2023 - South Elec Vault, Scenario 5 - 2023	
On-Site	0.0212
3.3 2023 - Paving/Demo, Scenarios 1, 2, 3 and 4 - 2023	
On-Site	0.3222
3.4 2024- Runway Rehab, Service Road, NAVAID, Scenario 6 - 2024	
Total	0.4555
3.5 2025 - Paving/Demo, Scenario 7 & 8 - 2025	
On-Site	0.2934
3.2 2023 - South Elec Vault, Scenario 5 - 2023 - 2 YR Alt	
On-Site	0.0212
3.3 2023 - Paving/Demo, Scenarios 1, 2, 3 and 4 - 2023 - 2 YR Alt	
On-Site	0.3222
3.4 2023 - Paving/Demo, Scenario 7 & 8 - 2023 2 YR Alt	
On-Site	0.2934
3.5 2024- Runway Rehab, Service Road, NAVAID, Scenario 6 - 2024 2 YR Alt	
On-Site	0.4555

Annual Emissions

	Exhaust PM10 (tons/yr)
3.2 2023 - South Elec Vault, Scenario 5 - 2023	
On-Site	0.0021
3.3 2023 - Paving/Demo, Scenarios 1, 2, 3 and 4 - 2023	
On-Site	0.0314
3.4 2024- Runway Rehab, Service Road, NAVAID, Scenario 6 - 2024	
On-Site	0.0449
3.5 2025 - Paving/Demo, Scenario 7 & 8 - 2025	
On-Site	0.0158
3.2 2023 - South Elec Vault, Scenario 5 - 2023 - 2 YR Alt	
On-Site	0.0021
3.3 2023 - Paving/Demo, Scenarios 1, 2, 3 and 4 - 2023 - 2 YR Alt	
On-Site	0.0314
3.4 2023 - Paving/Demo, Scenario 7 & 8 - 2023 2 YR Alt	
On-Site	0.0158
3.5 2024- Runway Rehab, Service Road, NAVAID, Scenario 6 - 2024 2 YR Alt	
On-Site	0.0449

Notes:
1. Exhaust PM10 emissions reported from project CalEEMod runs provided by HNTB.

HARP Project Summary Report 4/21/2022 09:41:48 AM

PROJECT INFORMATION
HARP Version: 21081
Project Name: ONT RISK 2024PA
Project Output Directory: C:\Users\martinr\Desktop\ONT HRA\ONT RISK 2024PA
HARP Database: NA

FACILITY INFORMATION
Origin
X (m):0
Y (m):0
Zone:1
No. of Sources:0
No. of Buildings:0

POLLUTANT HEALTH INFORMATION
Health Database: C:\HARP2\Tables\HEALTH17320.mdb
Health Table Version: HEALTH22013
Official: True

PolID	PolAbbrev	InhCancer	OralCancer	AcuteREL	InhChronicREL	OralChronicREL	InhChronic8HRREL
106990	1,3-Butadiene	0.6		660	2		9
75070	Acetaldehyde	0.01		470	140		300
107028	Acrolein			2.5 0.35 0.7			
71432	Benzene	0.1 27	3		3		
100414	Ethyl Benzene	0.0087			2000		
50000	Formaldehyde	0.021		55	9		9
67561	Methanol			28000	4000		
108383	m-Xylene	22000	700				
91203	Naphthalene	0.12			9		
95476	o-Xylene			22000	700		
108952	Phenol			5800	200		
123386	Propionaldehyde						
100425	Styrene			21000	900		
108883	Toluene			5000	420		830
7439921	Lead	0.042	0.0085				
9901	DieselExhPM	1.1			5		
7440382	Arsenic	12	1.5	0.2	0.015	3.50E-06	0.015
7440417	Beryllium	8.4			0.007	0.002	
7440439	Cadmium	15			0.02	0.0005	
18540299	Cr (VI)	510	0.5		0.2	0.02	
7439965	Manganese				0.09		0.17
7440020	Nickel	0.91		0.2	0.014	0.011	0.06
7782492	Selenium				20	0.005	

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Residential Cancer Risk

	UTM (m)			No Action				With Project				Net
ID	X	Y	SCENARIO	2023	2024	2025	Total	2023	2024	2025	Total	per million
H1	443818.03	3765934.14	1YrCancerRMP_InhSoilDermMMilkCrops	1.07E-06	9.96E-07	9.84E-07	3.05E-06	9.30E-07	9.79E-07	1.01E-06	2.92E-06	-0.13
R01	445946.84	3767789.93	1YrCancerRMP_InhSoilDermMMilkCrops	3.64E-06	3.40E-06	3.36E-06	1.04E-05	3.21E-06	3.25E-06	3.57E-06	1.00E-05	-0.36
R02	448001.77	3765079.22	1YrCancerRMP_InhSoilDermMMilkCrops	7.15E-07	6.68E-07	6.61E-07	2.04E-06	4.62E-07	5.04E-07	5.66E-07	1.53E-06	-0.51
R03	447122.94	3765379.32	1YrCancerRMP_InhSoilDermMMilkCrops	7.25E-07	6.78E-07	6.70E-07	2.07E-06	5.36E-07	5.77E-07	6.20E-07	1.73E-06	-0.34
R04	446042.57	3765649.63	1YrCancerRMP_InhSoilDermMMilkCrops	8.23E-07	7.68E-07	7.60E-07	2.35E-06	6.72E-07	7.14E-07	7.48E-07	2.13E-06	-0.22
R05	442937.76	3766057.37	1YrCancerRMP_InhSoilDermMMilkCrops	1.10E-06	1.02E-06	1.01E-06	3.13E-06	9.70E-07	1.02E-06	1.05E-06	3.04E-06	-0.09
R06	441491.30	3766217.18	1YrCancerRMP_InhSoilDermMMilkCrops	1.13E-06	1.06E-06	1.05E-06	3.24E-06	1.08E-06	1.09E-06	1.17E-06	3.33E-06	0.10
R07	440503.41	3767876.66	1YrCancerRMP_InhSoilDermMMilkCrops	5.28E-06	4.93E-06	4.88E-06	1.51E-05	5.62E-06	7.25E-06	4.78E-06	1.77E-05	2.57
R08	442036.65	3768089.20	1YrCancerRMP_InhSoilDermMMilkCrops	3.69E-06	3.44E-06	3.40E-06	1.05E-05	3.56E-06	3.38E-06	3.98E-06	1.09E-05	0.38
R09	441322.28	3768350.40	1YrCancerRMP_InhSoilDermMMilkCrops	8.10E-06	7.56E-06	7.45E-06	2.31E-05	8.79E-06	6.76E-06	1.05E-05	2.61E-05	2.96
R10	441344.10	3768445.29	1YrCancerRMP_InhSoilDermMMilkCrops	1.03E-05	9.60E-06	9.48E-06	2.94E-05	1.07E-05	1.01E-05	1.17E-05	3.24E-05	3.03
R11	441157.93	3769147.37	1YrCancerRMP_InhSoilDermMMilkCrops	2.42E-06	2.25E-06	2.22E-06	6.89E-06	2.34E-06	2.89E-06	2.14E-06	7.37E-06	0.49
R12	441198.12	3769179.74	1YrCancerRMP_InhSoilDermMMilkCrops	2.29E-06	2.14E-06	2.11E-06	6.54E-06	2.19E-06	2.64E-06	2.06E-06	6.89E-06	0.35
R13	441523.43	3769228.54	1YrCancerRMP_InhSoilDermMMilkCrops	2.25E-06	2.09E-06	2.07E-06	6.41E-06	2.11E-06	2.49E-06	2.04E-06	6.64E-06	0.23
R14	442119.99	3769274.66	1YrCancerRMP_InhSoilDermMMilkCrops	2.37E-06	2.21E-06	2.19E-06	6.78E-06	2.19E-06	2.58E-06	2.14E-06	6.91E-06	0.13
R15	442529.07	3769329.90	1YrCancerRMP_InhSoilDermMMilkCrops	2.48E-06	2.31E-06	2.28E-06	7.07E-06	2.22E-06	2.61E-06	2.21E-06	7.04E-06	-0.03
R16	443919.05	3769724.99	1YrCancerRMP_InhSoilDermMMilkCrops	2.24E-06	2.09E-06	2.06E-06	6.39E-06	1.93E-06	2.22E-06	1.99E-06	6.14E-06	-0.25
R17	444881.55	3770085.97	1YrCancerRMP_InhSoilDermMMilkCrops	1.88E-06	1.76E-06	1.74E-06	5.38E-06	1.63E-06	1.85E-06	1.70E-06	5.18E-06	-0.19
R18	446023.97	3770078.04	1YrCancerRMP_InhSoilDermMMilkCrops	2.10E-06	1.96E-06	1.94E-06	6.00E-06	1.81E-06	2.03E-06	1.89E-06	5.73E-06	-0.27
R19	447309.34	3770459.37	1YrCancerRMP_InhSoilDermMMilkCrops	1.59E-06	1.48E-06	1.47E-06	4.54E-06	1.37E-06	1.52E-06	1.43E-06	4.32E-06	-0.22
R20	441112.11	3768749.68	1YrCancerRMP_InhSoilDermMMilkCrops	4.96E-06	4.63E-06	4.59E-06	1.42E-05	4.76E-06	6.27E-06	4.14E-06	1.52E-05	0.99
R21	441900.00	3768900.00	1YrCancerRMP_InhSoilDermMMilkCrops	4.28E-06	3.99E-06	3.95E-06	1.22E-05	4.06E-06	5.08E-06	3.72E-06	1.29E-05	0.64
R22	442000.00	3769000.00	1YrCancerRMP_InhSoilDermMMilkCrops	3.50E-06	3.26E-06	3.23E-06	9.98E-06	3.28E-06	4.02E-06	3.08E-06	1.04E-05	0.40
S1	440398.94	3766842.56	1YrCancerRMP_InhSoilDermMMilkCrops	3.29E-06	3.07E-06	3.03E-06	9.39E-06	3.63E-06	3.72E-06	3.70E-06	1.10E-05	1.66
S2	440262.43	3766643.39	1YrCancerRMP_InhSoilDermMMilkCrops	2.99E-06	2.79E-06	2.76E-06	8.55E-06	3.23E-06	3.83E-06	2.97E-06	1.00E-05	1.48
S3	440295.60	3767639.22	1YrCancerRMP_InhSoilDermMMilkCrops	3.40E-06	3.17E-06	3.14E-06	9.71E-06	3.57E-06	4.54E-06	3.10E-06	1.12E-05	1.50
S4	440612.34	3769925.99	1YrCancerRMP_InhSoilDermMMilkCrops	9.68E-07	9.01E-07	8.89E-07	2.76E-06	8.97E-07	1.02E-06	8.98E-07	2.81E-06	0.06
S5	441198.61	3769729.73	1YrCancerRMP_InhSoilDermMMilkCrops	1.24E-06	1.16E-06	1.14E-06	3.55E-06	1.16E-06	1.34E-06	1.15E-06	3.64E-06	0.10

Residential Cancer Risk - 2-Year Alternate

	UTM (m)			No Action			With Project			Net
ID	X	Y	SCENARIO	2023	2024	Total	2023	2024	Total	per million
H1	443818.03	3765934.14	1YrCancerRMP_InhSoilDermMMilkCrops	1.07E-06	9.96E-07	2.06E-06	9.43E-07	9.80E-07	1.92E-06	-0.14
R01	445946.84	3767789.93	1YrCancerRMP_InhSoilDermMMilkCrops	3.64E-06	3.40E-06	7.03E-06	3.32E-06	3.26E-06	6.58E-06	-0.45
R02	448001.77	3765079.22	1YrCancerRMP_InhSoilDermMMilkCrops	7.15E-07	6.68E-07	1.38E-06	4.60E-07	5.05E-07	9.65E-07	-0.42
R03	447122.94	3765379.32	1YrCancerRMP_InhSoilDermMMilkCrops	7.25E-07	6.78E-07	1.40E-06	5.38E-07	5.78E-07	1.12E-06	-0.29
R04	446042.57	3765649.63	1YrCancerRMP_InhSoilDermMMilkCrops	8.23E-07	7.68E-07	1.59E-06	6.79E-07	7.15E-07	1.39E-06	-0.20
R05	442937.76	3766057.37	1YrCancerRMP_InhSoilDermMMilkCrops	1.10E-06	1.02E-06	2.12E-06	9.85E-07	1.02E-06	2.00E-06	-0.12
R06	441491.3	3766217.18	1YrCancerRMP_InhSoilDermMMilkCrops	1.13E-06	1.06E-06	2.19E-06	1.12E-06	1.09E-06	2.20E-06	0.01
R07	440503.41	3767876.66	1YrCancerRMP_InhSoilDermMMilkCrops	5.28E-06	4.93E-06	1.02E-05	5.11E-06	7.25E-06	1.24E-05	2.16
R08	442036.65	3768089.2	1YrCancerRMP_InhSoilDermMMilkCrops	3.69E-06	3.44E-06	7.14E-06	3.78E-06	3.38E-06	7.16E-06	0.03
R09	441322.28	3768350.4	1YrCancerRMP_InhSoilDermMMilkCrops	8.10E-06	7.56E-06	1.57E-05	1.01E-05	6.76E-06	1.68E-05	1.17
R10	441344.1	3768445.29	1YrCancerRMP_InhSoilDermMMilkCrops	1.03E-05	9.60E-06	1.99E-05	1.14E-05	1.01E-05	2.15E-05	1.56
R11	441157.93	3769147.37	1YrCancerRMP_InhSoilDermMMilkCrops	2.42E-06	2.25E-06	4.67E-06	2.18E-06	2.89E-06	5.07E-06	0.41
R12	441198.12	3769179.74	1YrCancerRMP_InhSoilDermMMilkCrops	2.29E-06	2.14E-06	4.43E-06	2.07E-06	2.64E-06	4.71E-06	0.28
R13	441523.43	3769228.54	1YrCancerRMP_InhSoilDermMMilkCrops	2.25E-06	2.09E-06	4.34E-06	2.02E-06	2.49E-06	4.51E-06	0.17
R14	442119.99	3769274.66	1YrCancerRMP_InhSoilDermMMilkCrops	2.37E-06	2.21E-06	4.59E-06	2.09E-06	2.58E-06	4.68E-06	0.09
R15	442529.07	3769329.9	1YrCancerRMP_InhSoilDermMMilkCrops	2.48E-06	2.31E-06	4.79E-06	2.13E-06	2.62E-06	4.75E-06	-0.04
R16	443919.05	3769724.99	1YrCancerRMP_InhSoilDermMMilkCrops	2.24E-06	2.09E-06	4.32E-06	1.88E-06	2.22E-06	4.10E-06	-0.23
R17	444881.55	3770085.97	1YrCancerRMP_InhSoilDermMMilkCrops	1.88E-06	1.76E-06	3.64E-06	1.60E-06	1.86E-06	3.46E-06	-0.18
R18	446023.97	3770078.04	1YrCancerRMP_InhSoilDermMMilkCrops	2.10E-06	1.96E-06	4.06E-06	1.77E-06	2.04E-06	3.81E-06	-0.25
R19	447309.34	3770459.37	1YrCancerRMP_InhSoilDermMMilkCrops	1.59E-06	1.48E-06	3.07E-06	1.34E-06	1.53E-06	2.87E-06	-0.21
R20	441112.11	3768749.68	1YrCancerRMP_InhSoilDermMMilkCrops	4.96E-06	4.63E-06	9.58E-06	4.26E-06	6.27E-06	1.05E-05	0.94
R21	441900	3768900	1YrCancerRMP_InhSoilDermMMilkCrops	4.28E-06	3.99E-06	8.27E-06	3.75E-06	5.08E-06	8.83E-06	0.56
R22	442000	3769000	1YrCancerRMP_InhSoilDermMMilkCrops	3.50E-06	3.26E-06	6.76E-06	3.07E-06	4.02E-06	7.09E-06	0.33
S1	440398.94	3766842.56	1YrCancerRMP_InhSoilDermMMilkCrops	3.29E-06	3.07E-06	6.36E-06	3.74E-06	3.72E-06	7.46E-06	1.10
S2	440262.43	3766643.39	1YrCancerRMP_InhSoilDermMMilkCrops	2.99E-06	2.79E-06	5.78E-06	3.10E-06	3.83E-06	6.92E-06	1.14
S3	440295.6	3767639.22	1YrCancerRMP_InhSoilDermMMilkCrops	3.40E-06	3.17E-06	6.57E-06	3.28E-06	4.54E-06	7.82E-06	1.25
S4	440612.34	3769925.99	1YrCancerRMP_InhSoilDermMMilkCrops	9.68E-07	9.01E-07	1.87E-06	8.76E-07	1.02E-06	1.90E-06	0.03
S5	441198.61	3769729.73	1YrCancerRMP_InhSoilDermMMilkCrops	1.24E-06	1.16E-06	2.40E-06	1.12E-06	1.34E-06	2.46E-06	0.06

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Worker Cancer Risk - Top 20 Receptors

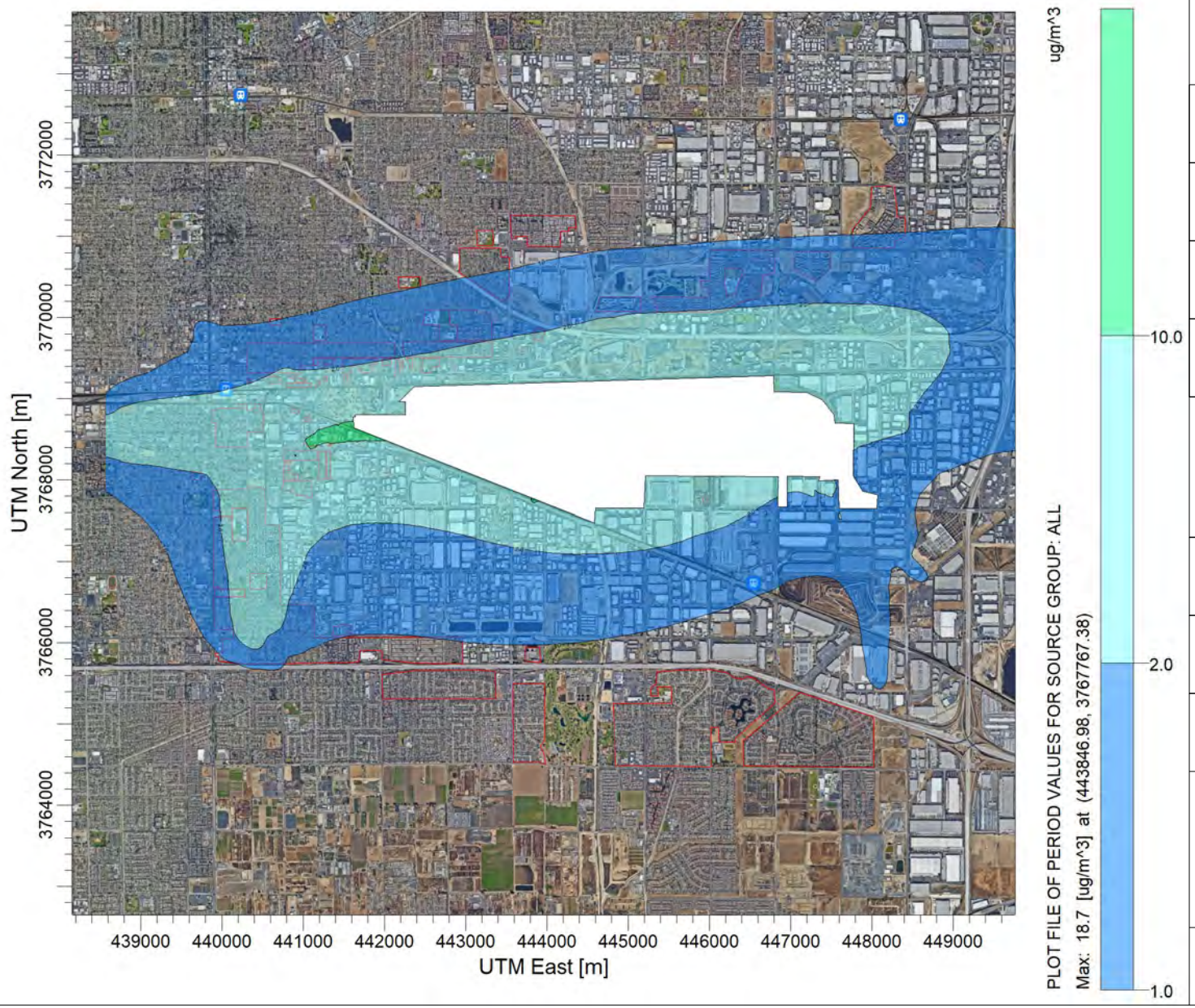
	UTM (m)			No Project				With Project				Net
ID	X	Y	SCENARIO	2023	2024	2025	Total	2023	2024	2025	Total	per million
2080	443847	3767767	1YrCancerDerived_InhSoilDerm	5.74E-08	5.80E-08	5.73E-08	1.73E-07	2.19E-07	1.92E-07	1.38E-07	5.49E-07	0.38
1433	440900	3768300	1YrCancerDerived_InhSoilDerm	1.23E-07	1.24E-07	1.23E-07	3.70E-07	1.28E-07	1.60E-07	1.32E-07	4.19E-07	0.05
1450	441100	3768400	1YrCancerDerived_InhSoilDerm	1.46E-07	1.47E-07	1.45E-07	4.39E-07	1.51E-07	1.66E-07	1.71E-07	4.88E-07	0.05
1879	441585	3768547	1YrCancerDerived_InhSoilDerm	1.47E-07	1.48E-07	1.47E-07	4.42E-07	1.47E-07	2.06E-07	1.38E-07	4.90E-07	0.05
1467	441400	3768500	1YrCancerDerived_InhSoilDerm	1.43E-07	1.44E-07	1.43E-07	4.30E-07	1.45E-07	1.88E-07	1.45E-07	4.78E-07	0.05
1468	441500	3768500	1YrCancerDerived_InhSoilDerm	1.44E-07	1.45E-07	1.44E-07	4.33E-07	1.46E-07	1.85E-07	1.50E-07	4.81E-07	0.05
1914	441522	3768637	1YrCancerDerived_InhSoilDerm	1.49E-07	1.51E-07	1.50E-07	4.49E-07	1.46E-07	2.29E-07	1.22E-07	4.97E-07	0.05
1434	441000	3768300	1YrCancerDerived_InhSoilDerm	1.21E-07	1.22E-07	1.20E-07	3.63E-07	1.27E-07	1.45E-07	1.39E-07	4.11E-07	0.05
1599	441344	3768445	1YrCancerDerived_InhSoilDerm	1.50E-07	1.51E-07	1.49E-07	4.49E-07	1.55E-07	1.58E-07	1.83E-07	4.97E-07	0.05
1878	441678	3768511	1YrCancerDerived_InhSoilDerm	1.47E-07	1.49E-07	1.47E-07	4.43E-07	1.49E-07	1.87E-07	1.54E-07	4.90E-07	0.05
1451	441200	3768400	1YrCancerDerived_InhSoilDerm	1.27E-07	1.28E-07	1.26E-07	3.81E-07	1.32E-07	1.48E-07	1.47E-07	4.28E-07	0.05
1480	441600	3768600	1YrCancerDerived_InhSoilDerm	1.40E-07	1.41E-07	1.40E-07	4.21E-07	1.38E-07	2.05E-07	1.23E-07	4.67E-07	0.05
1598	441322	3768350	1YrCancerDerived_InhSoilDerm	1.18E-07	1.19E-07	1.17E-07	3.54E-07	1.28E-07	1.06E-07	1.65E-07	3.99E-07	0.05
1452	441300	3768400	1YrCancerDerived_InhSoilDerm	1.23E-07	1.25E-07	1.23E-07	3.71E-07	1.31E-07	1.28E-07	1.57E-07	4.16E-07	0.05
734	441075	3768325	1YrCancerDerived_InhSoilDerm	1.20E-07	1.21E-07	1.20E-07	3.61E-07	1.27E-07	1.33E-07	1.47E-07	4.06E-07	0.05
1469	441600	3768500	1YrCancerDerived_InhSoilDerm	1.41E-07	1.42E-07	1.41E-07	4.24E-07	1.43E-07	1.73E-07	1.53E-07	4.69E-07	0.05
1470	441700	3768500	1YrCancerDerived_InhSoilDerm	1.42E-07	1.44E-07	1.42E-07	4.28E-07	1.45E-07	1.70E-07	1.58E-07	4.73E-07	0.05
1471	441800	3768500	1YrCancerDerived_InhSoilDerm	1.44E-07	1.46E-07	1.44E-07	4.34E-07	1.47E-07	1.70E-07	1.62E-07	4.78E-07	0.04
1877	441771	3768475	1YrCancerDerived_InhSoilDerm	1.43E-07	1.44E-07	1.42E-07	4.30E-07	1.48E-07	1.47E-07	1.79E-07	4.75E-07	0.04
1465	441200	3768500	1YrCancerDerived_InhSoilDerm	1.36E-07	1.37E-07	1.36E-07	4.09E-07	1.37E-07	1.83E-07	1.35E-07	4.54E-07	0.04

Worker Cancer Risk - 2-Year Alternate - Top 20 Receptors

	UTM (m)			No Project			With Project			Net
ID	X	Y	SCENARIO	2023	2024	Total	2023	2024	Total	per million
2080	443847	3767767	1YrCancerDerived_InhSoilDerm	5.74E-08	5.80E-08	1.15E-07	2.20E-07	2.71E-07	4.91E-07	0.38
1914	441522	3768637	1YrCancerDerived_InhSoilDerm	1.49E-07	1.51E-07	3.00E-07	1.22E-07	2.29E-07	3.51E-07	0.05
1480	441600	3768600	1YrCancerDerived_InhSoilDerm	1.40E-07	1.41E-07	2.81E-07	1.21E-07	2.05E-07	3.26E-07	0.04
1879	441585	3768547	1YrCancerDerived_InhSoilDerm	1.47E-07	1.48E-07	2.95E-07	1.33E-07	2.06E-07	3.39E-07	0.04
2079	443940	3767731	1YrCancerDerived_InhSoilDerm	5.60E-08	5.66E-08	1.13E-07	7.21E-08	8.12E-08	1.53E-07	0.04
1479	441500	3768600	1YrCancerDerived_InhSoilDerm	1.26E-07	1.27E-07	2.53E-07	1.10E-07	1.81E-07	2.91E-07	0.04
1467	441400	3768500	1YrCancerDerived_InhSoilDerm	1.43E-07	1.44E-07	2.87E-07	1.37E-07	1.88E-07	3.26E-07	0.04
1916	441440	3768580	1YrCancerDerived_InhSoilDerm	1.26E-07	1.27E-07	2.53E-07	1.12E-07	1.80E-07	2.91E-07	0.04
1478	441400	3768600	1YrCancerDerived_InhSoilDerm	1.26E-07	1.27E-07	2.53E-07	1.09E-07	1.83E-07	2.91E-07	0.04
2103	441715	3768604	1YrCancerDerived_InhSoilDerm	1.30E-07	1.31E-07	2.61E-07	1.15E-07	1.84E-07	2.99E-07	0.04
1953	441622	3768640	1YrCancerDerived_InhSoilDerm	1.23E-07	1.25E-07	2.48E-07	1.06E-07	1.80E-07	2.86E-07	0.04
1489	441600	3768700	1YrCancerDerived_InhSoilDerm	1.18E-07	1.19E-07	2.37E-07	9.79E-08	1.77E-07	2.75E-07	0.04
764	441325	3768575	1YrCancerDerived_InhSoilDerm	1.24E-07	1.26E-07	2.50E-07	1.10E-07	1.78E-07	2.88E-07	0.04
1481	441700	3768600	1YrCancerDerived_InhSoilDerm	1.29E-07	1.30E-07	2.59E-07	1.14E-07	1.82E-07	2.96E-07	0.04
1433	440900	3768300	1YrCancerDerived_InhSoilDerm	1.23E-07	1.24E-07	2.47E-07	1.24E-07	1.60E-07	2.84E-07	0.04
1465	441200	3768500	1YrCancerDerived_InhSoilDerm	1.36E-07	1.37E-07	2.73E-07	1.28E-07	1.83E-07	3.10E-07	0.04
765	441575	3768575	1YrCancerDerived_InhSoilDerm	1.27E-07	1.29E-07	2.56E-07	1.15E-07	1.77E-07	2.93E-07	0.04
1468	441500	3768500	1YrCancerDerived_InhSoilDerm	1.44E-07	1.45E-07	2.89E-07	1.41E-07	1.85E-07	3.25E-07	0.04
1477	441300	3768600	1YrCancerDerived_InhSoilDerm	1.19E-07	1.20E-07	2.39E-07	1.03E-07	1.72E-07	2.75E-07	0.04
1464	441100	3768500	1YrCancerDerived_InhSoilDerm	1.32E-07	1.34E-07	2.66E-07	1.23E-07	1.78E-07	3.02E-07	0.04

PROJECT TITLE:

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements
Incremental Cancer Risk (chances per million)



COMMENTS:

Note:These isopleths are for total risk, the risks without implementation of the project have not been subtracted

SOURCES:

30

RECEPTORS:

2251

OUTPUT TYPE:

Concentration

MAX:

18.7 ug/m^3

COMPANY NAME:

HELIX Environmenal Planning

DATE:

4/21/2022

SCALE: 1:75,684

0 2 km

PROJECT NO.:

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Residential Non-Cancer Chronic Maximum Hazard Index

	UTM (m)			2023			2024			2025			Overall
ID	X	Y	SCENARIO	No Action	Project	Max HI	No Action	Project	Max HI	No Action	Project	Max HI	MAX HI
H1	443818	3765934.1	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.04	0.03	0.00	0.04	0.04	0.00	0.04	0.04	0.00	0.00
R01	445946.8	3767789.9	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.12	0.11	-0.01	0.12	0.12	-0.01	0.12	0.13	0.01	0.01
R02	448001.8	3765079.2	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.02	0.02	-0.01	0.02	0.02	-0.01	0.02	0.02	0.00	0.00
R03	447122.9	3765379.3	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.02	0.02	-0.01	0.02	0.02	0.00	0.02	0.02	0.00	0.00
R04	446042.6	3765649.6	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.03	0.02	-0.01	0.03	0.03	0.00	0.03	0.03	0.00	0.00
R05	442937.8	3766057.4	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.04	0.03	0.00	0.04	0.04	0.00	0.04	0.04	0.00	0.00
R06	441491.3	3766217.2	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.04	0.04	0.00	0.04	0.04	0.00	0.04	0.04	0.00	0.00
R07	440503.4	3767876.7	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.18	0.19	0.01	0.18	0.26	0.08	0.18	0.17	0.00	0.08
R08	442036.7	3768089.2	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.12	0.12	0.00	0.13	0.12	0.00	0.12	0.15	0.02	0.02
R09	441322.3	3768350.4	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.27	0.30	0.02	0.28	0.25	-0.03	0.27	0.38	0.11	0.11
R10	441344.1	3768445.3	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.35	0.36	0.01	0.35	0.37	0.02	0.35	0.43	0.08	0.08
R11	441157.9	3769147.4	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.08	0.00	0.08	0.11	0.02	0.08	0.08	0.00	0.02
R12	441198.1	3769179.7	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.07	0.00	0.08	0.10	0.02	0.08	0.08	0.00	0.02
R13	441523.4	3769228.5	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.07	0.00	0.08	0.09	0.01	0.08	0.07	0.00	0.01
R14	442120	3769274.7	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.07	-0.01	0.08	0.09	0.01	0.08	0.08	0.00	0.01
R15	442529.1	3769329.9	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.08	-0.01	0.08	0.10	0.01	0.08	0.08	0.00	0.01
R16	443919.1	3769725	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.07	-0.01	0.08	0.08	0.00	0.08	0.07	0.00	0.00
R17	444881.6	3770086	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.06	0.06	-0.01	0.06	0.07	0.00	0.06	0.06	0.00	0.00
R18	446024	3770078	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.07	0.06	-0.01	0.07	0.07	0.00	0.07	0.07	0.00	0.00
R19	447309.3	3770459.4	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.05	0.05	-0.01	0.05	0.06	0.00	0.05	0.05	0.00	0.00
R20	441112.1	3768749.7	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.17	0.16	-0.01	0.17	0.23	0.06	0.17	0.15	-0.02	0.06
R21	441900	3768900	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.14	0.14	-0.01	0.15	0.19	0.04	0.14	0.14	-0.01	0.04
R22	442000	3769000	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.12	0.11	-0.01	0.12	0.15	0.03	0.12	0.11	-0.01	0.03
S1	440398.9	3766842.6	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.11	0.12	0.01	0.11	0.14	0.02	0.11	0.14	0.02	0.02
S2	440262.4	3766643.4	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.10	0.11	0.01	0.10	0.14	0.04	0.10	0.11	0.01	0.04
S3	440295.6	3767639.2	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.11	0.12	0.01	0.12	0.17	0.05	0.11	0.11	0.00	0.05
S4	440612.3	3769926	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.03	0.03	0.00	0.03	0.04	0.00	0.03	0.03	0.00	0.00
S5	441198.6	3769729.7	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.04	0.04	0.00	0.04	0.05	0.01	0.04	0.04	0.00	0.01

Residential Non-Cancer Chronic Maximum Hazard Index 2-Year Alternative

	UTM (m)			2023			2024			Overall
ID	X	Y	SCENARIO	No Action	Project	Max HI	No Action	Project	Max HI	MAX HI
H1	443818	3765934.1	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.04	0.03	0.00	0.04	0.04	0.00	0.00
R01	445946.8	3767789.9	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.12	0.11	-0.01	0.12	0.12	-0.01	-0.01
R02	448001.8	3765079.2	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.02	0.02	-0.01	0.02	0.02	-0.01	-0.01
R03	447122.9	3765379.3	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.02	0.02	-0.01	0.02	0.02	0.00	0.00
R04	446042.6	3765649.6	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.03	0.02	0.00	0.03	0.03	0.00	0.00
R05	442937.8	3766057.4	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.04	0.03	0.00	0.04	0.04	0.00	0.00
R06	441491.3	3766217.2	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.04	0.04	0.00	0.04	0.04	0.00	0.00
R07	440503.4	3767876.7	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.18	0.17	-0.01	0.18	0.26	0.08	0.08
R08	442036.7	3768089.2	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.12	0.13	0.00	0.13	0.12	0.00	0.00
R09	441322.3	3768350.4	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.27	0.34	0.07	0.28	0.25	-0.03	0.07
R10	441344.1	3768445.3	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.35	0.38	0.04	0.35	0.37	0.02	0.04
R11	441157.9	3769147.4	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.07	-0.01	0.08	0.11	0.02	0.02
R12	441198.1	3769179.7	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.07	-0.01	0.08	0.10	0.02	0.02
R13	441523.4	3769228.5	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.07	-0.01	0.08	0.09	0.01	0.01
R14	442120	3769274.7	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.07	-0.01	0.08	0.09	0.01	0.01
R15	442529.1	3769329.9	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.07	-0.01	0.08	0.10	0.01	0.01
R16	443919.1	3769725	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.08	0.06	-0.01	0.08	0.08	0.00	0.00
R17	444881.6	3770086	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.06	0.05	-0.01	0.06	0.07	0.00	0.00
R18	446024	3770078	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.07	0.06	-0.01	0.07	0.07	0.00	0.00
R19	447309.3	3770459.4	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.05	0.05	-0.01	0.05	0.06	0.00	0.00
R20	441112.1	3768749.7	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.17	0.14	-0.02	0.17	0.23	0.06	0.06
R21	441900	3768900	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.14	0.13	-0.02	0.15	0.19	0.04	0.04
R22	442000	3769000	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.12	0.10	-0.01	0.12	0.15	0.03	0.03
S1	440398.9	3766842.6	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.11	0.13	0.02	0.11	0.14	0.02	0.02
S2	440262.4	3766643.4	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.10	0.10	0.00	0.10	0.14	0.04	0.04
S3	440295.6	3767639.2	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.11	0.11	0.00	0.12	0.17	0.05	0.05
S4	440612.3	3769926	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.03	0.03	0.00	0.03	0.04	0.00	0.00
S5	441198.6	3769729.7	NonCancerChronicDerived_InhSoilDermMMilkCrops	0.04	0.04	0.00	0.04	0.05	0.01	0.01

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Worker Non-Cancer Chronic Maximum Hazard Index - Top 20 Receptors

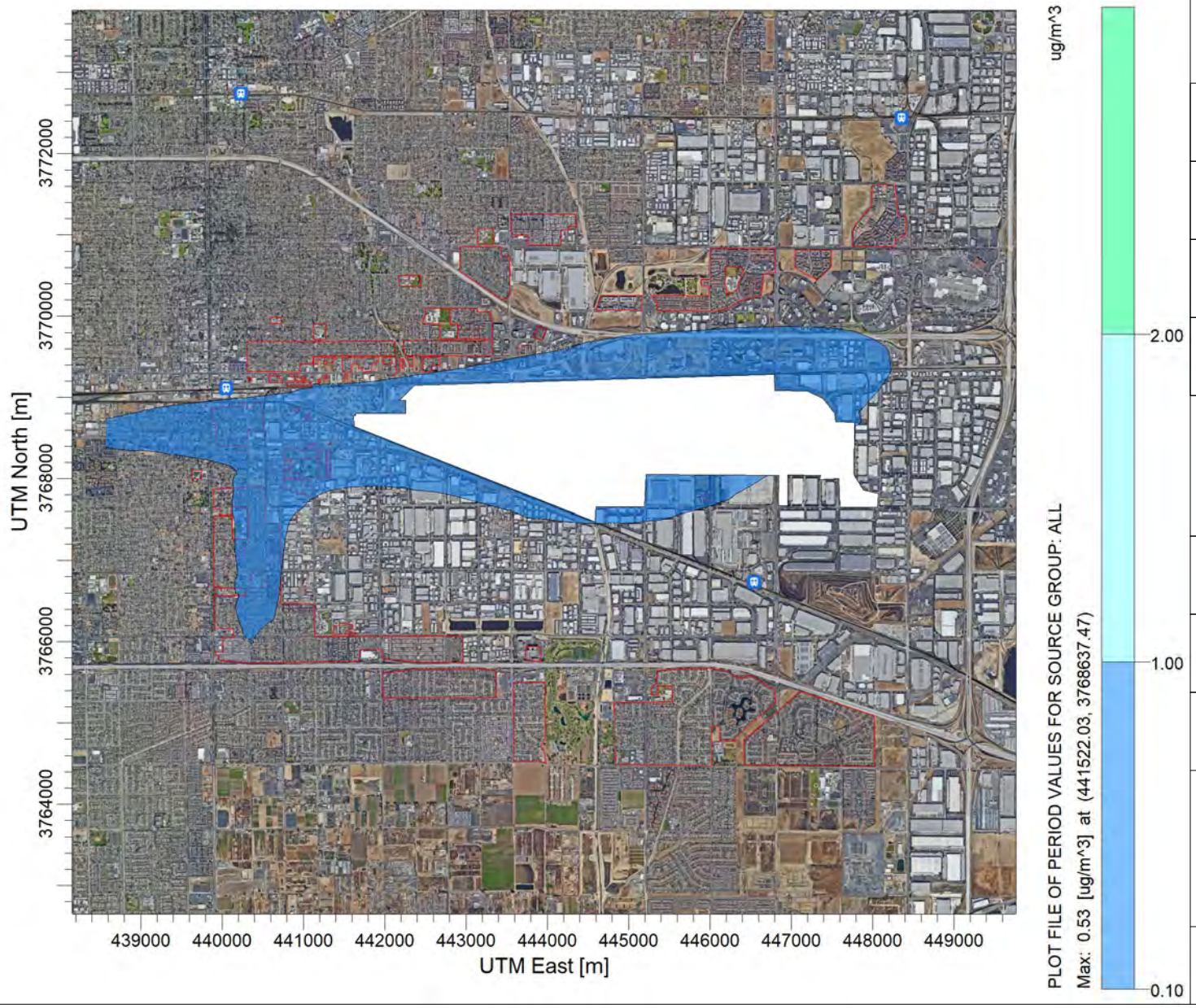
	UTM (m)			2023			2024			2025			Overall
ID	X	Y	SCENARIO	No Project	Project	Max HI	No Project	Project	Max HI	No Project	Project	Max HI	MAX HI
1914	441522	3768637	NonCancerChronicDerived_InhSoilDerm	0.35	0.34	-0.01	0.35	0.53	0.18	0.35	0.28	-0.06	0.18
1480	441600	3768600	NonCancerChronicDerived_InhSoilDerm	0.32	0.32	0.00	0.33	0.48	0.15	0.33	0.29	-0.04	0.15
1489	441600	3768700	NonCancerChronicDerived_InhSoilDerm	0.27	0.27	-0.01	0.28	0.41	0.13	0.27	0.23	-0.04	0.13
1879	441585	3768547	NonCancerChronicDerived_InhSoilDerm	0.34	0.34	0.00	0.34	0.48	0.13	0.34	0.32	-0.02	0.13
1953	441622	3768640	NonCancerChronicDerived_InhSoilDerm	0.29	0.28	0.00	0.29	0.42	0.13	0.29	0.25	-0.04	0.13
1478	441400	3768600	NonCancerChronicDerived_InhSoilDerm	0.29	0.29	0.00	0.30	0.42	0.13	0.29	0.26	-0.03	0.13
1479	441500	3768600	NonCancerChronicDerived_InhSoilDerm	0.29	0.29	0.00	0.30	0.42	0.13	0.29	0.26	-0.03	0.13
2103	441715	3768604	NonCancerChronicDerived_InhSoilDerm	0.30	0.30	0.00	0.31	0.43	0.12	0.30	0.28	-0.03	0.12
2104	441620	3768710	NonCancerChronicDerived_InhSoilDerm	0.26	0.25	-0.01	0.26	0.38	0.12	0.26	0.22	-0.04	0.12
1916	441440	3768580	NonCancerChronicDerived_InhSoilDerm	0.29	0.29	0.00	0.30	0.42	0.12	0.29	0.27	-0.02	0.12
1488	441500	3768700	NonCancerChronicDerived_InhSoilDerm	0.26	0.25	-0.01	0.26	0.38	0.12	0.26	0.22	-0.04	0.12
2099	442086	3768459	NonCancerChronicDerived_InhSoilDerm	0.36	0.37	0.01	0.36	0.32	-0.04	0.36	0.48	0.12	0.12
764	441325	3768575	NonCancerChronicDerived_InhSoilDerm	0.29	0.29	0.00	0.29	0.41	0.12	0.29	0.26	-0.03	0.12
1477	441300	3768600	NonCancerChronicDerived_InhSoilDerm	0.28	0.27	0.00	0.28	0.40	0.12	0.28	0.25	-0.03	0.12
1481	441700	3768600	NonCancerChronicDerived_InhSoilDerm	0.30	0.30	0.00	0.30	0.42	0.12	0.30	0.28	-0.02	0.12
1457	441800	3768400	NonCancerChronicDerived_InhSoilDerm	0.29	0.31	0.02	0.30	0.25	-0.04	0.29	0.41	0.12	0.12
1876	441864	3768438	NonCancerChronicDerived_InhSoilDerm	0.32	0.34	0.02	0.33	0.29	-0.04	0.32	0.44	0.12	0.12
1438	441400	3768300	NonCancerChronicDerived_InhSoilDerm	0.25	0.27	0.02	0.26	0.21	-0.05	0.25	0.37	0.12	0.12
1461	442200	3768400	NonCancerChronicDerived_InhSoilDerm	0.32	0.32	0.00	0.32	0.26	-0.06	0.32	0.43	0.11	0.11
765	441575	3768575	NonCancerChronicDerived_InhSoilDerm	0.30	0.30	0.00	0.30	0.41	0.11	0.30	0.28	-0.02	0.11

Worker Non-Cancer Chronic Maximum Hazard Index 2-Year Alternative - Top 20 Receptors

	UTM (m)			2023			2024			Overall
ID	X	Y	SCENARIO	No Project	Project	Max HI	No Project	Project	Max HI	MAX HI
2080	443847	3767767	NonCancerChronicDerived_InhSoilDerm	0.13	0.40	0.27	0.13	0.25	0.12	0.27
1914	441522	3768637	NonCancerChronicDerived_InhSoilDerm	0.35	0.28	-0.06	0.35	0.53	0.18	0.18
1480	441600	3768600	NonCancerChronicDerived_InhSoilDerm	0.32	0.28	-0.04	0.33	0.48	0.15	0.15
1489	441600	3768700	NonCancerChronicDerived_InhSoilDerm	0.27	0.23	-0.05	0.28	0.41	0.13	0.13
1879	441585	3768547	NonCancerChronicDerived_InhSoilDerm	0.34	0.31	-0.03	0.34	0.48	0.13	0.13
1953	441622	3768640	NonCancerChronicDerived_InhSoilDerm	0.29	0.25	-0.04	0.29	0.42	0.13	0.13
1478	441400	3768600	NonCancerChronicDerived_InhSoilDerm	0.29	0.25	-0.04	0.30	0.42	0.13	0.13
1479	441500	3768600	NonCancerChronicDerived_InhSoilDerm	0.29	0.26	-0.04	0.30	0.42	0.13	0.13
2103	441715	3768604	NonCancerChronicDerived_InhSoilDerm	0.30	0.27	-0.04	0.31	0.43	0.12	0.12
2104	441620	3768710	NonCancerChronicDerived_InhSoilDerm	0.26	0.22	-0.04	0.26	0.38	0.12	0.12
1916	441440	3768580	NonCancerChronicDerived_InhSoilDerm	0.29	0.26	-0.03	0.30	0.42	0.12	0.12
1488	441500	3768700	NonCancerChronicDerived_InhSoilDerm	0.26	0.21	-0.04	0.26	0.38	0.12	0.12
764	441325	3768575	NonCancerChronicDerived_InhSoilDerm	0.29	0.26	-0.03	0.29	0.41	0.12	0.12
1477	441300	3768600	NonCancerChronicDerived_InhSoilDerm	0.28	0.24	-0.04	0.28	0.40	0.12	0.12
1481	441700	3768600	NonCancerChronicDerived_InhSoilDerm	0.30	0.27	-0.03	0.30	0.42	0.12	0.12
765	441575	3768575	NonCancerChronicDerived_InhSoilDerm	0.30	0.27	-0.03	0.30	0.41	0.11	0.11
1476	441200	3768600	NonCancerChronicDerived_InhSoilDerm	0.27	0.23	-0.04	0.27	0.38	0.11	0.11
1487	441400	3768700	NonCancerChronicDerived_InhSoilDerm	0.24	0.20	-0.04	0.24	0.35	0.11	0.11
1917	441420	3768704	NonCancerChronicDerived_InhSoilDerm	0.24	0.20	-0.04	0.24	0.35	0.11	0.11
1465	441200	3768500	NonCancerChronicDerived_InhSoilDerm	0.32	0.30	-0.02	0.32	0.42	0.10	0.10

PROJECT TITLE:

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements
Non- Cancer Chronic Risk (maximum HI)



COMMENTS:

Note:These isopleths are for total risk, the risks without implementation of the project have not been subtracted

SOURCES:

30

RECEPTORS:

2251

OUTPUT TYPE:

Concentration

MAX:

0.53 ug/m^3

COMPANY NAME:

HELIX Environmenal Planning

DATE:

4/21/2022

SCALE: 1:75,684

0 2 km

PROJECT NO.:

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Residential Non-Cancer Acute Maximum Hazard Index

	UTM (m)			2023			2024			2025			Overall
ID	X	Y	SCENARIO	No Action	Project	Max HI	No Action	Project	Max HI	No Action	Project	Max HI	MAX HI
H1	443818.03	3765934.14	NonCancerAcute	0.45	0.40	-0.05	0.46	0.46	0.00	0.45	0.46	0.01	0.01
R01	445946.84	3767789.93	NonCancerAcute	1.29	1.16	-0.14	1.32	1.29	-0.03	1.29	1.37	0.07	0.07
R02	448001.77	3765079.22	NonCancerAcute	0.49	0.36	-0.14	0.51	0.43	-0.07	0.49	0.45	-0.05	-0.05
R03	447122.94	3765379.32	NonCancerAcute	0.41	0.35	-0.06	0.42	0.41	-0.01	0.41	0.41	0.00	0.00
R04	446042.57	3765649.63	NonCancerAcute	0.42	0.37	-0.05	0.43	0.43	0.00	0.42	0.42	0.01	0.01
R05	442937.76	3766057.37	NonCancerAcute	0.49	0.44	-0.05	0.50	0.50	0.00	0.49	0.50	0.01	0.01
R06	441491.3	3766217.18	NonCancerAcute	0.47	0.42	-0.06	0.48	0.49	0.00	0.47	0.48	0.01	0.01
R07	440503.41	3767876.66	NonCancerAcute	1.16	1.13	-0.02	1.18	1.32	0.14	1.15	1.26	0.11	0.14
R08	442036.65	3768089.2	NonCancerAcute	1.20	1.03	-0.18	1.23	1.12	-0.11	1.20	1.25	0.05	0.05
R09	441322.28	3768350.4	NonCancerAcute	1.71	1.63	-0.07	1.74	1.43	-0.31	1.70	2.15	0.45	0.45
R10	441344.1	3768445.29	NonCancerAcute	1.88	1.77	-0.11	1.92	1.85	-0.07	1.88	2.15	0.27	0.27
R11	441157.93	3769147.37	NonCancerAcute	1.50	1.26	-0.24	1.53	1.53	0.00	1.49	1.45	-0.05	0.00
R12	441198.12	3769179.74	NonCancerAcute	1.47	1.23	-0.24	1.50	1.48	-0.03	1.47	1.43	-0.04	-0.03
R13	441523.43	3769228.54	NonCancerAcute	1.50	1.28	-0.22	1.53	1.53	0.00	1.49	1.48	-0.02	0.00
R14	442119.99	3769274.66	NonCancerAcute	1.55	1.35	-0.20	1.58	1.63	0.05	1.55	1.52	-0.03	0.05
R15	442529.07	3769329.9	NonCancerAcute	1.61	1.42	-0.19	1.64	1.70	0.05	1.61	1.60	-0.01	0.05
R16	443919.05	3769724.99	NonCancerAcute	1.39	1.26	-0.13	1.42	1.52	0.10	1.39	1.40	0.01	0.10
R17	444881.55	3770085.97	NonCancerAcute	1.13	1.01	-0.12	1.15	1.21	0.05	1.13	1.13	0.01	0.05
R18	446023.97	3770078.04	NonCancerAcute	1.26	1.10	-0.16	1.29	1.31	0.03	1.26	1.25	-0.01	0.03
R19	447309.34	3770459.37	NonCancerAcute	0.95	0.84	-0.11	0.97	1.00	0.03	0.95	0.95	0.00	0.03
R20	441112.11	3768749.68	NonCancerAcute	1.56	1.37	-0.19	1.59	1.74	0.15	1.56	1.49	-0.06	0.15
R21	441900	3768900	NonCancerAcute	1.66	1.37	-0.29	1.69	1.66	-0.03	1.66	1.59	-0.06	-0.03
R22	442000	3769000	NonCancerAcute	1.60	1.33	-0.26	1.63	1.57	-0.06	1.59	1.57	-0.03	-0.03
S1	440398.94	3766842.56	NonCancerAcute	1.02	1.06	0.03	1.05	1.17	0.13	1.02	1.19	0.17	0.17
S2	440262.43	3766643.39	NonCancerAcute	0.85	0.85	0.00	0.87	1.05	0.18	0.85	0.90	0.05	0.18
S3	440295.6	3767639.22	NonCancerAcute	1.03	0.99	-0.04	1.05	1.27	0.22	1.03	1.03	0.00	0.22
S4	440612.34	3769925.99	NonCancerAcute	1.14	1.00	-0.14	1.16	1.17	0.01	1.14	1.15	0.01	0.01
S5	441198.61	3769729.73	NonCancerAcute	1.28	1.13	-0.15	1.30	1.33	0.02	1.28	1.29	0.01	0.02

Residential Non-Cancer Acute Maximum Hazard Index 2-Year Alternative

	UTM (m)			2023			2024			Overall
ID	X	Y	SCENARIO	No Action	Project	Max HI	No Action	Project	Max HI	MAX HI
H1	443818.03	3765934.14	NonCancerAcute	0.45	0.40	-0.05	0.46	0.46	0.00	0.00
R01	445946.84	3767789.93	NonCancerAcute	1.29	1.19	-0.11	1.32	1.29	-0.03	-0.03
R02	448001.77	3765079.22	NonCancerAcute	0.49	0.36	-0.14	0.51	0.43	-0.07	-0.07
R03	447122.94	3765379.32	NonCancerAcute	0.41	0.36	-0.06	0.42	0.41	-0.01	-0.01
R04	446042.57	3765649.63	NonCancerAcute	0.42	0.37	-0.05	0.43	0.43	0.00	0.00
R05	442937.76	3766057.37	NonCancerAcute	0.49	0.44	-0.05	0.50	0.50	0.00	0.00
R06	441491.3	3766217.18	NonCancerAcute	0.47	0.42	-0.05	0.48	0.49	0.00	0.00
R07	440503.41	3767876.66	NonCancerAcute	1.16	1.14	-0.01	1.18	1.32	0.14	0.14
R08	442036.65	3768089.2	NonCancerAcute	1.20	1.06	-0.14	1.23	1.12	-0.11	-0.11
R09	441322.28	3768350.4	NonCancerAcute	1.71	1.84	0.14	1.74	1.43	-0.31	0.14
R10	441344.1	3768445.29	NonCancerAcute	1.88	1.88	0.00	1.92	1.85	-0.07	0.00
R11	441157.93	3769147.37	NonCancerAcute	1.50	1.24	-0.26	1.53	1.53	0.00	0.00
R12	441198.12	3769179.74	NonCancerAcute	1.47	1.22	-0.25	1.50	1.48	-0.03	-0.03
R13	441523.43	3769228.54	NonCancerAcute	1.50	1.27	-0.22	1.53	1.53	0.00	0.00
R14	442119.99	3769274.66	NonCancerAcute	1.55	1.33	-0.22	1.58	1.63	0.05	0.05
R15	442529.07	3769329.9	NonCancerAcute	1.61	1.41	-0.20	1.64	1.70	0.05	0.05
R16	443919.05	3769724.99	NonCancerAcute	1.39	1.25	-0.15	1.42	1.52	0.10	0.10
R17	444881.55	3770085.97	NonCancerAcute	1.13	1.00	-0.13	1.15	1.21	0.05	0.05
R18	446023.97	3770078.04	NonCancerAcute	1.26	1.09	-0.17	1.29	1.31	0.03	0.03
R19	447309.34	3770459.37	NonCancerAcute	0.95	0.83	-0.12	0.97	1.00	0.03	0.03
R20	441112.11	3768749.68	NonCancerAcute	1.56	1.32	-0.24	1.59	1.74	0.15	0.15
R21	441900	3768900	NonCancerAcute	1.66	1.36	-0.30	1.69	1.66	-0.03	-0.03
R22	442000	3769000	NonCancerAcute	1.60	1.33	-0.26	1.63	1.57	-0.06	-0.06
S1	440398.94	3766842.56	NonCancerAcute	1.02	1.09	0.06	1.05	1.17	0.13	0.13
S2	440262.43	3766643.39	NonCancerAcute	0.85	0.84	-0.02	0.87	1.05	0.18	0.18
S3	440295.6	3767639.22	NonCancerAcute	1.03	0.94	-0.09	1.05	1.27	0.22	0.22
S4	440612.34	3769925.99	NonCancerAcute	1.14	1.00	-0.14	1.16	1.17	0.01	0.01
S5	441198.61	3769729.73	NonCancerAcute	1.28	1.12	-0.15	1.30	1.33	0.02	0.02

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements

Worker Non-Cancer Acute Maximum Hazard Index - Top 20 Receptors

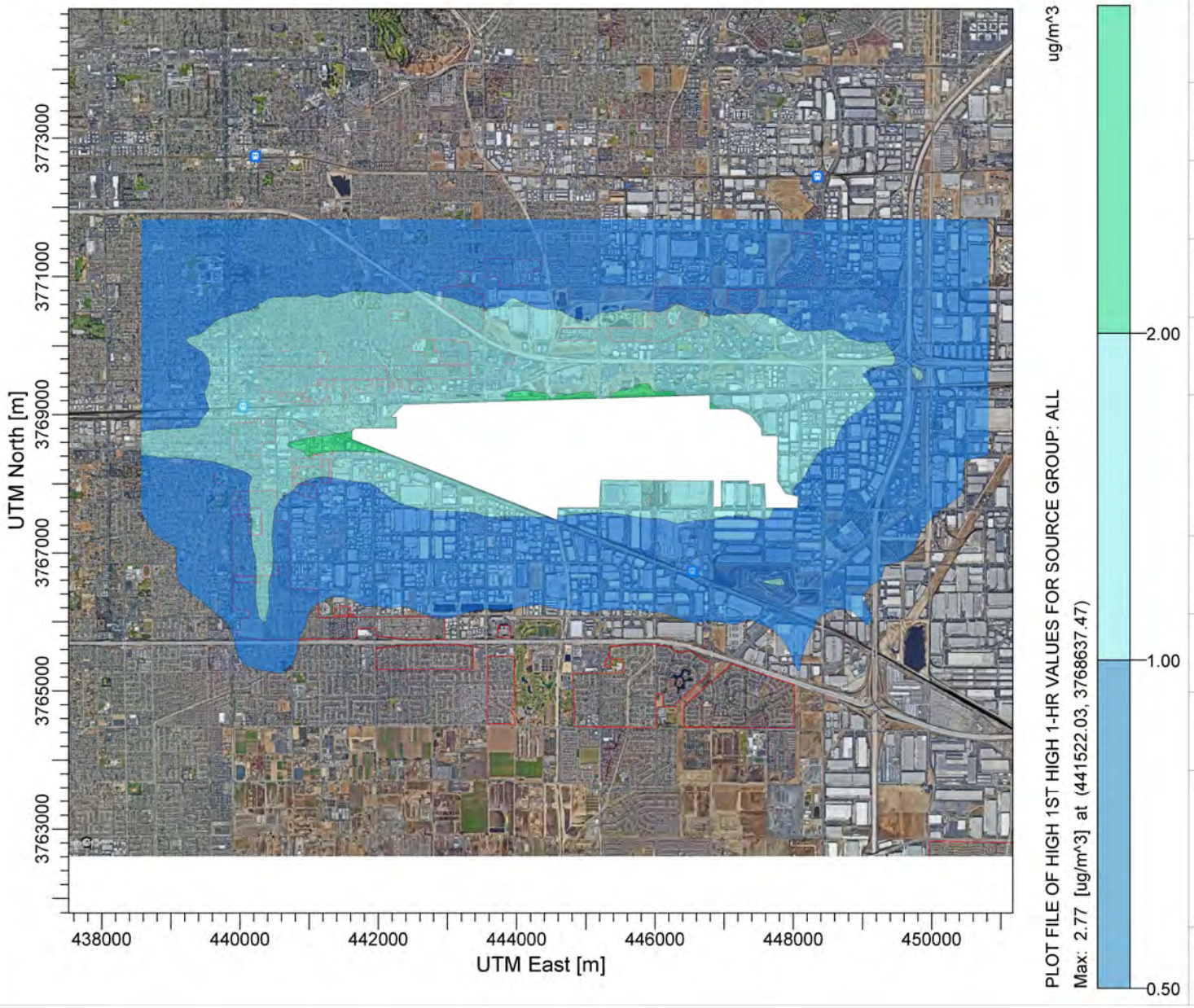
	UTM (m)			2023.00			2024.00			2025.00			Overall
ID	X	Y	SCENARIO	No Action	Project	Max HI	No Action	Project	Max HI	No Action	Project	Max HI	MAX HI
1914	441522	3768637	NonCancerAcute	2.18	1.98	-0.20	2.23	2.77	0.54	2.18	1.96	-0.23	0.54
1916	441440.3	3768580	NonCancerAcute	2.15	1.97	-0.18	2.19	2.73	0.53	2.15	1.96	-0.19	0.53
1480	441600	3768600	NonCancerAcute	2.19	1.98	-0.21	2.24	2.77	0.53	2.19	1.97	-0.23	0.53
1478	441400	3768600	NonCancerAcute	2.09	1.91	-0.19	2.14	2.66	0.52	2.10	1.89	-0.20	0.52
1479	441500	3768600	NonCancerAcute	2.12	1.93	-0.19	2.17	2.67	0.50	2.12	1.93	-0.19	0.50
2103	441714.7	3768604	NonCancerAcute	2.18	1.96	-0.22	2.23	2.73	0.50	2.19	1.96	-0.23	0.50
764	441325	3768575	NonCancerAcute	2.07	1.90	-0.18	2.12	2.61	0.49	2.08	1.90	-0.17	0.49
1481	441700	3768600	NonCancerAcute	2.18	1.96	-0.22	2.23	2.72	0.49	2.18	1.96	-0.22	0.49
765	441575	3768575	NonCancerAcute	2.15	1.96	-0.19	2.20	2.69	0.49	2.15	1.97	-0.19	0.49
1477	441300	3768600	NonCancerAcute	2.03	1.86	-0.17	2.08	2.56	0.48	2.04	1.86	-0.17	0.48
1476	441200	3768600	NonCancerAcute	2.05	1.87	-0.18	2.09	2.57	0.48	2.05	1.87	-0.18	0.48
1473	440900	3768600	NonCancerAcute	1.84	1.66	-0.17	1.88	2.34	0.46	1.84	1.64	-0.20	0.46
1598	441322.3	3768350	NonCancerAcute	1.71	1.63	-0.07	1.74	1.43	-0.31	1.70	2.15	0.45	0.45
735	441325	3768325	NonCancerAcute	1.64	1.56	-0.07	1.67	1.35	-0.32	1.63	2.08	0.45	0.45
1911	441734.4	3768382	NonCancerAcute	1.91	1.78	-0.14	1.95	1.58	-0.38	1.91	2.36	0.45	0.45
1879	441585.5	3768547	NonCancerAcute	2.16	1.96	-0.20	2.21	2.66	0.45	2.16	2.00	-0.16	0.45
1457	441800	3768400	NonCancerAcute	1.98	1.83	-0.15	2.02	1.66	-0.37	1.97	2.41	0.44	0.44
1953	441622	3768640	NonCancerAcute	2.03	1.82	-0.20	2.07	2.50	0.43	2.03	1.85	-0.18	0.43
1455	441600	3768400	NonCancerAcute	1.89	1.76	-0.12	1.93	1.63	-0.30	1.88	2.29	0.41	0.41
1461	442200	3768400	NonCancerAcute	2.24	1.99	-0.25	2.28	1.83	-0.45	2.23	2.63	0.40	0.40

Worker Non-Cancer Acute Maximum Hazard Index 2-Year Alternative - Top 20 Receptors

	UTM (m)			2023.00			2024.00			Overall
ID	X	Y	SCENARIO	No Action	Project	Max HI	No Action	Project	Max HI	MAX HI
1914	441522	3768637	NonCancerAcute	2.18	1.80	-0.38	2.23	2.77	0.54	0.54
1916	441440	3768580	NonCancerAcute	2.15	1.80	-0.35	2.19	2.73	0.53	0.53
1480	441600	3768600	NonCancerAcute	2.19	1.81	-0.39	2.24	2.77	0.53	0.53
1478	441400	3768600	NonCancerAcute	2.09	1.74	-0.35	2.14	2.66	0.52	0.52
1479	441500	3768600	NonCancerAcute	2.12	1.77	-0.35	2.17	2.67	0.50	0.50
2103	441715	3768604	NonCancerAcute	2.18	1.79	-0.39	2.23	2.73	0.50	0.50
764	441325	3768575	NonCancerAcute	2.07	1.75	-0.33	2.12	2.61	0.49	0.49
1481	441700	3768600	NonCancerAcute	2.18	1.79	-0.39	2.23	2.72	0.49	0.49
765	441575	3768575	NonCancerAcute	2.15	1.80	-0.35	2.20	2.69	0.49	0.49
1477	441300	3768600	NonCancerAcute	2.03	1.71	-0.32	2.08	2.56	0.48	0.48
1476	441200	3768600	NonCancerAcute	2.05	1.71	-0.34	2.09	2.57	0.48	0.48
1473	440900	3768600	NonCancerAcute	1.84	1.51	-0.33	1.88	2.34	0.46	0.46
1879	441585	3768547	NonCancerAcute	2.16	1.82	-0.34	2.21	2.66	0.45	0.45
1953	441622	3768640	NonCancerAcute	2.03	1.68	-0.35	2.07	2.50	0.43	0.43
1475	441100	3768600	NonCancerAcute	1.93	1.63	-0.30	1.97	2.37	0.40	0.40
763	441075	3768575	NonCancerAcute	1.87	1.60	-0.27	1.91	2.30	0.39	0.39
1474	441000	3768600	NonCancerAcute	1.84	1.54	-0.30	1.88	2.27	0.39	0.39
2102	441807	3768568	NonCancerAcute	2.20	1.81	-0.38	2.25	2.63	0.39	0.39
1464	441100	3768500	NonCancerAcute	1.91	1.69	-0.22	1.95	2.33	0.38	0.38
762	440825	3768575	NonCancerAcute	1.77	1.48	-0.29	1.81	2.17	0.36	0.36

PROJECT TITLE:

ONT Rehabilitation of Runway 8R-26L and Associated Airfield Improvements
Non- Cancer Acute Risk (maximum HI)



COMMENTS:

Note:These isopleths are for total risk, the risks without implementation of the project have not been subtracted

SOURCES:

30

RECEPTORS:

2251

OUTPUT TYPE:

Concentration

MAX:

2.77 ug/m^3

COMPANY NAME:

HELIX Environmenal Planning

DATE:

4/21/2022

SCALE: 1:89,054

0 2 km

PROJECT NO.:

Appendix J

City of Ontario Planning Department Coordination

From: Rudy Zeledon
To: Ryan Lombardi
Cc: Caroline Pinegar; Walker, Nicole
Subject: Development proposed around ONT (2023, 2024, and 2025)
Date: Tuesday, February 15, 2022 12:10:23 PM
Attachments: image001.png
image002.png
image003.png
image004.png
Ontario Projects - 2 Mile Radius Map.pdf
ONT Airport - 2 Mile Radius Project List.xlsx

Good Morning Ryan,

Attached is a copy of a recently completed cumulative project map for ONT and a spreadsheet with the project(s) information.

If you have any questions, please let me know.

From: Ryan Lombardi <rlombardi@HNTB.com>
Sent: Wednesday, February 2, 2022 11:31 AM
To: Thomas Grahn <TGrahn@ontarioca.gov>
Cc: nwalker@flyontario.com; Caroline Pinegar <cpinegar@hntb.com>
Subject: [WARNING: UNSCANNABLE EXTRACTION FAILED]Development proposed around ONT (2023, 2024, and 2025)

Hi Thomas,

I am working with Ontario International Airport Authority (OIAA) to complete CEQA documentation for upcoming projects at ONT, proposed for construction between 2023-2025. In order to complete a cumulative impact analysis, we need to identify non-OIAA projects that may occur within one mile of the Airport during the same construction timeframe. I was hoping you could help, or direct me to who may be able to help, in compiling a list of development projects proposed in 2023, 2024 and 2025 within an approximate one-mile boundary of the Airport (PDF and kmz attached for reference).

Thank you,

Ryan Lombardi, P.E.
Environmental Planning Project Manager
Office (703) 253-5858
Cell (703) 403-9060

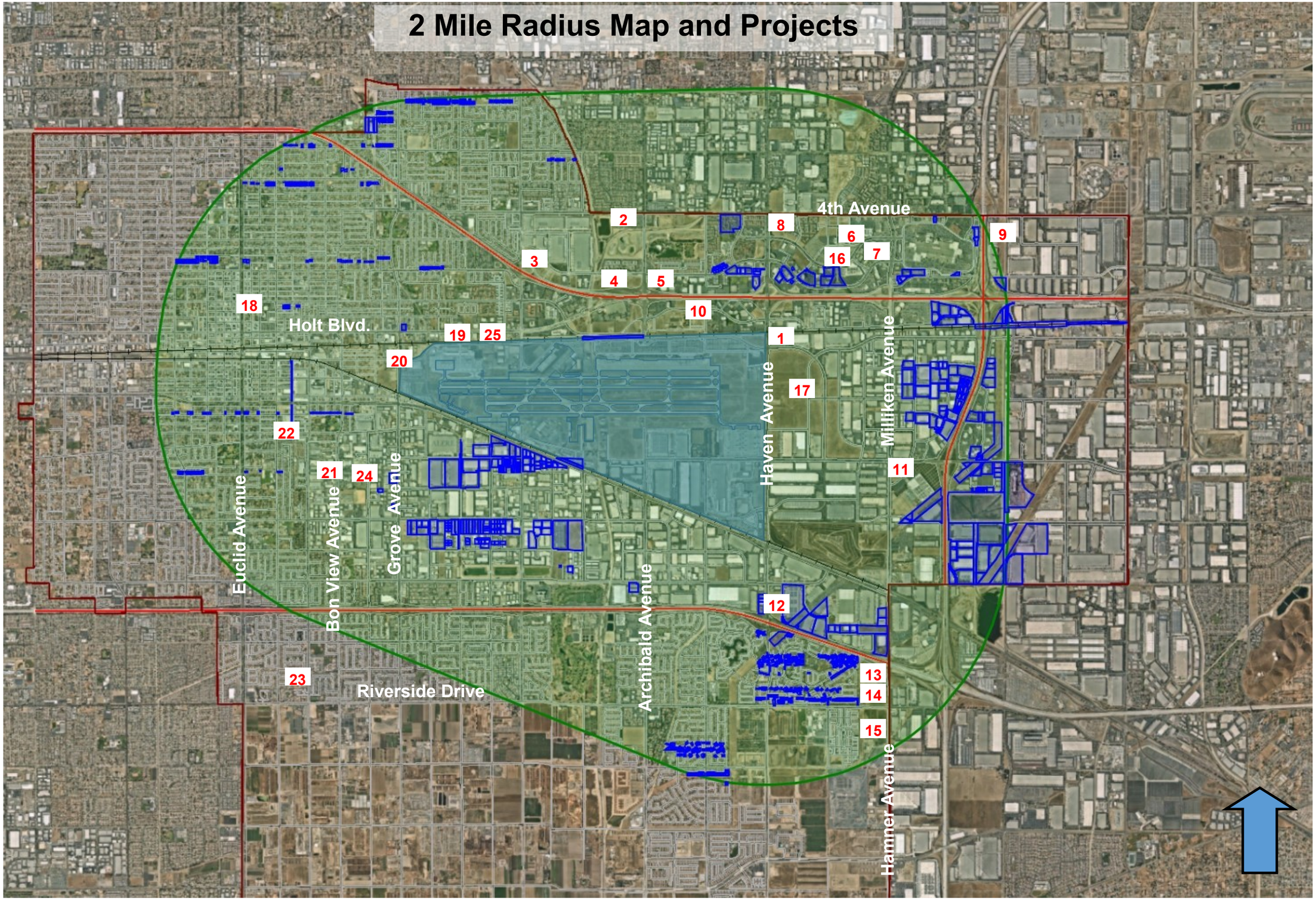
HNTB CORPORATION
2900 South Quincy St. Suite 600, Arlington, VA 22206 | www.hntb.com [hntb.com]

100+ YEARS OF INFRASTRUCTURE SOLUTIONS

[twitter.com] [linkedin.com] [facebook.com] [instagram.com]

Ontario Projects within a 2-Mile Radius								
Map Number	Project Description	Location/APN	Residential Units	Commercial Building SF	Industrial Building SF	Entitled	Under Construction	In Process
1	File No. PDEV20-008 - Industrial Development	NEC of Airport Drive/Haven Avenue APN:0211-222-66			200,291	X		
2	Top Golf - Recreation	2714 East 4th Street		50,000 (Site 600,000 SF)			X	
3	Palmer Apartments / Commercial Retail APNs: 0110-311-52, 53, 54 and 55.	SEC of Vineyard and Inland Empire Blvd. APN:	950	5,000			X	
4	File No. PDEV19-024: IKEA-Retail Development	APNS: 0110-321-74, 75, 76 and 0110-321-29 and 77		329,850				X
5	File PDEV19-067: Hyatt Dual Hotel 265 Rooms	SEC of Archibald/Inland Empire, APNs:0210-191-29 thru 32		157,370		X		
6	File No. PDEV19-054- Townhomes	SWC of Via Alba/Via Villagio - APN 0210-204-40	72				X	
7	File No. PDEV19-061 - Townhomes	NEC of Ontario Center Parkway/ Via Alba, APN:0210-204-26	110				X	
8	File No. 21-013 - Retail Shopping Center	SEC of Haven Ave. and 4th Street. APNS:0210-531-06 thru 14.		91,163		X		
9	File No. PDEV21-021 - Extended Stay Hotel 138 rooms	5060 East 4th Street, APN 0238-012-30		57,060				X
10	File No. PDEV17-016 - Cambria Hotel 124 Rooms	535 N Turner Avenue, APN: 0210-192-24		83,500		X		
11	PDEV21-018 - Industrial Development	SEC of Jurupa/Milliken - APN:0238-121-75			168,172			X
12	PDEV19-057	NEC of Haven Ave. and 60FWY			281,000	X		
13	PDEV21-007	SWC of Milliken and 60 FWY			393,334	X		
14	PDEV19-059	NWC of Riverside Dr. and Milliken Ave.			295,991	X		
15	PDEV18-031	SWC Riverside Dr. and Hamner Ave.			968,092	X		
16	Adept	4th Street south to Concours' between Via Asti and Via Oiemonte	691	70,538				X
17	California Logistic Center	Airport Drive south to Jurupa Street between Haven Avenue and Double Day Avenue			4,285,380			X
18	PDEV20-020	NEC of Euclid Ave. And C Street	144	4,500		X		
19	PDEV21-003	1486 East Holt Blvd.			26,000	X		
20	PDEV21-038	1001 East Holt	42	12,119				X
21	PDEV21-007	1516 South Bon View			31,500			X
22	PDEV21-035	Sec of Sultana Ave. and Belmont			60,455			X
23	PDEV20-003	2862 South Campus Avenue	92				X	
24	PDEV19-040	1612 South Cucamonga Ave.			211,358		X	
25	PDEV19-048	1650 East Holt Blvd.			83,416		X	
Totals			2,101	811,100	7,004,989			

2 Mile Radius Map and Projects



Appendix J

Two-Year Program Alternative

APPENDIX K:
Two-Year Program Alternative

The following reports are included as part of this appendix to support the alternatives discussion:

- Attachment K-1: Email from OIAA to FAA, "Ontario International Airport ACIP Submittal, January 31, 2020, with Attachment ONT Project Sheets and Exhibits 2020 1-30-20_r1.pdf.
- Attachment K-2: 2019 Airport Capital Improvement Plan (ACIP).
- Attachment K-3: FAA, "Overview: What is AIP? – Airports."
- Attachment K-4: Email from FAA to OIAA, "Ontario Int' Airport (ONT) – ACIP (Additional Info Request), March 19, 2020
- Attachment K-5: Construction Workforce Labor Shortages References
- Attachment K-6: OIAA Funding and Financial Resources

Appendix K-1

Email from OIAA to FAA, "Ontario International Airport ACIP Submittal, January 31, 2020, with Attachment ONT Project Sheets and Exhibits 2020 1-30-20

From:	Brantley, Michelle
To:	Perez, Brenda (FAA)
Cc:	Richardson, Al (FAA); Samad, Sam (FAA); Smith, Jeffrey; Owens, Keith; AFlake; Bruce Atlas; Schubert, John; Elkadi, Atif; Campos, Gail (FAA); mike.n.williams@faa.gov
Subject:	Ontario International Airport ACIP Submittal
Date:	Friday, January 31, 2020 6:50:30 PM
Attachments:	ONT Project Sheets and Exhibits 2020 1-30-20_r1.pdf
Importance:	High

Hi Brenda,

Our final Ontario International Airport ACIP data sheet, exhibits and project descriptions are attached.

Based on our meeting with you on January 7th, we have incorporated and addressed your comments with the following changes:

- Separated and moved up design for Project #4 Rehabilitate Runway 8R-26L and Connector Taxiways to take advantage of expiring entitlements.
- Updated the expected share of Federal and Local funds for the 2 years of construction for Projects #7 and #8 Rehabilitate Runway 8R-26L and Connector Taxiways.

To ensure we are able to utilize the expiring entitlements, please note that we have begun the necessary internal processes required to kick off the design of the 8R-26L project and have initiated coordination with our consultant to assist with the environmental planning required for CEQA and NEPA.

In regards to the federal funds for the Runway 8R-26L rehabilitation, the federal amount requested for the two years of construction in 2022 and 2023 was determined through an analysis of total grant amounts awarded to medium hub airports around the country over the last 10 years for similar runway rehabilitation projects. Based on this analysis and the fact that this project was identified in the previous ACIP with an NPR of 83, we believe the federal funds listed in our ACIP submission are reasonable. The Ontario International Airport Authority remains committed to pursuing additional revenue sources to help us pay for this and many more projects that are vital to the continued successful operation of the airport. We welcome further discussions in this area and would like to add it to the agenda of the monthly FAA check-in call we do with you.

Please note that, per the FAA's suggestion, we did consider alternative phasing of the construction over three years. Based on our professional experience and industry expertise, extending construction on the runway and associated taxiways does not benefit the funding plan due to the increase in the total cost of the project. Furthermore, it would extend closure/disruption of operations on this Continuous Power Airport runway without a justifiable benefit and introduces unnecessary risk to the project with the multiple phases. The extension of duration would also delay critical projects in the following years of the ONT ACIP.

Finally, we would like to bring your attention to the Project #9, 26L ALSF, which is listed in the ACIP as an FAA project. As we discussed, the initiation of this project soon is critical to being able to replace the ALSF during the reconstruction of the runway. We appreciate your willingness to address this topic with TechOps at your February 11 meeting and look forward to hearing about next steps.

Starting tomorrow, I will be out of the country for 10 days, but I will be checking emails while I'm away. On behalf of Ontario International Airport, I want to thank you for your partnership as we plan for the airport's future and I am happy to address any questions you may have.

Michelle Brantley
Director of Planning

U.S. Department of Transportation **Federal**
Aviation Administration

Airport Capital Improvement Plan (ACIP)

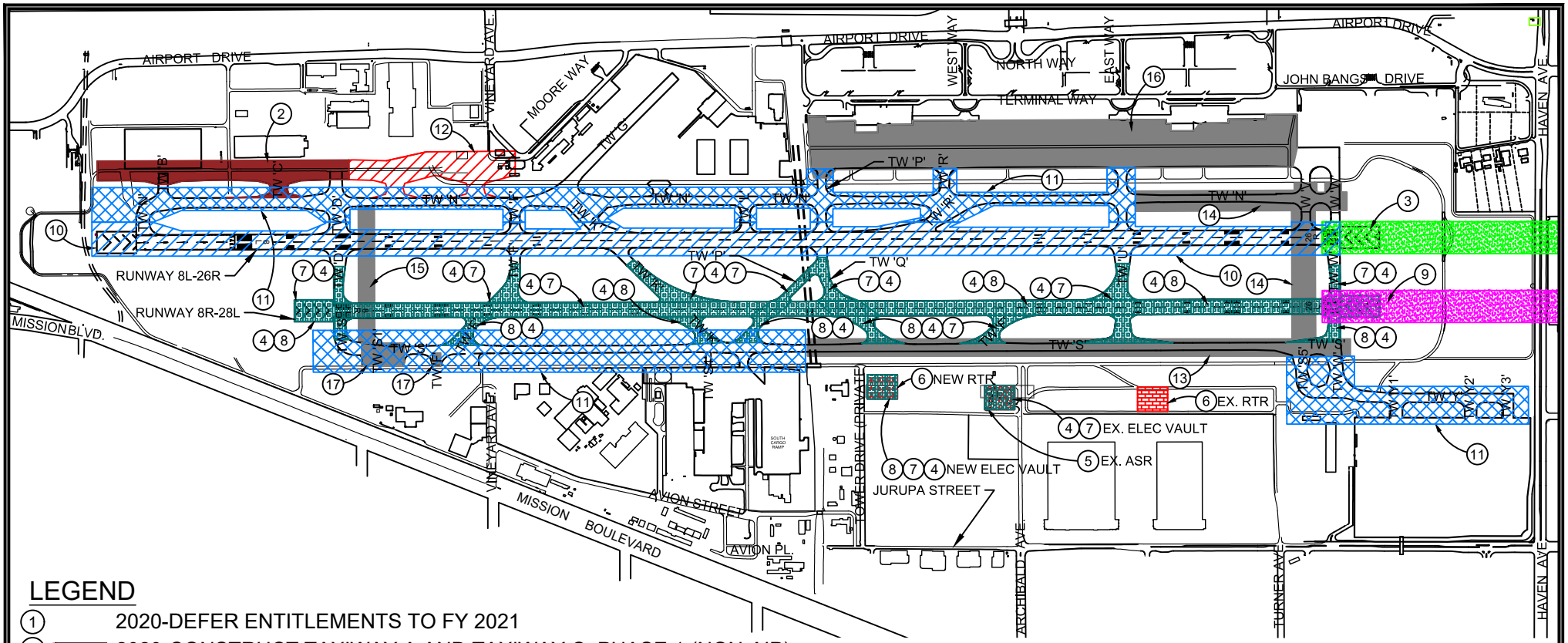
1. Airport:	2. State:	NPIAS No.:	4. LOCID:
Ontario International Airport (ONT)	**California**	**06-0175**	**ONT**

5. Project Description *(by Funding Year in Priority Order)*	Federal Funds	State Funds	LOCAL FUNDS		Total $	Environmental Impact	Start Date	Completion Date
			PFC	Other				
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1: 2020 - Defer Entitlements to FY 2021						N/A	N/A	N/A
2: 2020 - Construct Taxiway A and Taxiway C: Phase 1 (Non-AIP)				31,544	31,544	Cat-Ex	3/30/2020	12/31/2021
3: 2020 - Upgrade Runway 26R ILS (Non-AIP)				6,000	6,000	Cat-Ex	3/30/2021	12/31/2022
SUBTOTAL (2020)				**37,544**	**37,544**			
4: 2021 - Rehabilitate Runway 8R-26L and Connector Taxiways: Design	8,059			1,941	10,000	N/A	6/1/2020	2/1/2022
5: 2021 - ASR Relocation (Non-AIP)				14,296	14,296	Pending	3/1/2020	11/5/2025
6: 2021 - RTR Relocation (Non-AIP)				3,899	3,899	Pending	3/1/2020	11/5/2023
7: 2022 - Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 1	21,608			18,706	40,314	Pending	12/30/2021	4/30/2024
8: 2023 - Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 2	21,608			21,955	43,563	Pending	12/30/2021	4/30/2025
9: 2023 - Upgrade Runway 26L ALSF (FAA Funded)	TBD				TBD	Pending	1/1/2024	10/31/2024
10: 2024 - Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting: Phase 1	10,090			2,430	12,520	Pending	12/30/2023	6/1/2025
11: 2025 - Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting: Phase 2	8,035			1,935	9,970	Pending	5/1/2024	6/30/2026
12: 2025 - Construct Taxiway A: Phase 2 (Non-AIP)				102,797	102,797	Pending	11/4/2024	12/30/2025
SUBTOTAL (2021-2025)	**69,400**			**167,959**	**237,359**			
13: 2026 - Rehabilitate Taxiway S Phase 2: Channel to Taxiway W	35,575			8,568	44,143			
14: 2027 - Reconstruct Taxiway N East of U and Construct Taxiway V Extension to S5	10,851			2,613	13,464			
15: 2028 - Construct Taxiway E	15,773			3,799	19,572			
16: 2029 - Relocate Taxiway N1 and Rehabilitate Terminals 2, 3 and 4 Aprons Phase 1: Paving and Electrical Improvements	5,232			1,260	6,492			
17: 2030 - Rehabilitate Taxiway S1 and F South of Taxiway S Within Movement Area	2,628			633	3,261			
SUBTOTAL (2026-2030)	**70,059**			**16,874**	**86,933**			
TOTAL (2021-2030): DOES NOT INCLUDE 2020	**139,459**			**184,833**	**324,292**			

All costs on this sheet are expressed in $1,000's

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley — January 30, 2020	(909) 544-5255
Signature — Date	Contact Phone (Print or Type)



LEGEND

1. 2020-DEFER ENTITLEMENTS TO FY 2021
2. 2020-CONSTRUCT TAXIWAY A AND TAXIWAY C: PHASE 1 (NON-AIP)
3. 2020-UPGRADE RUNWAY 26R ILS (NON-AIP)
4. 2021-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: DESIGN
5. 2021-ASR RELOCATION (NON-AIP)
6. 2021-RTR RELOCATION (NON-AIP)
7. 2022-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 1
8. 2023-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 2
9. 2023-UPGRADE RUNWAY 26L ALSF (FAA FUNDED)
10. 2024-REHABILITATE RUNWAY 8L-26R LIGHTING AND TAXIWAY LIGHTING: PHASE 1
11. 2025-REHABILITATE RUNWAY 8L-26R LIGHTING AND TAXIWAY LIGHTING: PHASE 2
12. 2025-CONSTRUCT TAXIWAY A: PHASE 2 (NON-AIP)
13. 2026-REHABILITATE TAXIWAY S PHASE 2: CHANNEL TO TAXIWAY W
14. 2027-RECONSTRUCT TAXIWAY N EAST OF TAXIWAY U AND CONSTRUCT TAXIWAY V EXTENSION TO S5
15. 2028-CONSTRUCT TAXIWAY E
16. 2029-RELOCATE TAXIWAY N1 AND REHABILITATE TERMINALS 2, 3, AND 4 APRONS PHASE 1: PAVING AND ELECTRICAL IMPROVEMENTS
17. 2030-REHABILITATE TAXIWAY S1 AND F SOUTH OF TAXIWAY S WITHIN MOVEMENT AREA

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2021-2025 ACIP

OVERALL

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	0 OF 13
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2020		1
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	N/A	Defer Entitlements to FY 2021			
		Design / Coordination / Administration (10%)	$0	$0	$0
		Construction	$0	$0	$0
		Construction Management / Inspection / Monitoring (12.5%)	$0	$0	$0
		TOTAL	$0	$0	$0

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **N/A**
Description:
Defer entitlements - NO PROJECT

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	N/A
Grant Offer	N/A	Construction Completion	N/A
		Grant Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

N/A

Date of Last ALP Approval Depicting Proposed Projects

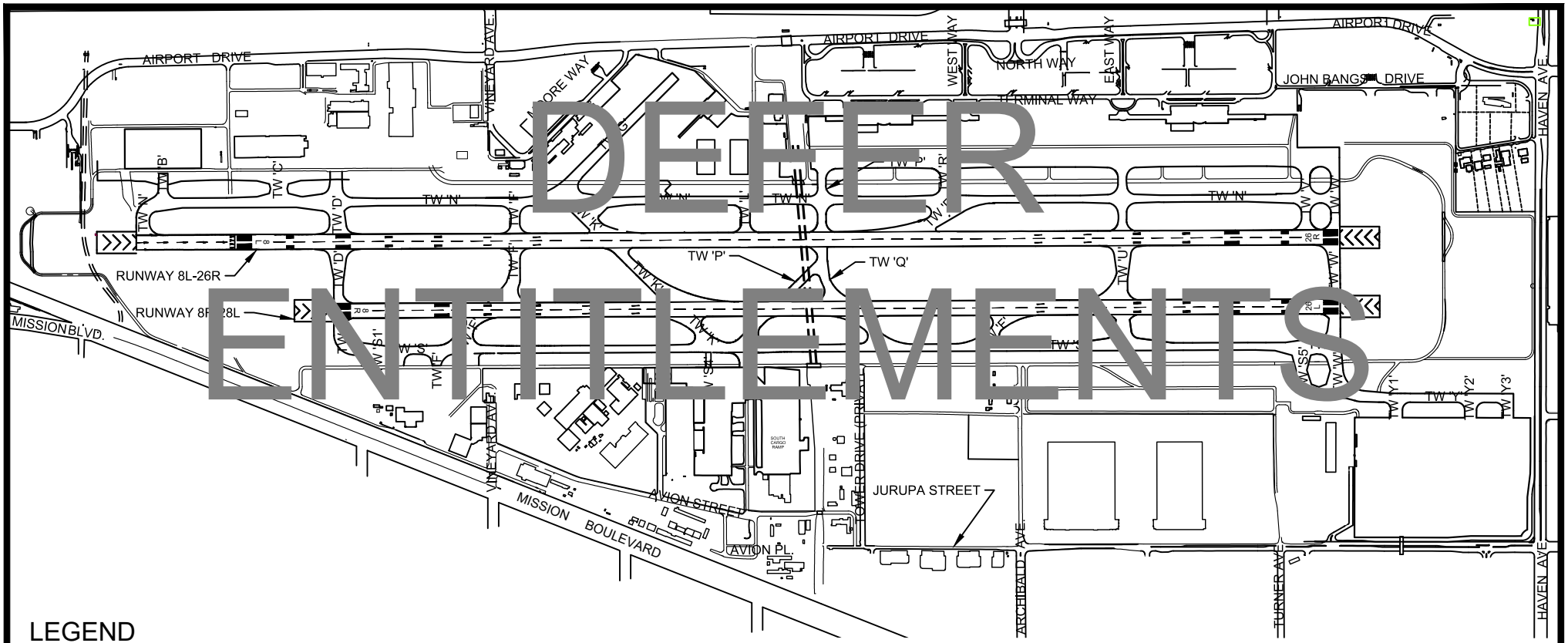
N/A

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley	(909) 544-5255
Signature — January 30, 2020 (Date)	Contact Phone (Print or Type)



DEFER
ENTITLEMENTS

LEGEND

① 2020-DEFER ENTITLEMENTS TO FY 2021

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2020 ACIP

DEFER ENTITLEMENTS

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	1 OF 13
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2020		2
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Construct Taxiway A and Taxiway C: Phase 1 (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$2,575,000	$2,575,000
		Construction	$0	$25,750,000	$25,750,000
		Construction Management / Inspection / Monitoring (12.5%)	$0	$3,218,750	$3,218,750
		TOTAL	$0	$31,543,750	$31,543,750

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **CA/TW/CO** **NPR: 79**
Overall Development Objective: **Construct Taxiway A and C**
Description:
Project is the construction of a parallel taxiway that runs east-west, along with connector Taxiway 'C'. Taxiway 'A' will eventually connect to Taxiway 'N1'. The project consists of building and pavement demolition, new pavement, airfield lighting, airfield signage, grading, pavement markings, and utility relocations.

Approximate Area:
Project includes 63,200 SY of paving.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	March 30, 2020
Grant Offer	N/A	Construction Completion	December 31, 2021
		Grant Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Project approved as Cat-Ex on November 6, 2018.

Date of Last ALP Approval Depicting Proposed Projects

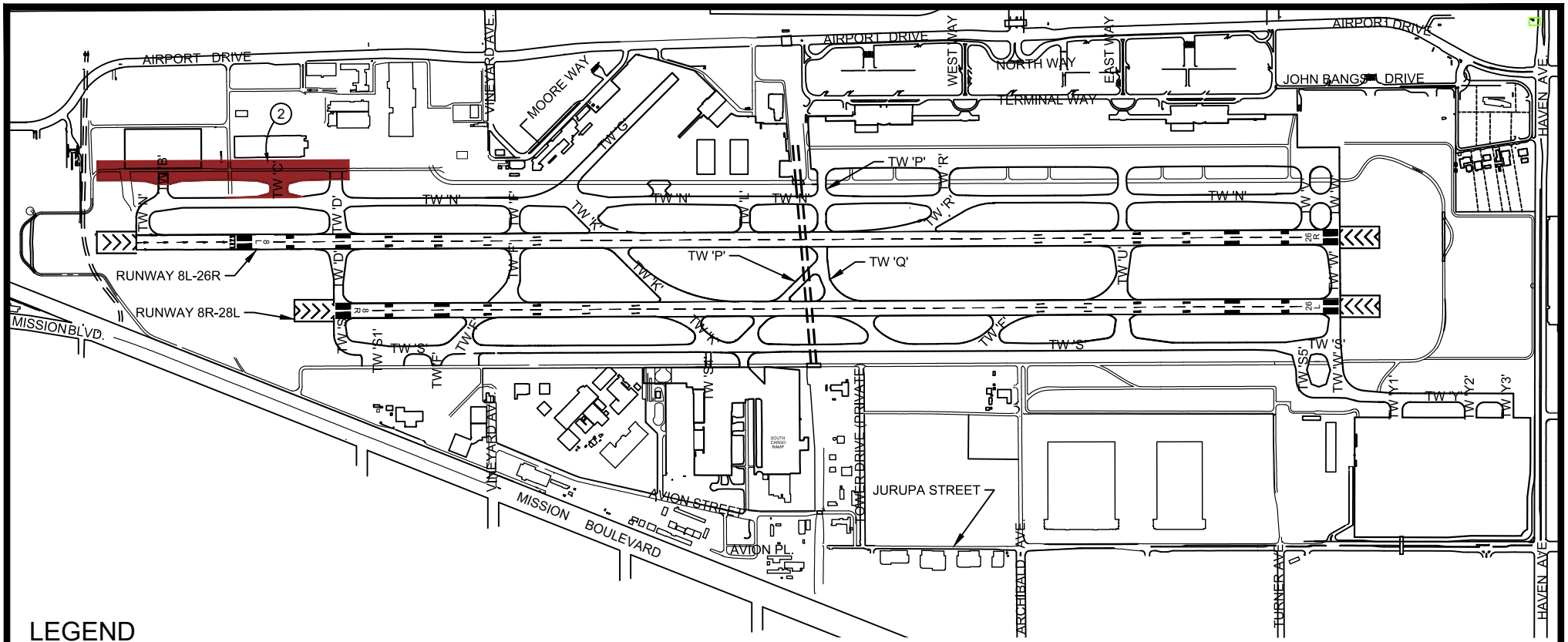
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley	(909) 544-5255
Signature — January 30, 2020 (Date)	Contact Phone (Print or Type)



LEGEND

(2) 2020-CONSTRUCT TAXIWAY A AND TAXIWAY C: PHASE 1 (NON-AIP)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2020 ACIP

CONSTRUCT TAXIWAY A AND C: PHASE 1

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 2
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2020		3
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	D	Upgrade Runway 26R ILS (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$489,796	$489,796
		Construction	$0	$4,897,959	$4,897,959
		Construction Management / Inspection / Monitoring (12.5%)	$0	$612,245	$612,245
		TOTAL	$0	$6,000,000	$6,000,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **Enabling Project for *Rehabilitate Runway 8R-26L and Connector Taxiways***
Description:
Install ALSF-II approach lighting system to Runway 26R. Includes relocation of one (1) Runway Visual Range and back-up engine generator, with upgrades to glideslope and localizer array. Development of a Reimbursable Agreement for this project is underway. This project, along with the TDZ lighting upgrades (grant 3-06-0175-041-2018), allows Runway 8L-26R to be upgraded to a CAT-III to enable the Runway 8R-26L Rehabilitation Project in 2022.
From FAA Order 6030.20F: Continuous Power Airports (CPA) provide continuous operations in the event of area-wide utility power failures. CPA airports must have backup power to operate runway lighting and NAS services. This backup power must be available to supply power for at least 4 hours to the runway lighting as well as navigation, landing, and communications equipment. FAA Order 6030.20F, Appendix A: *Continuous Power Airports and Current Runway Codes* includes ONT Runway 26L in the listing of airports.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Process Initiation	December 18, 2018	Grant Execution	TBD
Bid Opening	TBD	Construction Commencement	March 30, 2021
Grant Offer	N/A	Construction Completion	December 31, 2022
		Grant Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Cat-Ex expected by December 2020.

Date of Last ALP Approval Depicting Proposed Projects

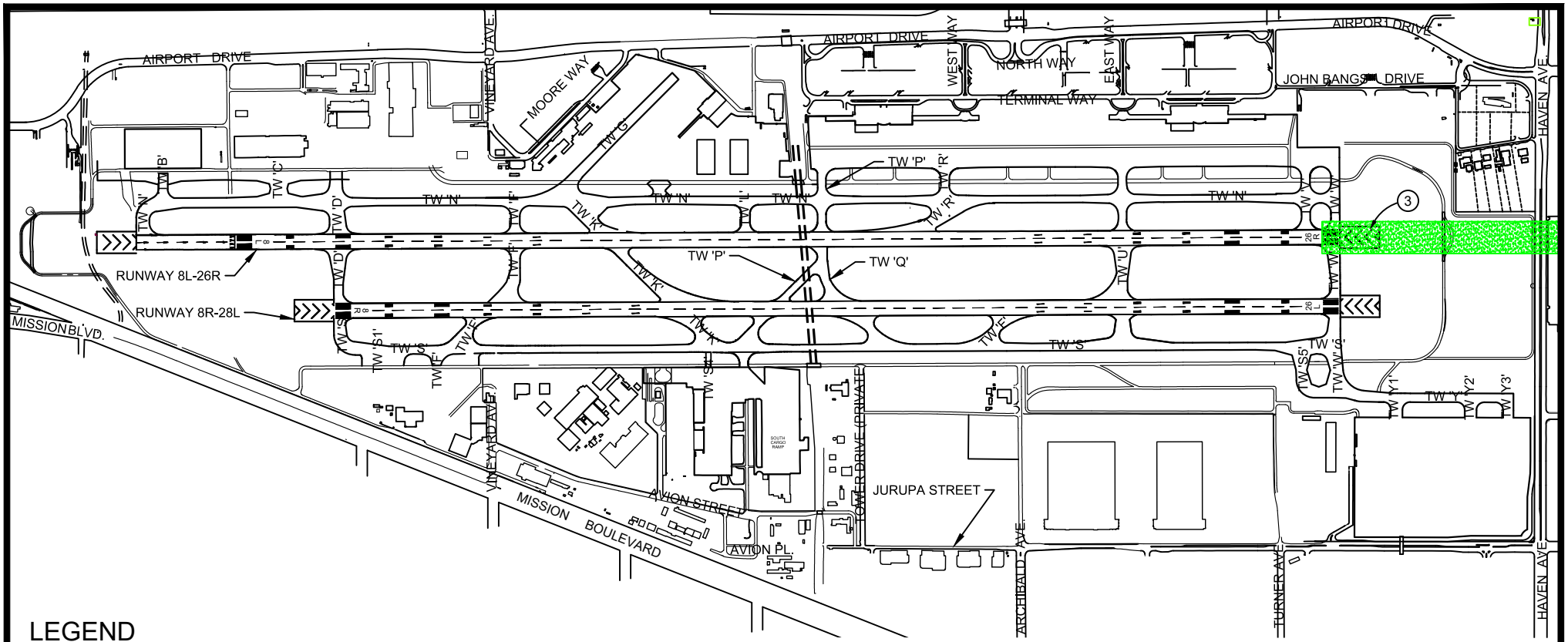
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(3) 2020-UPGRADE RUNWAY 26R ILS (NON-AIP)

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2020 ACIP
UPGRADE RUNWAY 26R ILS

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 3
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2021		4
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	N/A	Rehabilitate Runway 8R-26L and Connector Taxiways: Design			
		Design / Coordination / Administration	$8,059,000	$1,941,000	$10,000,000
		Construction	$0	$0	$0
		Construction Management / Inspection / Monitoring (12.5%)	$0	$0	$0
		TOTAL	$8,059,000	$1,941,000	$10,000,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/IM** **NPR: 83**
Overall Development Objective: **Rehabilitate Runway 8R-26L and Connector Taxiways**
Description:
Rehabilitation of Runway 8R-26L and Connector Taxiways (Taxiways D, F, K, P, Q, U, and W) will be an electrical, paving, grading, and marking project. Project also includes the relocation of the southern electrical vault. Runway 8R-26L was constructed in 1981 and will be 42 years old by the beginning of construction in 2022. Project was identified in the Airport Pavement Management System study and is on the ALP. **Grant application covers design of both phases.**

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2020	Grant Execution	September 1, 2021
Bid Opening	N/A	Design Commencement	June 1, 2020
Grant Offer	August 1, 2021	Design Completion	February 1, 2022
		Grant Closeout	September 30, 2022

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

N/A

Date of Last ALP Approval Depicting Proposed Projects

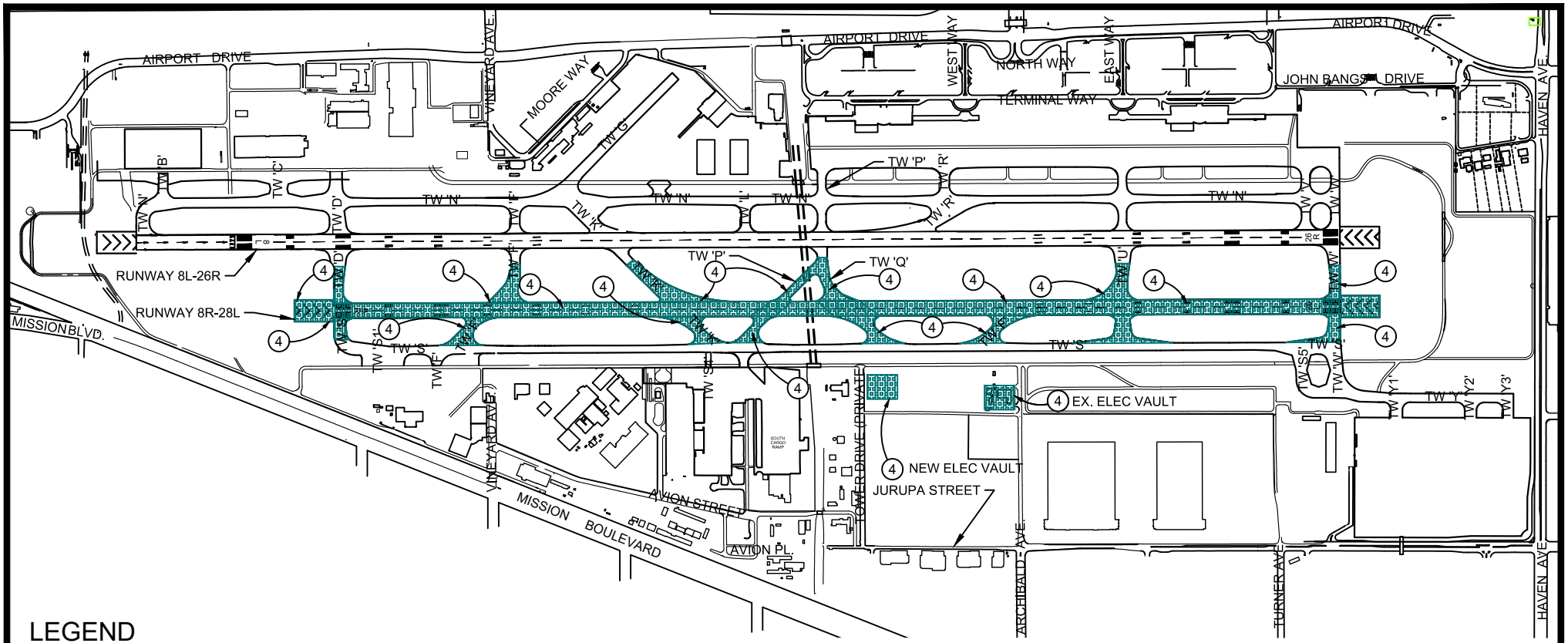
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(4) 2021-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: DESIGN

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2021 ACIP

REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: DESIGN

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 4
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2021		5
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
No	D	ASR Relocation (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$1,166,990	$1,166,990
		Construction	$0	$11,669,900	$11,669,900
		Construction Management / Inspection / Monitoring (12.5%)	$0	$1,458,738	$1,458,738
		TOTAL	$0	$14,295,628	$14,295,628

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **Relocate ASR**
Description:
The Airport Surveillance Radar (ASR) will require relocation to a site to-be-defined in the new ALP.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Reimbursable Agreement/Process Initiation	March 1, 2020	Grant Execution	N/A
Bid Opening	TBD	Construction Commencement	TBD
Grant Offer	N/A	Construction Completion	November 5, 2025
		Project Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending Application.

Date of Last ALP Approval Depicting Proposed Projects

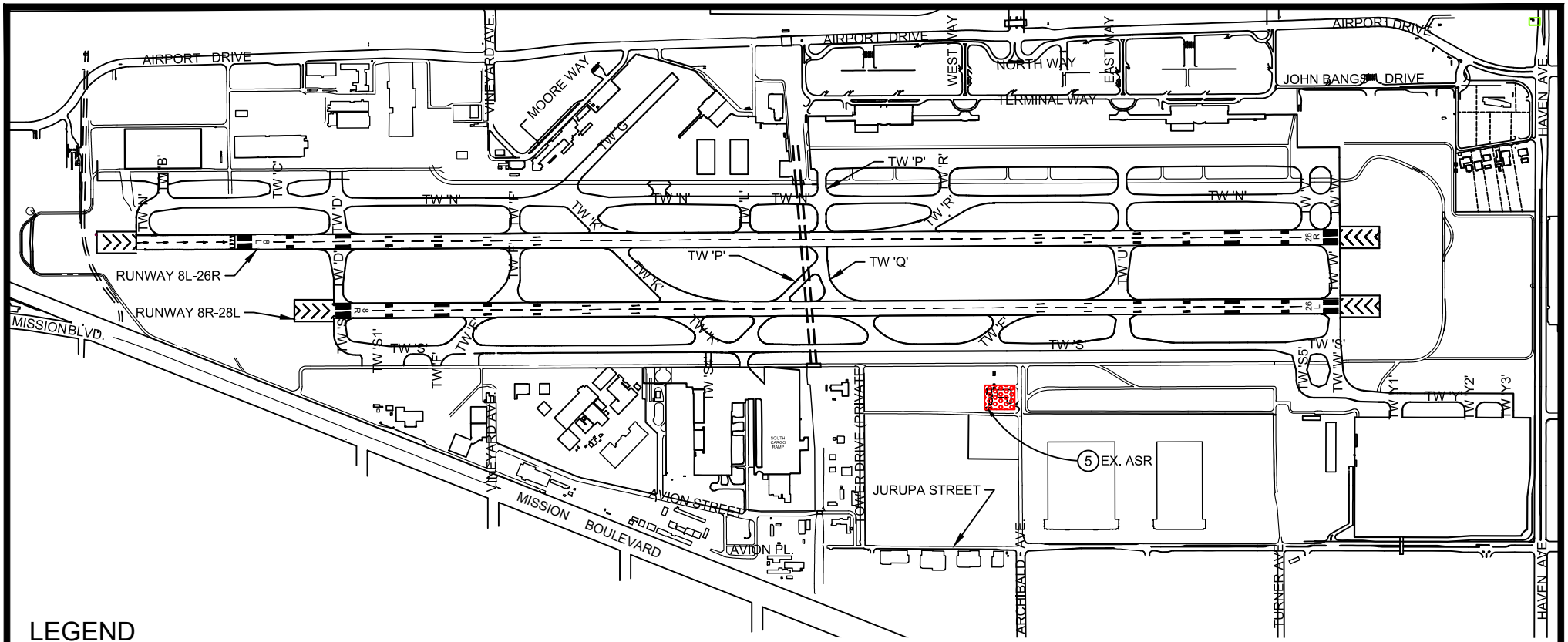
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley	(909) 544-5255
Signature — January 30, 2020 (Date)	Contact Phone (Print or Type)



LEGEND

(5) 2021-ASR RELOCATION (NON-AIP)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2021 ACIP

ASR RELOCATION

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 5
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2021		6
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
No	D	RTR Relocation (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$318,270	$318,270
		Construction	$0	$3,182,700	$3,182,700
		Construction Management / Inspection / Monitoring (12.5%)	$0	$397,838	$397,838
		TOTAL	$0	$3,898,808	$3,898,808

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **Relocate RTR**
Description:
The Remote Transmitter/Receiver (RTR) will require relocation to a site to-be-defined in the new ALP. Attached graphic shows preliminary location.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Reimbursable Agreement/Process Initiation	March 1, 2020	Grant Execution	N/A
Bid Opening	TBD	Construction Commencement	November 5, 2022
Grant Offer	N/A	Construction Completion	November 5, 2023
		Project Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending Application.

Date of Last ALP Approval Depicting Proposed Projects

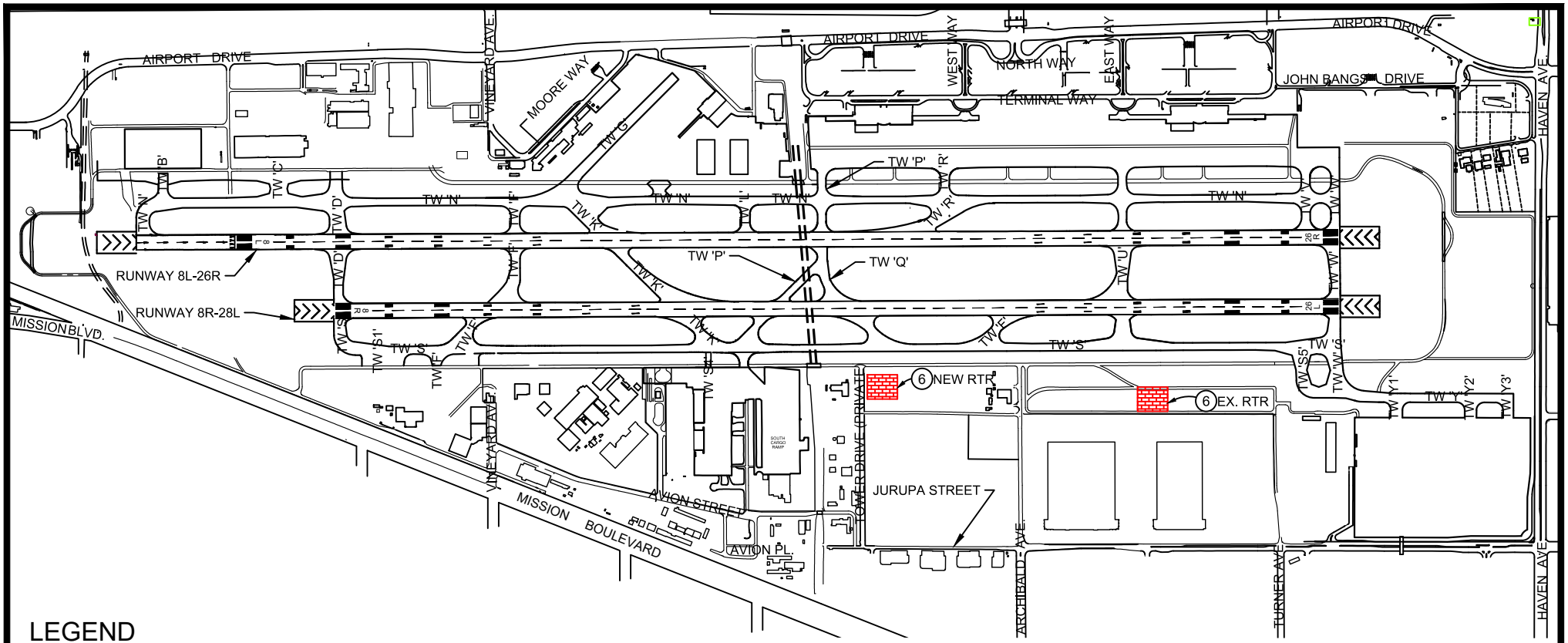
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(6) 2021-RTR RELOCATION (NON-AIP)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2021 ACIP

RTR RELOCATION

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 6
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2022		7
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 1			
		Construction	$18,708,225	$16,195,671	$34,903,896
		Construction Management / Inspection / Monitoring (15.5%)	$2,899,775	$2,510,329	$5,410,104
		TOTAL	$21,608,000	$18,706,000	$40,314,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/IM** **NPR: 83**
Overall Development Objective: **Rehabilitate Runway 8R-26L and Connector Taxiways**
Description:
Rehabilitation of Runway 8R-26L and Connector Taxiways (Taxiways D, F, K, P, Q, U, and W) will be an electrical, paving, grading, and marking project. Project also includes the relocation of the southern electrical vault. Runway 8R-26L was constructed in 1981 and will be 42 years old in 2022. Project was identified in the Airport Pavement Management System study and is on the ALP. **Phase 1 is the construction of the connector taxiways and the electrical vault.**
Approximate Area:
Approximate total area for Phases 1 & 2 is 297,200 SY.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2021	Grant Execution	September 1, 2022
Bid Opening	May 1, 2022	Construction Commencement	January 1, 2023
Grant Offer	August 1, 2022	Construction Completion	October 31, 2023
		Grant Closeout	April 30, 2024

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

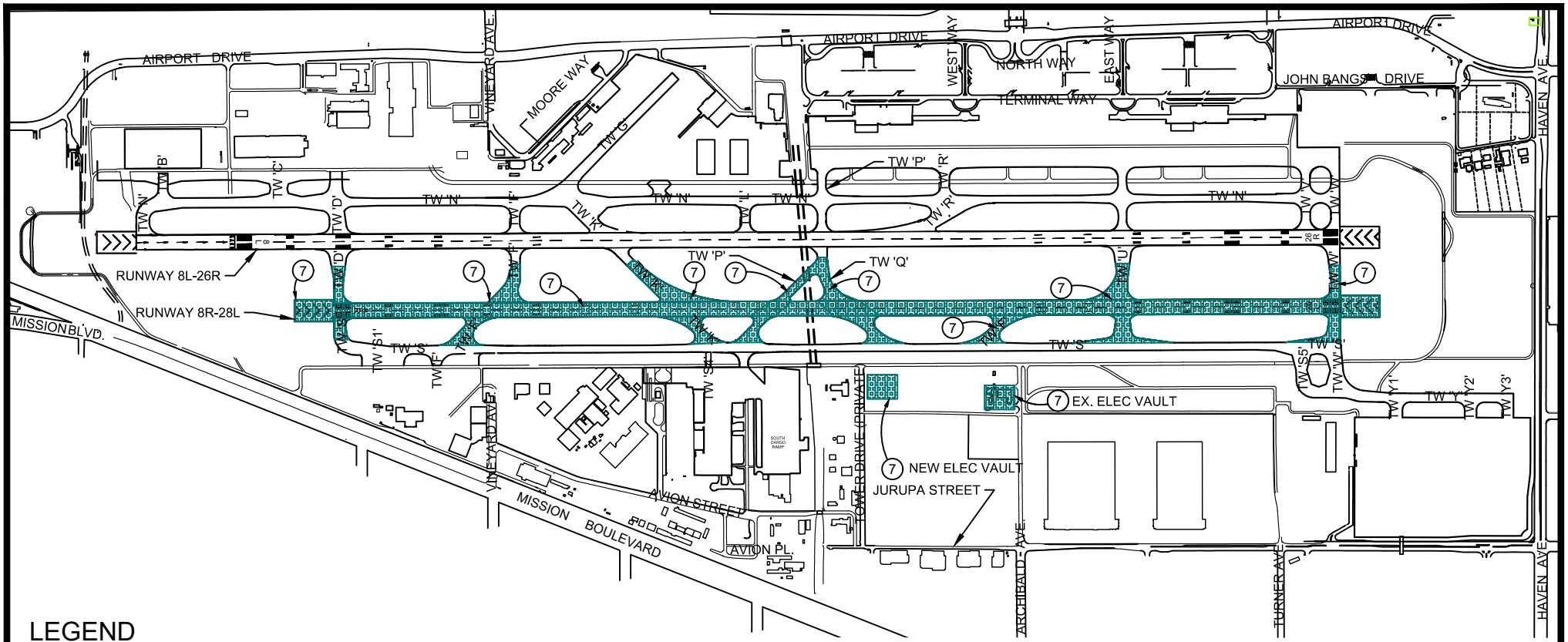
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley — January 30, 2020	(909) 544-5255
Signature — Date	Contact Phone (Print or Type)



LEGEND

(7) 2022-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 1

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2022 ACIP

REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PH 1

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 7
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2023		8
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 2			
		Construction	$18,708,225	$19,008,658	$37,716,883
		Construction Management / Inspection / Monitoring (15.5%)	$2,899,775	$2,946,342	$5,846,117
		TOTAL	$21,608,000	$21,955,000	$43,563,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/IM** **NPR: 83**
Overall Development Objective: **Rehabilitate Runway 8R-26L and Connector Taxiways**
Description:
Rehabilitation of Runway 8R-26L and Connector Taxiways (Taxiways D, F, K, P, Q, U, and W) will be an electrical, paving, grading, and marking project. Runway 8R-26L was constructed in 1981 and will be 42 years old by the beginning of construction is 2022. Project was identified in the Airport Pavement Management System study and is on the ALP. **Phase 2 consists of the rehabilitation of Runway 8R-26L.**
Approximate Area:
Approximate total area for Phases 1 & 2 is 297,200 SY.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2021	Grant Execution	September 1, 2023
Bid Opening	May 1, 2022	Construction Commencement	January 1, 2024
Grant Offer	August 1, 2023	Construction Completion	October 31, 2024
		Grant Closeout	April 30, 2025

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

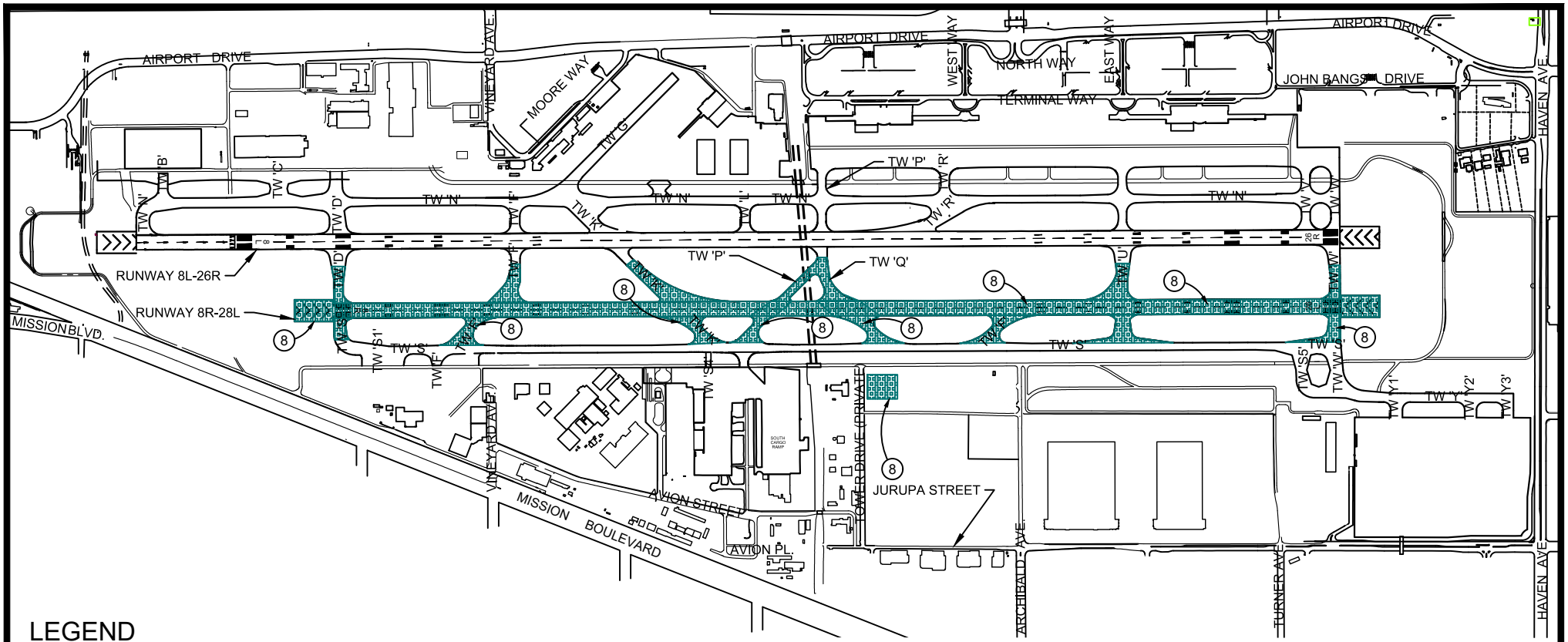
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(8) 2023-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 2

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2023 ACIP

REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PH 2

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 8
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2023		9
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Upgrade Runway 26L ALSF (FAA Funded)			
		Design / Coordination / Administration (10%)	TBD	$0	TBD
		Construction	TBD	$0	TBD
		Construction Management / Inspection / Monitoring (12.5%)	TBD	$0	TBD
		TOTAL	TBD	$0	TBD

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **Stand-alone project**
Description:
This project would be to upgrade the existing Runway 26L ALSF system, projected to occur before the end of FY 2023. This project would be fully funded by the FAA.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Process Initiation	February 1, 2020	Grant Execution	TBD
Bid Opening	TBD	Construction Commencement	January 1, 2024
Grant Offer	N/A	Construction Completion	October 31, 2024
		Project Closeout	April 30, 2025

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Not applicable.

Date of Last ALP Approval Depicting Proposed Projects

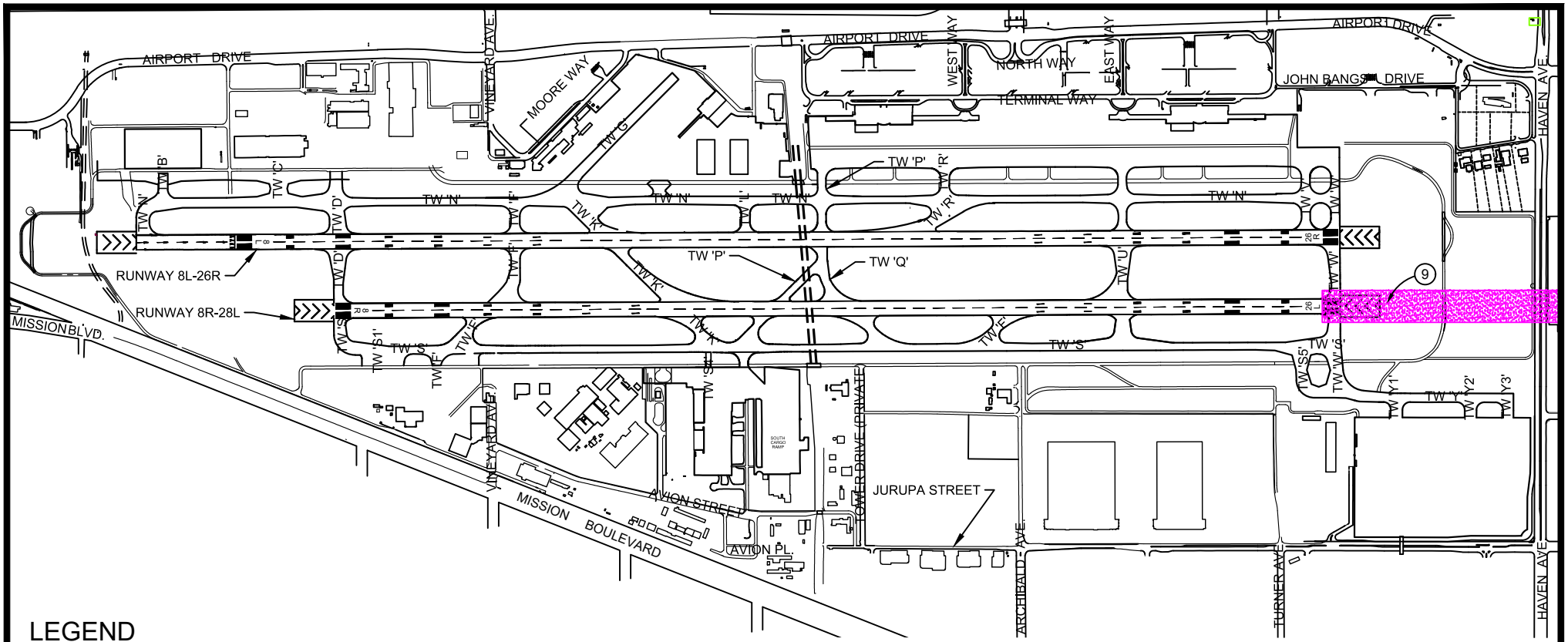
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(9) 2023-UPGRADE RUNWAY 26L ALSF (FAA FUNDED)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2023 ACIP

UPGRADE RUNWAY 26L ALSF (FAA FUNDED)

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 9
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2024		10
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting: Phase 1			
		Design / Coordination / Administration (10%)	$823,673	$198,381	$1,022,054
		Construction	$8,236,732	$1,983,807	$10,220,539
		Construction Management / Inspection / Monitoring (12.5%)	$1,029,592	$247,976	$1,277,567
		TOTAL	$10,089,997	$2,430,163	$12,520,160

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/LI** **NPR: 83**
Overall Development Objective: **Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting**
Description:
Rehabilitate existing airfield lighting that is over 20 years old, including runway edge lighting, signs, and an upgrade to the existing north airfield vault. Phase 1 is anticipated to be Runway 8L-26R and its connector taxiways 'N', 'D', 'F', 'K', 'L', 'R', 'U', 'V' and 'W' within the RSA. Associated work in the northern airfield electrical vault will be completed as well.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2023	Grant Execution	July 25, 2024
Bid Opening	May 1, 2024	Construction Commencement	September 4, 2024
Grant Offer	June 15, 2024	Construction Completion	December 31, 2024
		Grant Closeout	June 1, 2025

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

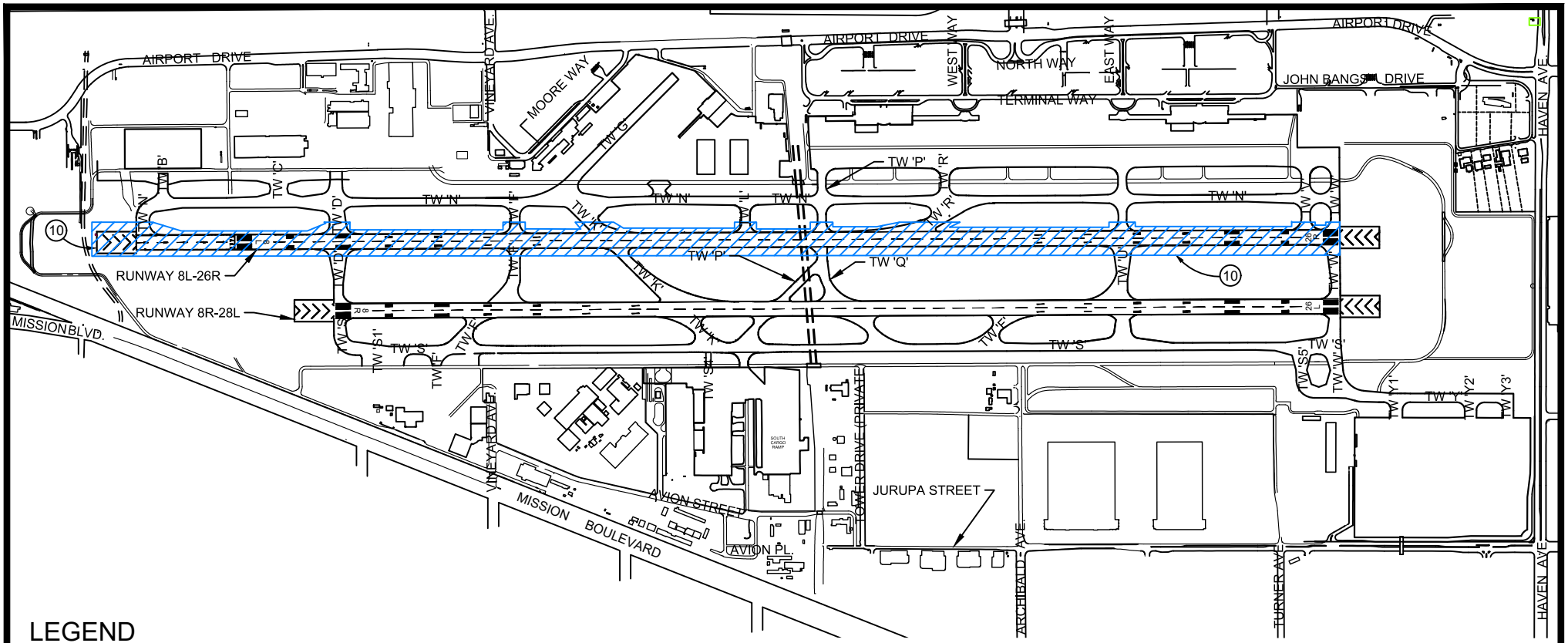
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley	(909) 544-5255
Signature — January 30, 2020 Date	Contact Phone (Print or Type)



LEGEND

(10) 2024-REHABILITATE RUNWAY 8L-26R LIGHTING AND TAXIWAY LIGHTING: PHASE 1

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2024 ACIP

REHABILITATE RUNWAY 8L-26R
LIGHTING AND TAXIWAY
LIGHTING: PH 1

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	10 OF 13
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01
X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2025		11
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting: Phase 2			
		Design / Coordination / Administration (10%)	$655,926	$157,979	$813,905
		Construction	$6,559,261	$1,579,790	$8,139,050
		Construction Management / Inspection / Monitoring (12.5%)	$819,908	$197,474	$1,017,381
		TOTAL	$8,035,094	$1,935,242	$9,970,337

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/LI** **NPR: 83**
Overall Development Objective: **Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting**
Description:
Rehabilitate existing airfield lighting that is over 20 years old, including runway edge lights and signs. Phase 2 is anticipated to be Taxiways 'N', 'S' west of 'Q', and 'Y', as well as the minor connectors to these taxiways. These minor collectors include portions of 'D', 'F', 'K', 'L', 'R', 'S5', and 'W'. Associated work in the northern airfield electrical vault will be completed as well.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2023	Grant Execution	July 25, 2025
Bid Opening	May 1, 2024	Construction Commencement	September 4, 2025
Grant Offer	June 15, 2025	Construction Completion	December 30, 2025
		Grant Closeout	June 30, 2026

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

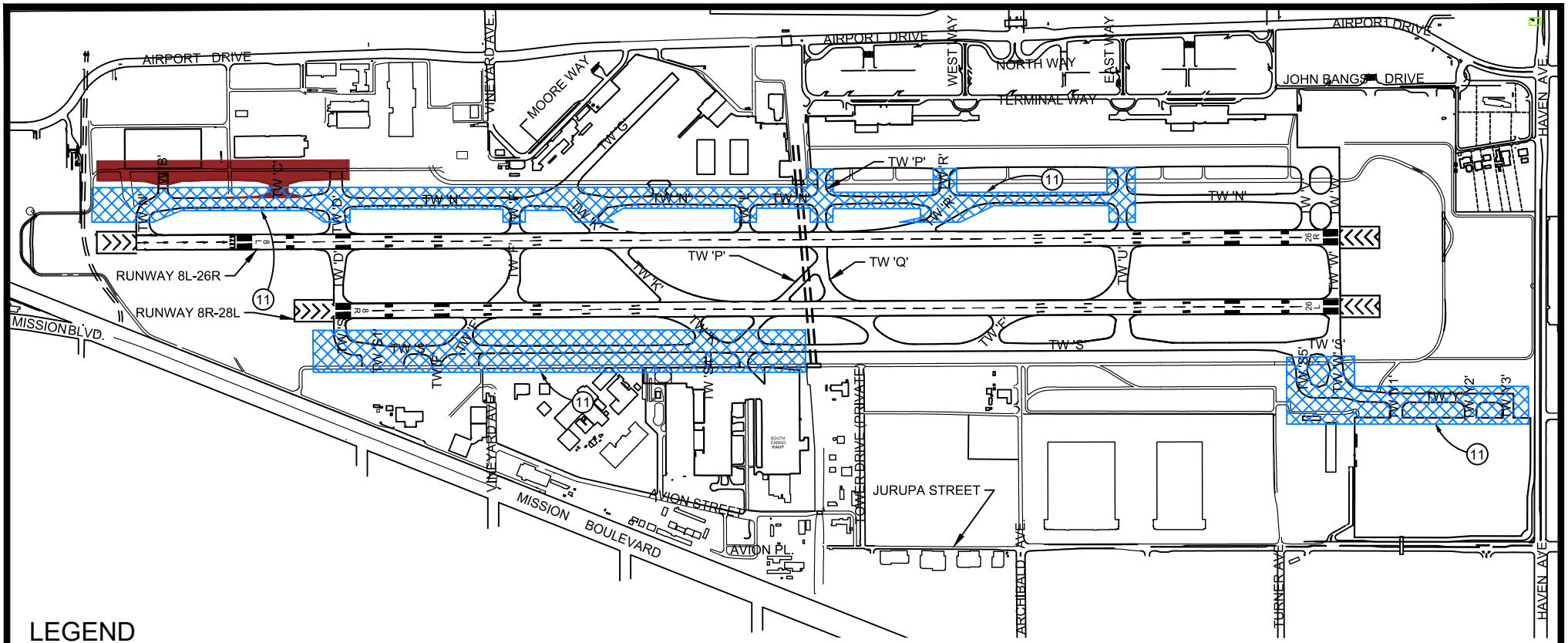
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley	(909) 544-5255
Signature — January 30, 2020 Date	Contact Phone (Print or Type)


AIRPORT DRIVE
VINEYARD AVE.
MOORE WAY
TW 'G'
AIRPORT DRIVE
WEST WAY
NORTH WAY
EAST WAY
TERMINAL WAY
AIRPORT DRIVE
JOHN BANGS DRIVE
HAVEN AVE.
TW 'P'
TW 'N'
TW 'N'
TW 'N'
TW 'N'
TW 'N'
TW 'P'
TW 'P'
TW 'Q'
TW 'U'
TW 'W'
TW 'W'
TW 'W'
26R
26L
RUNWAY 8L-26R
RUNWAY 8R-28L
11
TW 'D'
TW 'E'
TW 'K'
TW 'S'
TW 'S'
TW 'S

Airport Name		Ontario International Airport	Fiscal Year 2025		12
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Construct Taxiway A: Phase 2 (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$8,391,621	$8,391,621
		Construction	$0	$83,916,213	$83,916,213
		Construction Management / Inspection / Monitoring (12.5%)	$0	$10,489,527	$10,489,527
		TOTAL	$0	$102,797,360	$102,797,360

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **Construct Taxiway A**
Description:
The airport will construct the second phase of Taxiway 'A' , from 'Taxiway 'D' to 'F', using non-AIP funds. A future phase will include the extension to the Cucamonga channel.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	November 4, 2024
Grant Offer	N/A	Construction Completion	December 30, 2025
		Grant Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

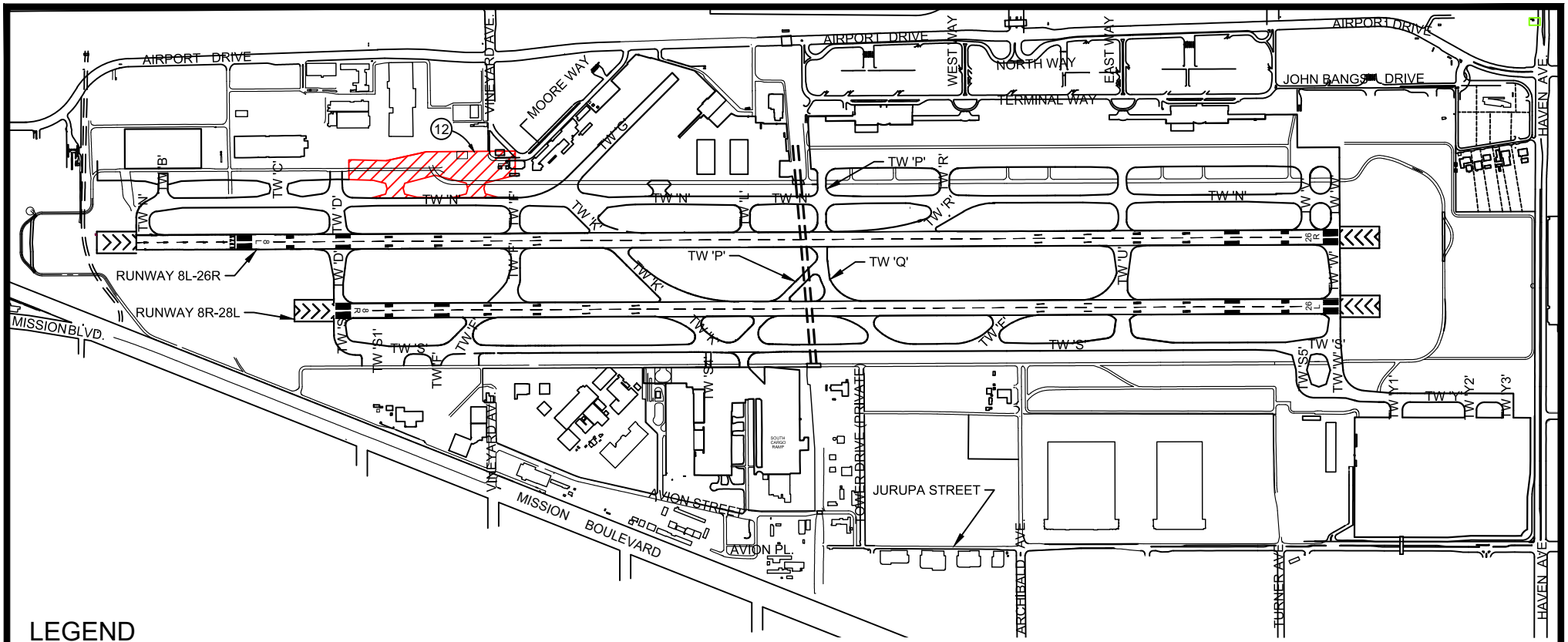
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(12) 2025-CONSTRUCT TAXIWAY A: PHASE 2 (NON-AIP)

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2025 ACIP

CONSTRUCT TAXIWAY A: PHASE 2 (NON-AIP)

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	12 OF 13
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2026-2030		13
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	2026 - Rehabilitate Taxiway S Phase 2: Channel to Taxiway W	$35,574,750	$8,568,134	$44,142,884
Pending	D	2027 - Reconstruct Taxiway N East of U and Construct Taxiway V Extension to S5	$10,851,040	$2,613,459	$13,464,499
Pending	D	2028 - Construct Taxiway E	$15,772,751	$3,798,847	$19,571,598
Yes	D	2029 - Relocate Taxiway N1 and Rehabilitate Terminals 2, 3 and 4 Aprons Phase 1: Paving and Electrical Improvements	$5,232,274	$1,260,186	$6,492,460
Yes	D	2030 - Rehabilitate Taxiway S1 and F South of Taxiway S Within Movement Area	$2,628,245	$633,010	$3,261,255
		TOTAL	**$70,059,059**	**$16,873,636**	**$86,932,696**

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

Overall Development Objective: **Future Projects, 2026-2030**

Description:

This sheet lists projects planned for 2026-2030 and their projected costs.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	N/A
Grant Offer	N/A	Construction Completion	N/A
		Grant Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

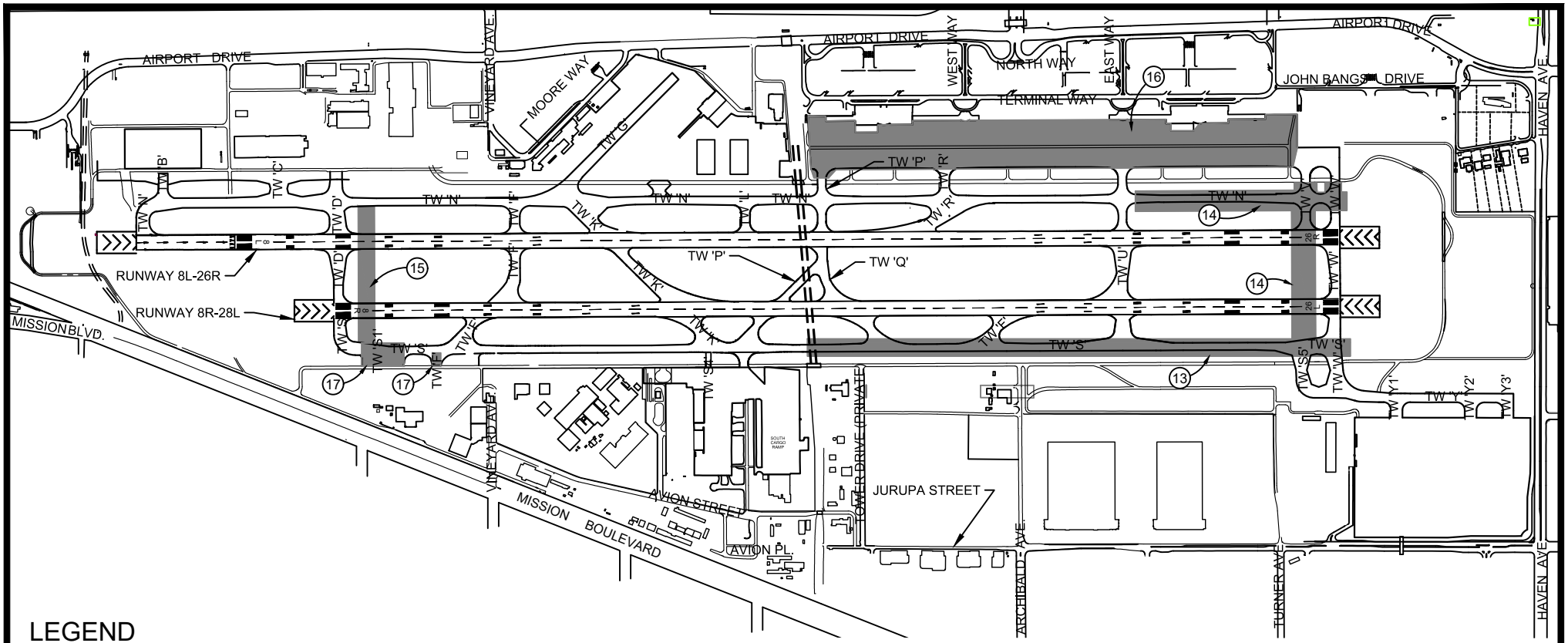
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q1 2020
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q1 2020
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q2 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2021
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

- (13) 2026-REHABILITATE TAXIWAY S PHASE 2: CHANNEL TO TAXIWAY W
- (14) 2027-RECONSTRUCT TAXIWAY N EAST OF TAXIWAY U AND CONSTRUCT TAXIWAY V EXTENSION TO S5
- (15) 2028-CONSTRUCT TAXIWAY E
- (16) 2029-RELOCATE TAXIWAY N1 AND REHABILITATE TERMINALS 2, 3, AND 4 APRONS PHASE 1: PAVING AND ELECTRICAL IMPROVEMENTS
- (17) 2030-REHABILITATE TAXIWAY S1 AND F SOUTH OF TAXIWAY S WITHIN MOVEMENT AREA

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2026-2030 ACIP
PROJECTS IN OUTLYING YEARS

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	13 OF 13
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01
X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Appendix K-2

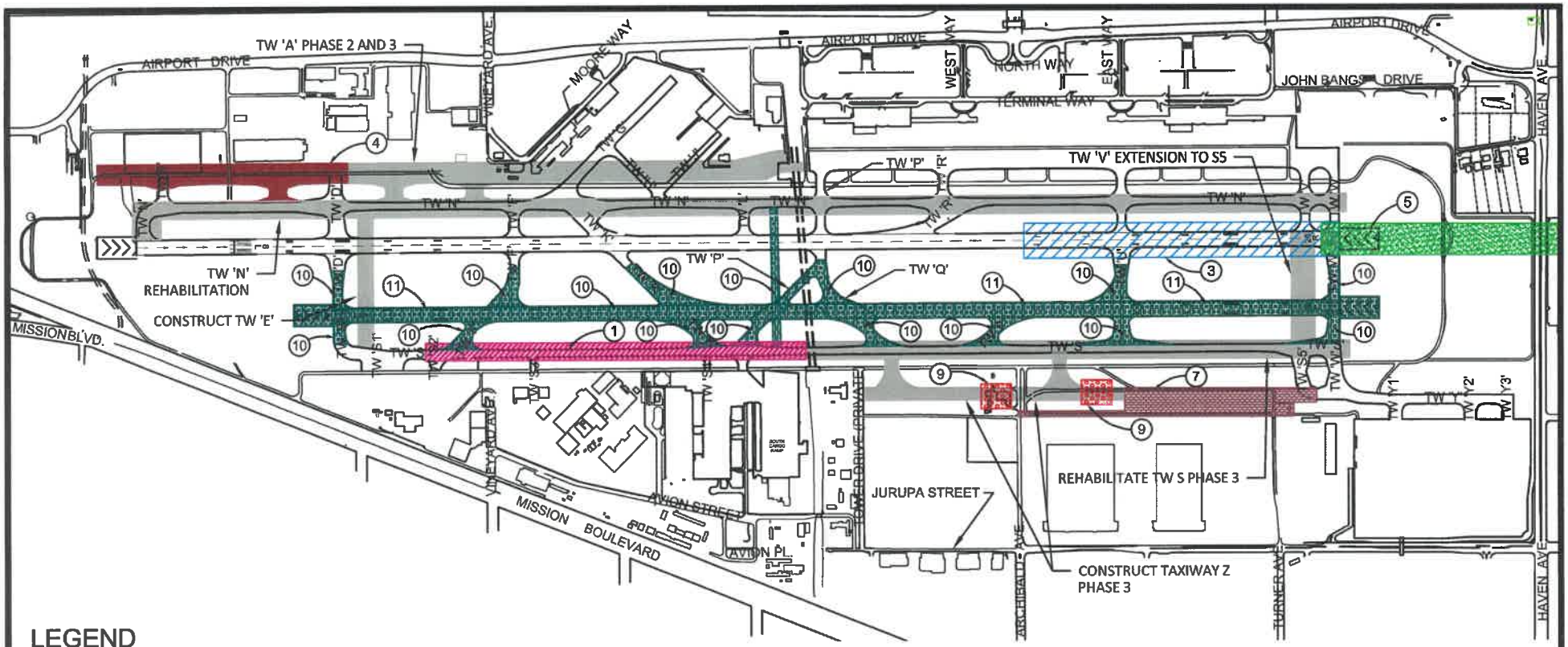
2019 Airport Capital Improvement Plan (ACIP)

U.S. Department of Transportation
Federal Aviation Administration

Airport Capital Improvement Plan (ACIP)

1. Airport:	2. State:	NPIAS No.:	4. LOCID:
Ontario International Airport (ONT)	California	06-0175	ONT

5. Project Description *(by Funding Year in Priority Order)*	Federal Funds	State Funds	LOCAL FUNDS		Total $	Environmental Impact	Start Date	Completion Date
			PFC	Other				
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1: 2019 - Rehabilitate Taxiway S Phase 2: Taxiway F to Channel (Construction)	4,601			1,108	5,709	Cat-Ex	12/30/18	3/27/20
2: 2019 - Update ALP	782			188	970	N/A	12/30/18	12/30/19
3: 2019 - Install RW 26R Lighting (Touchdown Zone): Phase 2 (Construction)	2,017			486	2,503	Cat-Ex	12/30/18	6/30/20
SUBTOTAL (2019)	**7,400**			**1,782**	**9,183**			
4: 2020 - Construct Taxiway A: Phase 1 (Non-AIP)				30,625	30,625	Cat-Ex	Q1 2020	Q4 2021
5: 2020 - Upgrade Runway 26R ILS (Non-AIP)				6,003	6,003	Cat-Ex	Q1 2020	Q4 2020
6: 2020 - Defer Entitlements to FY 2022						N/A	N/A	N/A
7: 2020 - Construct Taxiway Z Phase 1: Construct Taxiway Z from RTR to Taxiway S5 and Construct Apron (Non-AIP)				41,650	41,650	Pending	6/1/20	12/30/21
8: 2021 - Defer Entitlements to FY 2022						N/A	N/A	N/A
9: 2021 - Construct Taxiway Z Phase 2: RTR and ASR Relocation (Non-AIP)				20,213	20,213	Pending	5/2/21	3/24/24
10: 2022 - Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 1	69,166			16,659	85,825	Pending	12/30/21	5/1/23
11: 2023 - Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 2	69,166			16,659	85,825	Pending	12/30/22	5/1/24
12: 2024 - Rehabilitate Runway 8L-26R Lighting, Taxiway Lighting, and Apron Lighting: Phase 1	5,923			1,427	7,350	Pending	12/30/23	5/1/25
SUBTOTAL (2020-2024)	**144,256**			**133,234**	**277,490**			
2025 - Rehabilitate Runway 8L-26R Lighting, Taxiway Lighting, and Apron Lighting: Phase 2	4,835			1,165	6,000			
2025 - Construct Taxiway Z Phase 3: Construct Taxiway Z from Tower Drive to RTR (Non-AIP)				48,000	48,000			
2026 - Rehabilitate Taxiway S Phase 3: Taxiway F to Taxiway W	9,671			2,329	12,000			
2026 - Construct Taxiway A: Phases 2 and 3 (Non-AIP)				70,000	70,000			
2027 - Construct Taxiway V Extension to S5	6,044			1,456	7,500			
2028 - Construct Taxiway E	12,089			2,912	15,000			
2029 - Rehabilitate Taxiway N and Connector Taxiways	20,148			4,853	25,000			
SUBTOTAL (2025-2029)	**52,786**			**130,714**	**183,500**			
TOTAL (2020-2029): DOES NOT INCLUDE 2019	**197,043**			**263,947**	**460,990**			

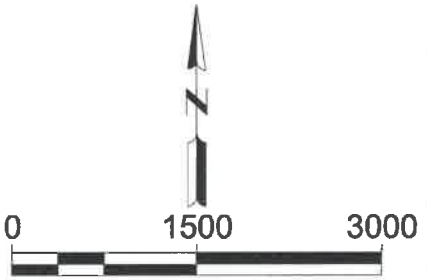


LEGEND

1. 2019-REHABILITATE TAXIWAY S PHASE 2: TAXIWAY F TO CHANNEL (CONSTRUCTION)
2. 2019-UPDATE ALP
3. 2019-INSTALL RW 26R LIGHTING (TOUCHDOWN ZONE): PHASE 2 (CONSTRUCTION)
4. 2020-CONSTRUCT TAXIWAY A: PHASE 1 (NON-AIP)
5. 2020-UPGRADE RUNWAY 26R ILS (NON-AIP)
6. 2020-DEFER ENTITLEMENTS TO FY 2022
7. 2020-CONSTRUCT TAXIWAY Z PHASE 1: CONSTRUCT TAXIWAY Z FROM RTR TO TAXIWAY S5 AND CONSTRUCT APRON (NON-AIP)
8. 2021-DEFER ENTITLEMENTS TO FY 2022
9. 2022-CONSTRUCT TAXIWAY Z PHASE 2: RTR & ASR RELOCATION (NON-AIP)
10. 2022-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 1
11. 2023-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 2
12. 2024-REHABILITATE RUNWAY 8L-26R LIGHTING, TAXIWAY LIGHTING, AND APRON LIGHTING: PHASE 1

PROJECTS IN OUTLYING YEARS:

2025-REHABILITATE RUNWAY 8L-26R LIGHTING, TAXIWAY LIGHTING, AND APRON LIGHTING: PHASE 2
2025-CONSTRUCT TAXIWAY Z PHASE 3: CONSTRUCT TAXIWAY Z FROM TOWER DRIVE TO RTR (NON-AIP)
2026-REHABILITATE TAXIWAY S PHASE 3: TAXIWAY F TO TAXIWAY W
2026-CONSTRUCT TAXIWAY A PHASES 2 & 3 (NON-AIP)
2027-CONSTRUCT TAXIWAY V EXTENSION TO S5
2028-CONSTRUCT TAXIWAY E
2029-REHABILITATE TAXIWAY N AND CONNECTOR TAXIWAYS



Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2019-2024 ACIP

OVERALL

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	0 OF 12
DRAWN:	ELH		
MH PROJECT NO.:	1512800-180958.01		
ONA PROJECT NO.:			

Airport Name		Ontario International Airport	Fiscal Year 2019		1
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	D	Rehabilitate Taxiway S Phase 2: Taxiway F to Channel (Construction)			
		Design / Coordination / Administration (10%)	$0	$0	$0
		Construction	$4,089,943	$985,058	$5,075,000
		Construction Management / Inspection / Monitoring (12.5%)	$511,243	$123,132	$634,375
		TOTAL	$4,601,185	$1,108,190	$5,709,375

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/TW/IM** **NPR: 68**
Overall Development Objective: **Rehabilitate Taxiway S**
Description:
Repair pavement and affected taxiway electrical systems. Project includes PCC panel repair/replacement, crack and spall repair, joint sealing, marking, centerline lighting repair, and stabilization of subgrade structure.

Phase 2, as shown here, is only for construction.
Phase 1 is the design grant (see below).

Approximate Area:
Project area includes 34,000 SY of pavement.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2018	Grant Execution	July 23, 2019
Bid Opening	May 1, 2019	Construction Commencement	September 2, 2019
Grant Offer	June 4, 2019	Construction Completion	March 27, 2020

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Project approved as Cat-Ex on March 21, 2018.

Date of Last ALP Approval Depicting Proposed Projects

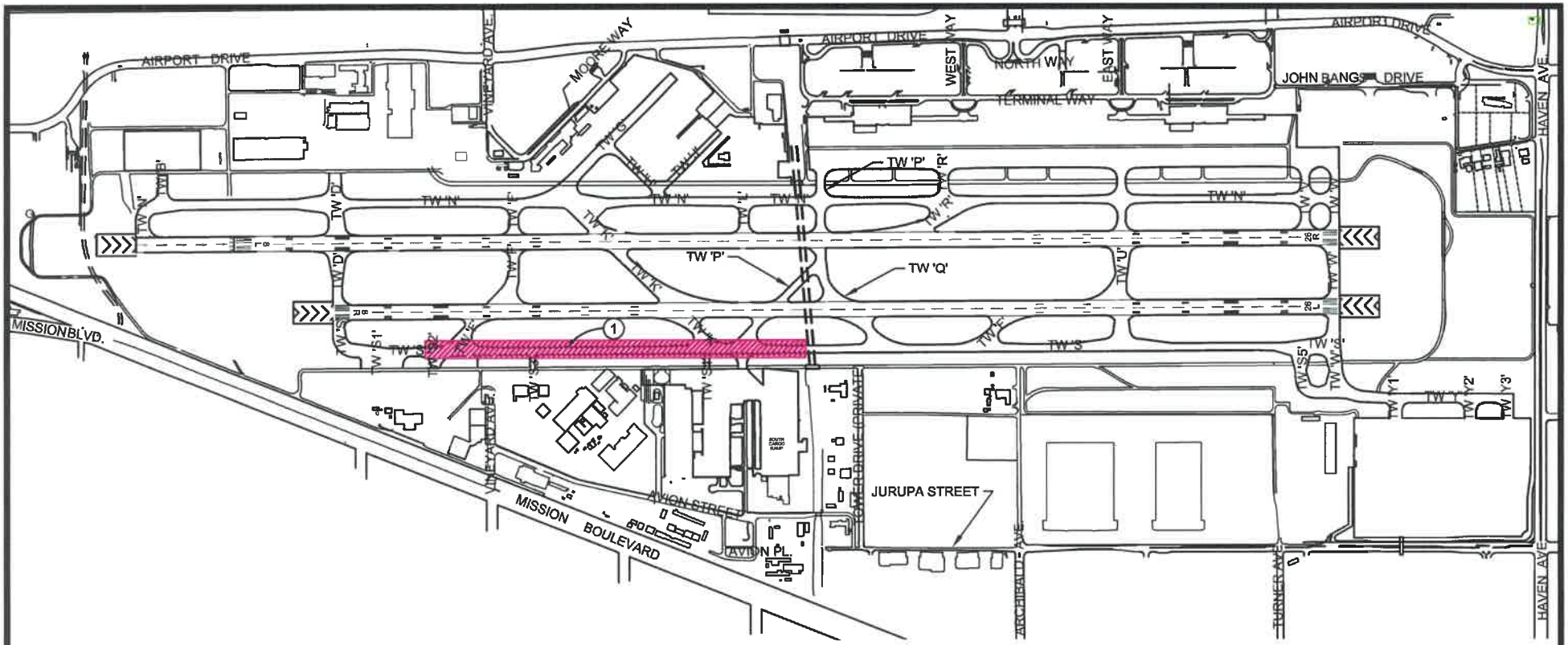
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith A Owens	(909) 544-5383
Signature	Date	Contact Phone (Print or Type)
	January 31, 2019	



LEGEND

① 2019-REHABILITATE TAXIWAY S PHASE 2: TAXIWAY F TO CHANNEL (CONSTRUCTION)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2019 ACIP

TW 'S' REHABILITATION PHASE 2

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	1 OF 12
DRAWN:	ELH		
MH PROJECT NO.:	1512800-180958.01		
OIAA PROJECT NO.:			

Airport Name		Ontario International Airport	Fiscal Year 2019		2
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	P	Update ALP			
		Design / Coordination / Administration (10%)	$781,732	$188,279	$970,011
		TOTAL	$781,732	$188,279	$970,011

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **PL/PL/MA** **NPR: 68**
Overall Development Objective: **Stand-alone project**
Description:
Update ALP and Narrative Report with AGIS.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2018	Grant Execution	June 25, 2019
Bid Opening	N/A	Planning Commencement	August 1, 2019
Grant Offer	June 14, 2019	Planning Completion	December 30, 2019

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

N/A

Date of Last ALP Approval Depicting Proposed Projects

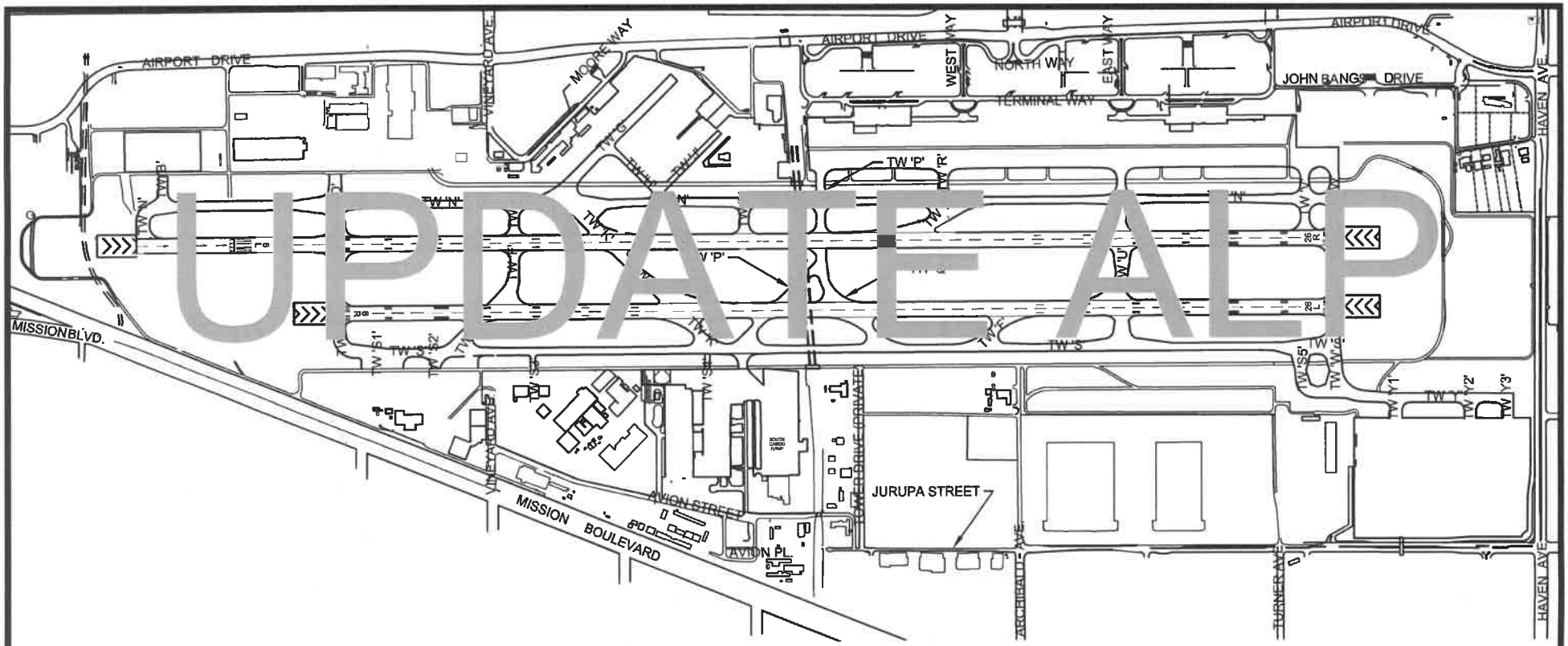
N/A - Last ALP update March 7, 2018.

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith A Owens	(909) 544-5383
Signature — January 31, 2019 Date	Contact Phone (Print or Type)



LEGEND

② 2019-UPDATE ALP

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2019 ACIP

UPDATE ALP

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	2 OF 12
DRAWN:	ELH		
MH PROJECT NO.:	1512800-180958.01		
ONA PROJECT NO.:			

Airport Name		Ontario International Airport	Fiscal Year 2019		3
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	D	Install RW 26R Lighting (Touchdown Zone): Phase 2 (Construction)			
		Design / Coordination / Administration (10%)	$0	$0	$0
		Construction	$1,793,128	$431,873	$2,225,000
		Construction Management / Inspection / Monitoring (12.5%)	$224,141	$53,984	$278,125
		TOTAL	$2,017,268	$485,857	$2,503,125

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **ST/RW/LI** **NPR: 50**
Overall Development Objective: **Stand-alone Project**
Description:
Project is the construction of touchdown zone lighting on Runway 26R. The project will require 180 in-pavement L-868 lights and cans, electrical homeruns with new conductor and new conduit, new Constant Current Regulator (CCR), and corresponding ALCMS upgrades to handle the new circuit.

Phase 2, as shown here, is only for construction.
Phase 1 is the design grant (see below).

This project, along with the ILS upgrade next year, allows RW 8L-26R to be upgraded to a CAT-III to enable the RW 8R-26L Rehbilitation Project in 2022.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2018	Grant Execution	July 23, 2019
Bid Opening	May 1, 2019	Construction Commencement	December 30, 2019
Grant Offer	June 14, 2019	Construction Completion	June 30, 2020

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Project approved as Cat-Ex on March 21, 2018.

Date of Last ALP Approval Depicting Proposed Projects

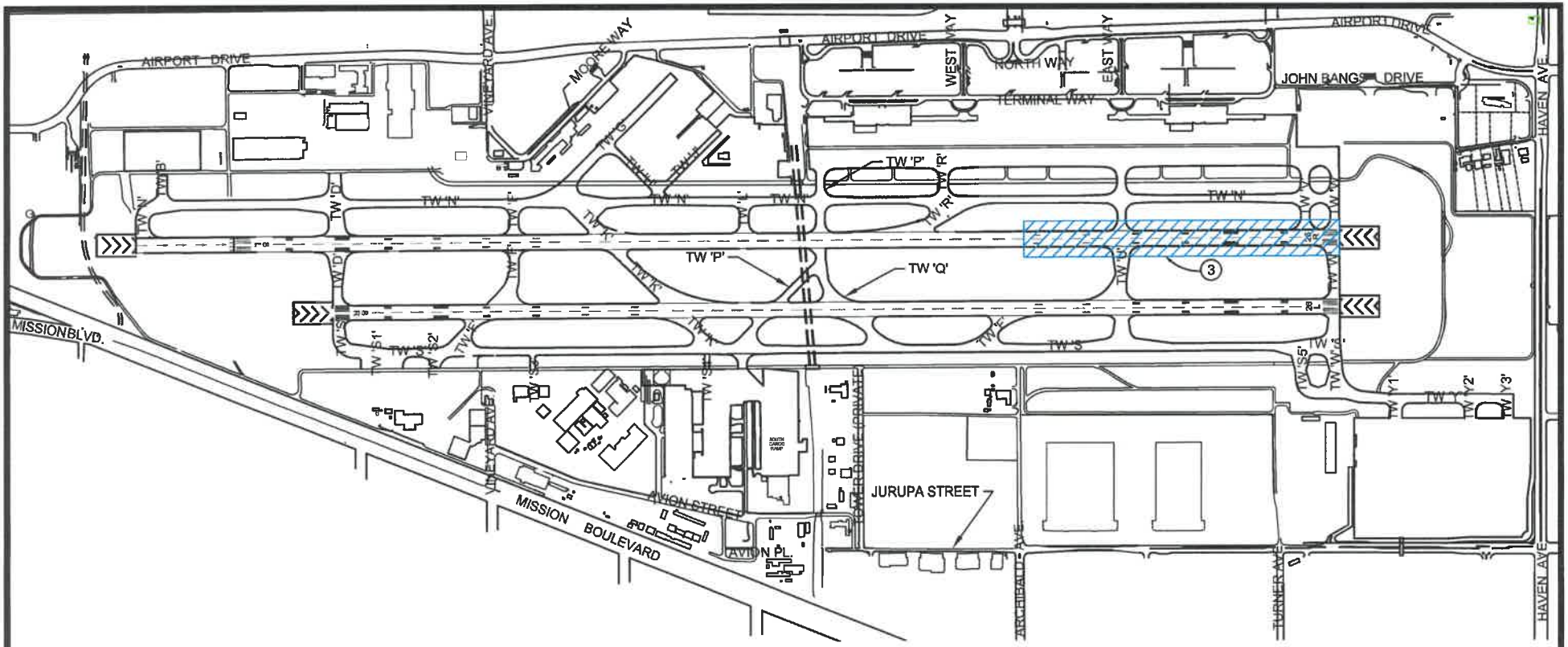
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith A Owens	(909) 544-5383
Signature — January 31, 2019 Date	Contact Phone (Print or Type)



LEGEND

③ 2019-INSTALL RW 26R LIGHTING (TOUCHDOWN ZONE): PHASE 2 (CONSTRUCTION)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2019 ACIP
RUNWAY 26R TDZ LIGHTING (TOUCHDOWN ZONE)

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	3 OF 12
DRAWN:	ELH		

M+H PROJECT NO.: 1512800-180958.01

ONA PROJECT NO.:

Airport Name		Ontario International Airport	Fiscal Year 2020		4
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	D	Construct Taxiway A: Phase 1 (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$2,500,000	$2,500,000
		Construction	$0	$25,000,000	$25,000,000
		Construction Management / Inspection / Monitoring (12.5%)	$0	$3,125,000	$3,125,000
		TOTAL	$0	$30,625,000	$30,625,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **CA/TW/CO** **NPR: 61**
Overall Development Objective: **Construct Taxiway A**
Description:
Project is the construction of a parallel taxiway that runs east-west. Taxiway 'A' will eventually connect to Taxiway 'N1'. The project consists of building and pavement demolition, new pavement, airfield, lighting, airfield signage, grading, pavement markings, and utility relocations.

Approximate Area:
Project includes 63,200 SY of paving.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	Q1 2020
Grant Offer	N/A	Construction Completion	Q4 2021

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Project approved as Cat-Ex on November 6, 2018.

Date of Last ALP Approval Depicting Proposed Projects

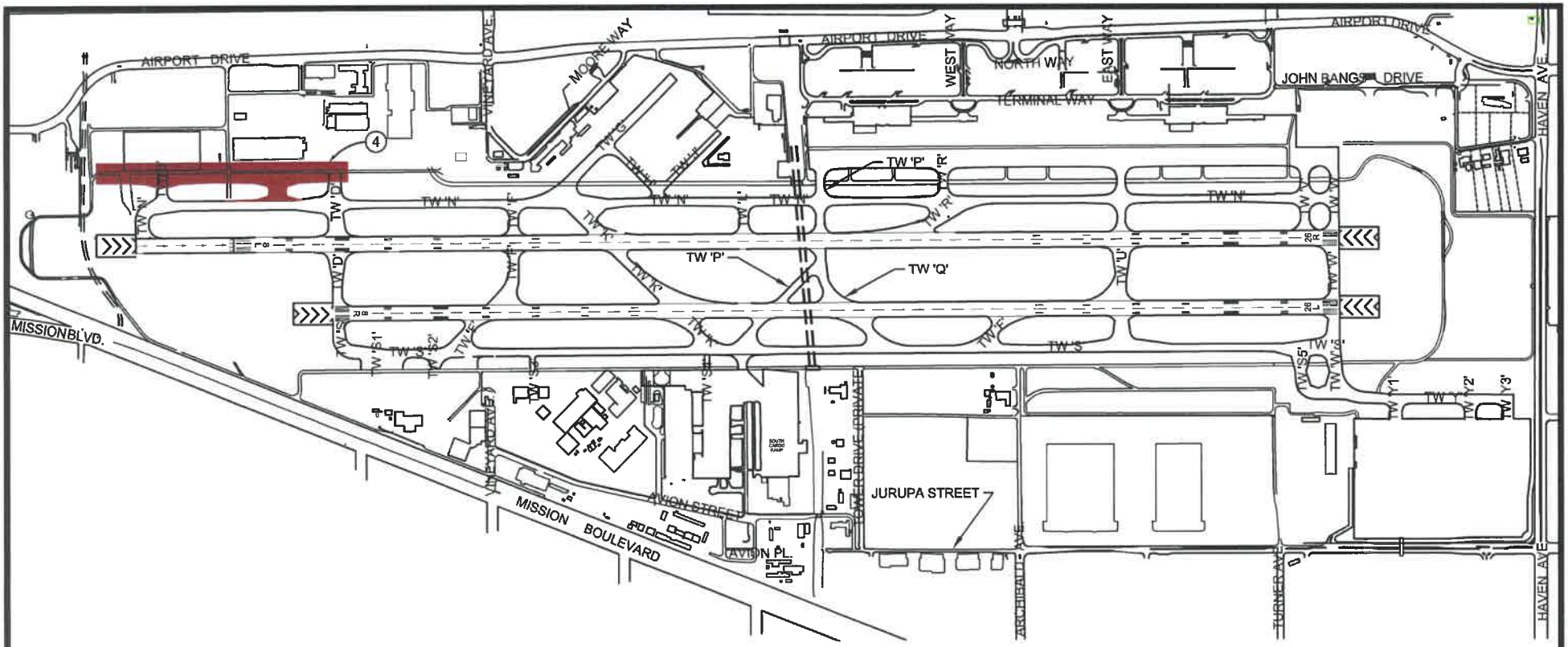
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith A Owens January 31, 2019	(909) 544-5383
Signature Date	Contact Phone (Print or Type)



LEGEND

④ 2020-CONSTRUCT TAXIWAY A: PHASE 1 (NON-AIP)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2020 ACIP

CONSTRUCT TW 'A' PHASE 1

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	4 OF 12
DRAWN:	ELH		
MH PROJECT NO.:	1512800-180958.01		
ONA PROJECT NO.:			

Airport Name		Ontario International Airport	Fiscal Year 2020		5
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	D	Upgrade Runway 26R ILS (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$490,000	$490,000
		Construction	$0	$4,900,000	$4,900,000
		Construction Management / Inspection / Monitoring (12.5%)	$0	$612,500	$612,500
		TOTAL	$0	$6,002,500	$6,002,500

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR: N/A**
Overall Development Objective: **Stand-alone project**
Description:
Install ALSF-II approach lighting system to Runway 26R. Includes installation of one (1) Runway Visual Range and back-up engine generator, with upgrades to glideslope and localizer array. Development of a Reimburable Agreement for this project is underway.

This project, along with the TDZ lighting upgrades in the previous year, allows RW 8L-26R to be upgraded to a CAT-III to enable the RW 8R-26L Rehbilitation Project in 2022.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	Q1 2020
Grant Offer	N/A	Construction Completion	Q4 2020

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Cat-Ex expected by December 2019.

Date of Last ALP Approval Depicting Proposed Projects

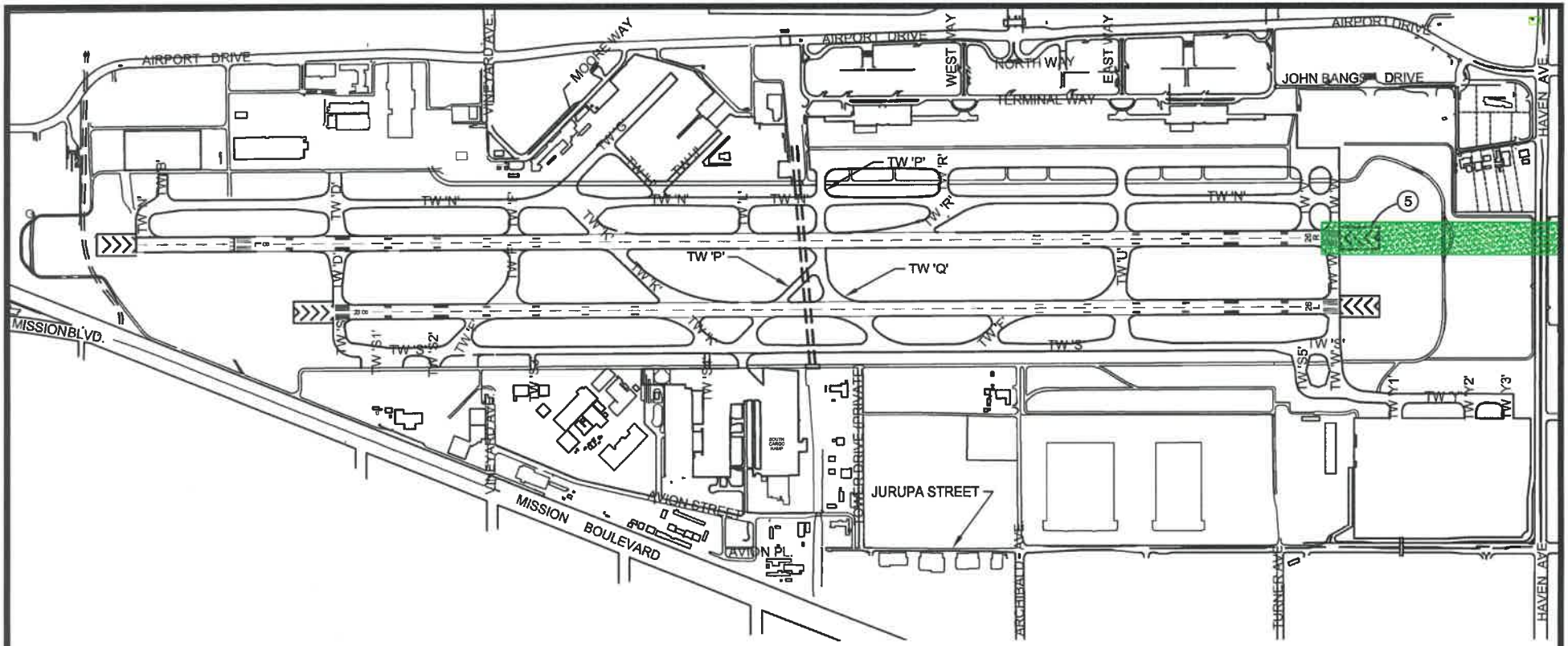
In Progress - Expected December 2019.

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith A Owens January 31, 2019	(909) 544-5383
Signature Date	Contact Phone (Print or Type)



LEGEND

⑤ 2020-UPGRADE RUNWAY 26R ILS (NON-AIP)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2020 ACIP

UPGRADE RW 26R ILS

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	5 OF 12
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

OIAA PROJECT NO.:

Airport Name		Ontario International Airport	Fiscal Year 2020		6
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	N/A	Defer Entitlements to FY 2022			
		Design / Coordination / Administration (10%)	$0	$0	$0
		Construction	$0	$0	$0
		Construction Management / Inspection / Monitoring (12.5%)	$0	$0	$0
		TOTAL	$0	$0	$0

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR: N/A**
Overall Development Objective: **N/A**
Description:
Defer entitlements - NO PROJECT

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	N/A
Grant Offer	N/A	Construction Completion	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

N/A

Date of Last ALP Approval Depicting Proposed Projects

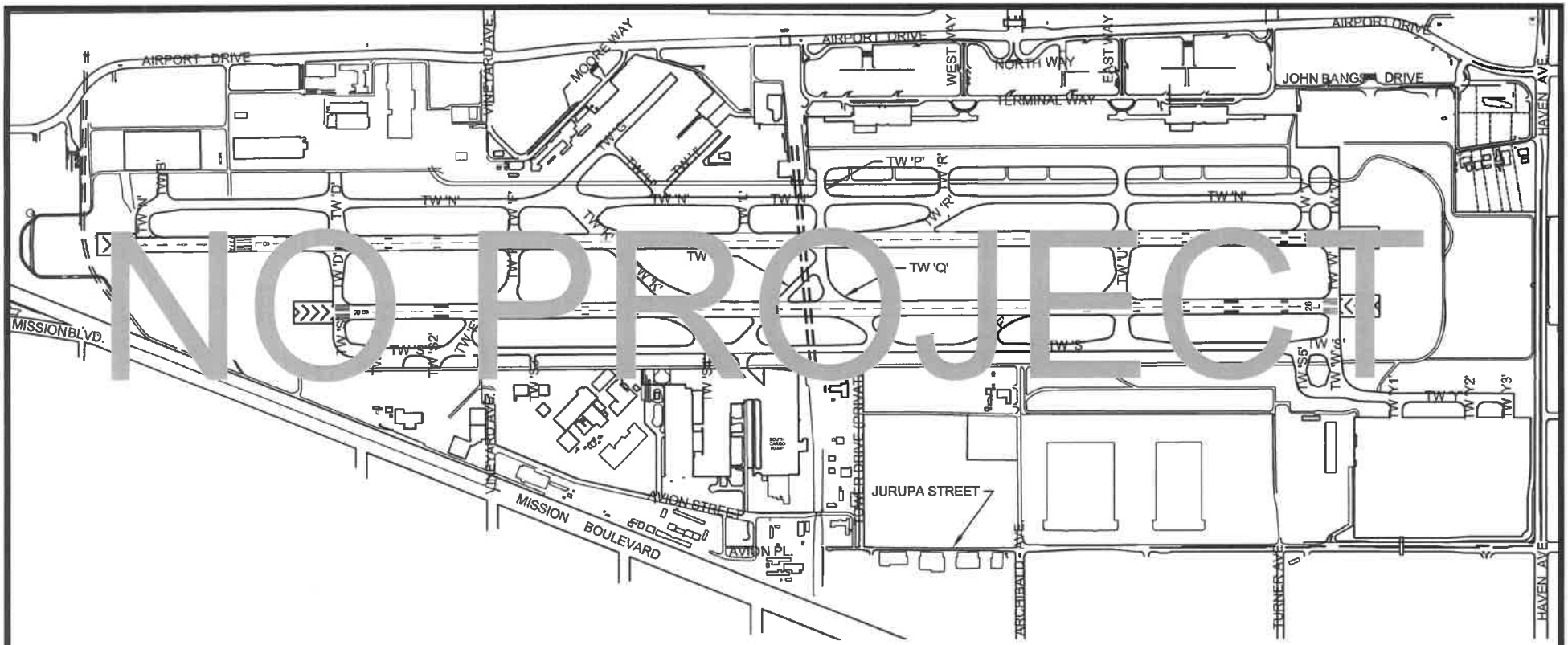
N/A

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith L Owens — January 31, 2019	(909) 544-5383
Signature — Date	Contact Phone (Print or Type)



LEGEND

⑥ 2020-DEFER ENTITLEMENTS TO FY 2022

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2020 ACIP

NO PROJECT

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	6 OF 12
DRAWN:	ELH		
MH PROJECT NO.:	1512600-180958.01		
OIAA PROJECT NO.:			

Airport Name		Ontario International Airport	Fiscal Year 2020		7
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	D	Construct Taxiway Z Phase 1: Construct Taxiway Z from RTR to Taxiway S5 and Construct Apron (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$3,400,000	$3,400,000
		Construction	$0	$34,000,000	$34,000,000
		Construction Management / Inspection / Monitoring (12.5%)	$0	$4,250,000	$4,250,000
		TOTAL	$0	$41,650,000	$41,650,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **CA/TW/CO** **NPR: 61**
Overall Development Objective: **Construct Taxiway Z**
Description:
Taxiway 'Z' will serve as a parallel taxiway to Taxiway 'S'. Project will require grading, paving, lighting, signage, marking and utility reconstruction, as well as a new apron for aircraft parking.

Approximate Area:
Project includes 60,000 SY of paving.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	May 1, 2020	Construction Commencement	June 1, 2020
Grant Offer	N/A	Construction Completion	December 30, 2021

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

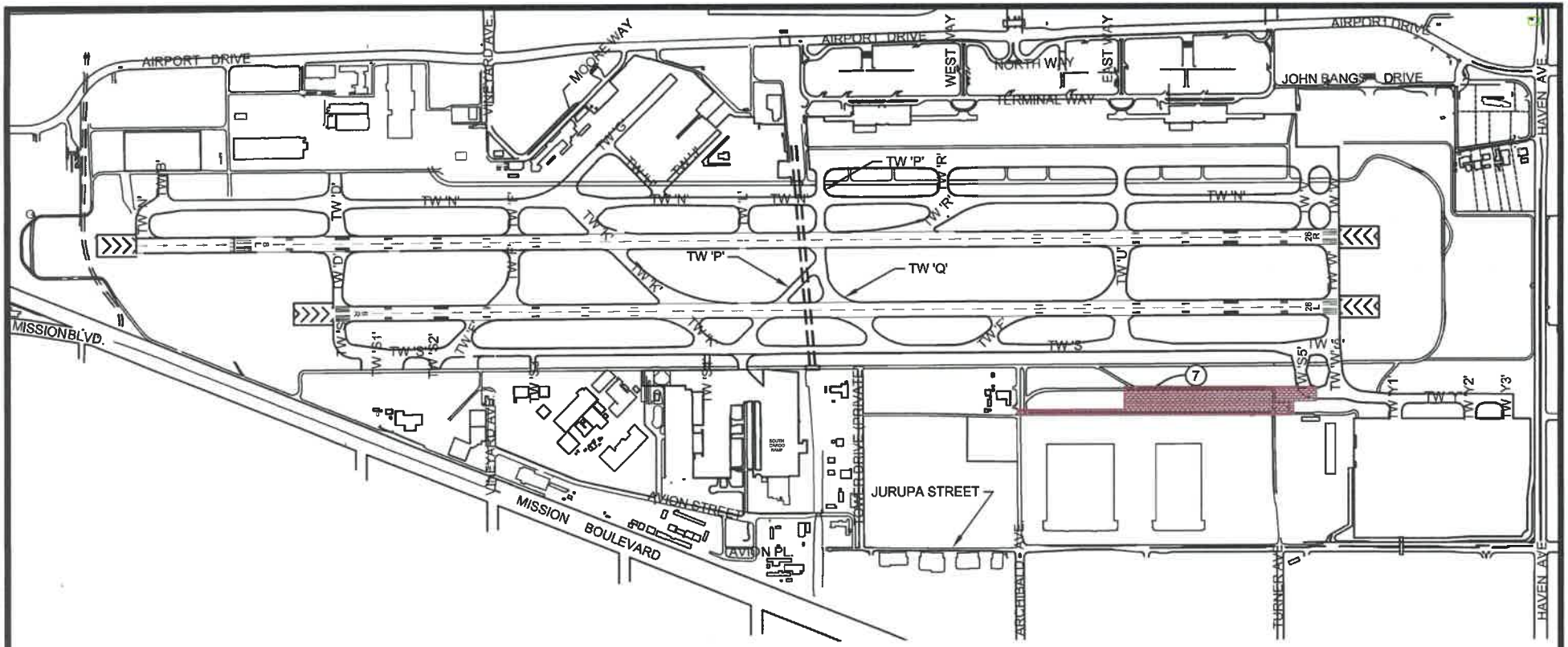
In Progress - Expected December 2019

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith A Owens	(909) 544-5383
Signature — January 31, 2019 Date	Contact Phone (Print or Type)



LEGEND

0 1500 3000

⑦ 2020-CONSTRUCT TAXIWAY Z PHASE 1: CONSTRUCT TAXIWAY Z FROM RTR TO TAXIWAY S5 AND CONSTRUCT APRON (NON-AIP)

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2020 ACIP

CONSTRUCT TW Z PHASE 1

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	7 OF 12
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

OAA PROJECT NO.:

Airport Name		Ontario International Airport	Fiscal Year 2021		
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	N/A	Defer Entitlements to FY 2022			
		Design / Coordination / Administration (10%)	$0	$0	$0
		Construction	$0	$0	$0
		Construction Management / Inspection / Monitoring (12.5%)	$0	$0	$0
		TOTAL	$0	$0	$0

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR: N/A**
Overall Development Objective: **N/A**
Description:
Defer entitlements - NO PROJECT

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	N/A
Grant Offer	N/A	Construction Completion	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

N/A

Date of Last ALP Approval Depicting Proposed Projects

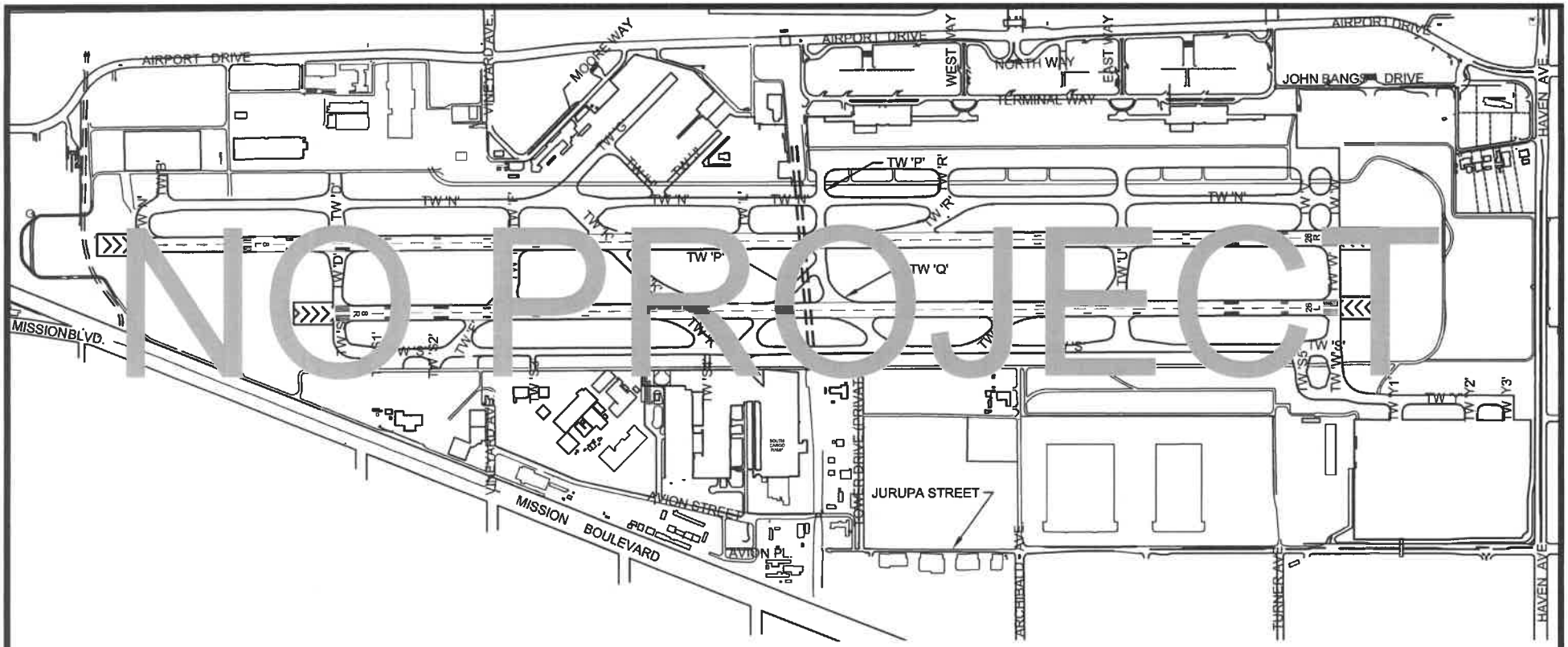
N/A

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith A Owens	(909) 544-5383
Signature — January 31, 2019 Date	Contact Phone (Print or Type)



LEGEND

0 1500 3000

⑧ 2021-DEFER ENTITLEMENTS TO FY 2022

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2021 ACIP

NO PROJECT

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	8 OF 12
DRAWN:	ELH		
MH PROJECT NO.:	1512800-180958.01		
OMA PROJECT NO.			

Airport Name		Ontario International Airport	Fiscal Year 2021		9
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	D	Construct Taxiway Z Phase 2: RTR and ASR Relocation (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$1,650,000	$1,650,000
		Construction	$0	$16,500,000	$16,500,000
		Construction Management / Inspection / Monitoring (12.5%)	$0	$2,062,500	$2,062,500
		TOTAL	$0	$20,212,500	$20,212,500

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **CA/TW/CO** **NPR: 61**
Overall Development Objective: **Construct Taxiway Z**
Description:
In order to prepare for Taxiway 'Z' construction, the FAA facilities currently in the area will require relocation. The Remote Transmitter/Receiver (RTR) and Airport Surveillance Radar (ASR) will require relocation to sites to-be-defined in the new ALP.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	May 2, 2021	Construction Commencement	September 5, 2021
Grant Offer	N/A	Construction Completion	March 24, 2024

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending Application.

Date of Last ALP Approval Depicting Proposed Projects

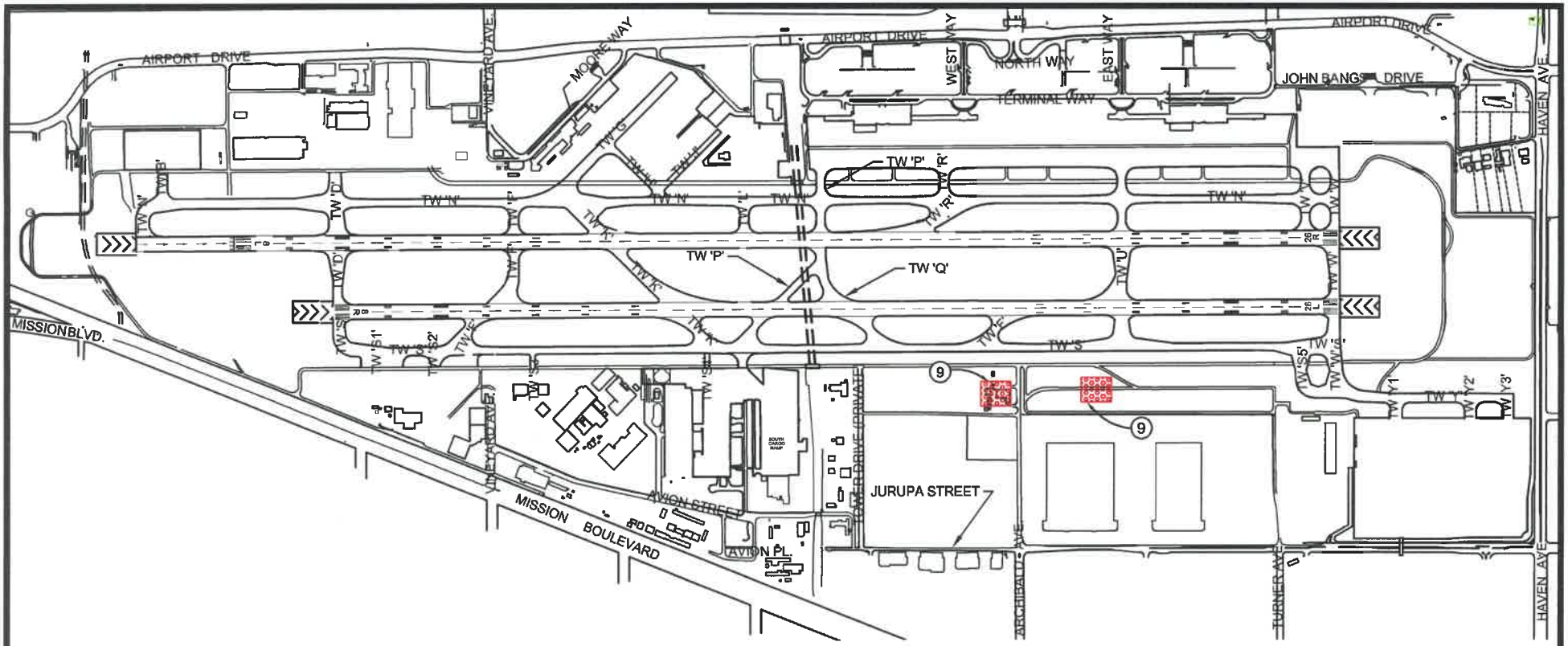
In Progress - Expected December 2019.

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith A Owens	(909) 544-5383
Signature — January 31, 2019 Date	Contact Phone (Print or Type)



LEGEND

0 1500 3000

⑨ 2021-CONSTRUCT TAXIWAY Z PHASE 2: RTR & ASR RELOCATION (NON-AIP)

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2021 ACIP

CONSTRUCT TW Z PHASE 2

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	9 OF 12
DRAWN:	ELH		
MH PROJECT NO.:	1512800-180958.01		
ONA PROJECT NO.:			

Airport Name		Ontario International Airport	Fiscal Year 2022		10
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	D	Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 1			
		Design / Coordination / Administration (10%)	$5,646,234	$1,359,888	$7,006,122
		Construction	$56,462,341	$13,598,884	$70,061,225
		Construction Management / Inspection / Monitoring (12.5%)	$7,057,793	$1,699,860	$8,757,653
		TOTAL	$69,166,368	$16,658,633	$85,825,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/IM** **NPR: 72**
Overall Development Objective: **Rehabilitate Runway 8R-26L and Connector Taxiways**
Description:
Rehabilitation of Runway 8R-26L and Connector Taxiways will be an electrical, paving, grading, marking, and drainage project. Runway 8R-26L was constructed in 1981 and will be 42 years old, likely requiring full reconstruction.

Approximate Area:
Approximate total area for Phases 1 & 2 is 297,200 SY. Total project is expected to require 2 phases and will be further defined by the Airport Pavement Management System and ALP.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2021	Grant Execution	July 25, 2022
Bid Opening	May 1, 2022	Construction Commencement	September 4, 2022
Grant Offer	June 15, 2022	Construction Completion	May 1, 2023

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

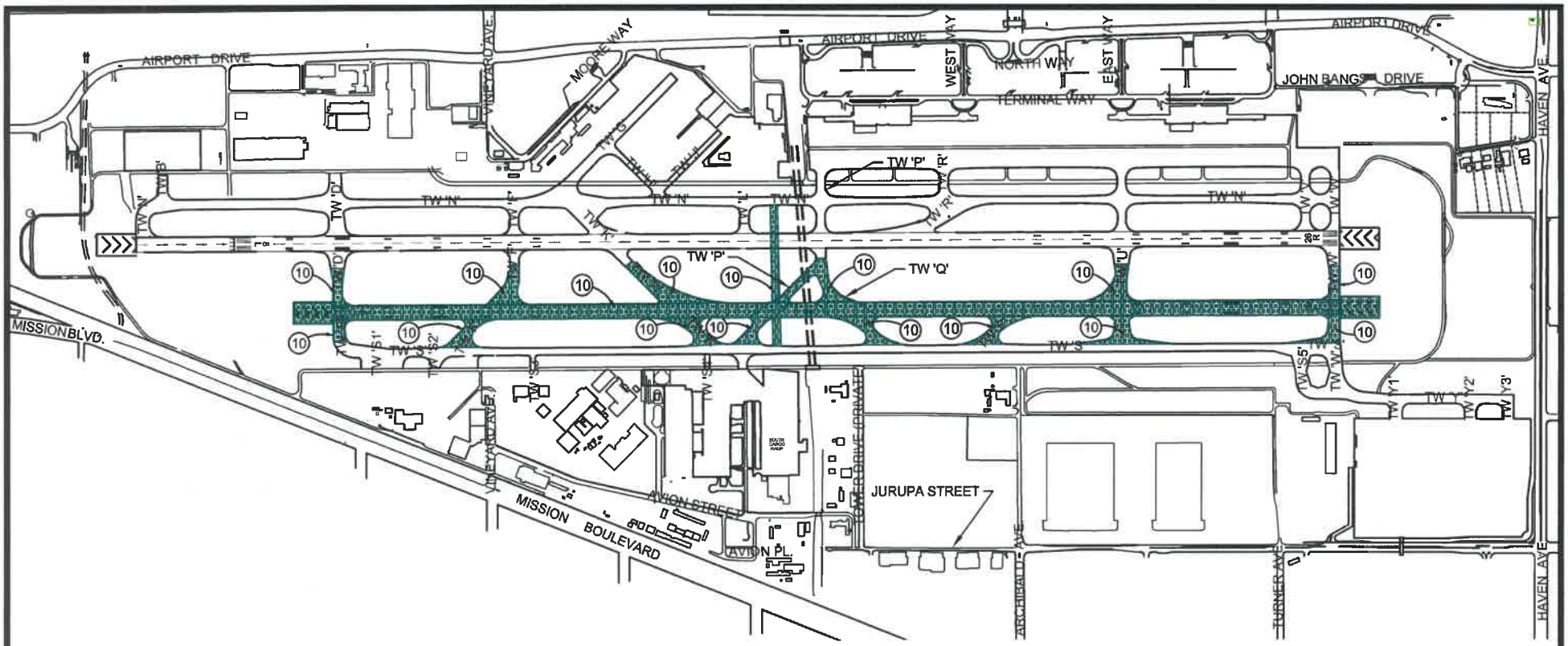
In Progress - Expected December 2019.

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

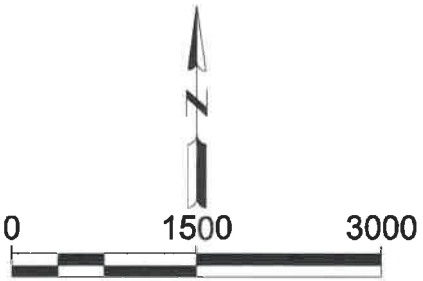
Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith A Owens	(909) 544-5383
Signature — January 31, 2019 Date	Contact Phone (Print or Type)



LEGEND

⑩ 2022-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 1



Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2022 ACIP
REHABILITATE RUNWAY 8R-26L
PHASE 1

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	10 OF 12
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

OIAA PROJECT NO.:

Airport Name		Ontario International Airport	Fiscal Year 2023		11
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	D	Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 2			
		Design / Coordination / Administration (10%)	$5,646,234	$1,359,888	$7,006,122
		Construction	$56,462,341	$13,598,884	$70,061,225
		Construction Management / Inspection / Monitoring (12.5%)	$7,057,793	$1,699,860	$8,757,653
		TOTAL	$69,166,368	$16,658,633	$85,825,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/IM** **NPR: 72**
Overall Development Objective: **Rehabilitate Runway 8R-26L and Connector Taxiways**
Description:
Rehabilitation of Runway 8R-26L and Connector Taxiways will be an electrical, paving, grading, marking, and drainage project. Runway 8R-26L was constructed in 1981 and will be 42 years old, likely requiring full reconstruction.

Approximate Area:
Approximate total area for Phases 1 & 2 is 297,200 SY. Total project is expected to require 2 phases and will be further defined by the Airport Pavement Management System and ALP.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2022	Grant Execution	July 25, 2023
Bid Opening	May 1, 2023	Construction Commencement	September 4, 2023
Grant Offer	June 15, 2023	Construction Completion	May 1, 2024

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

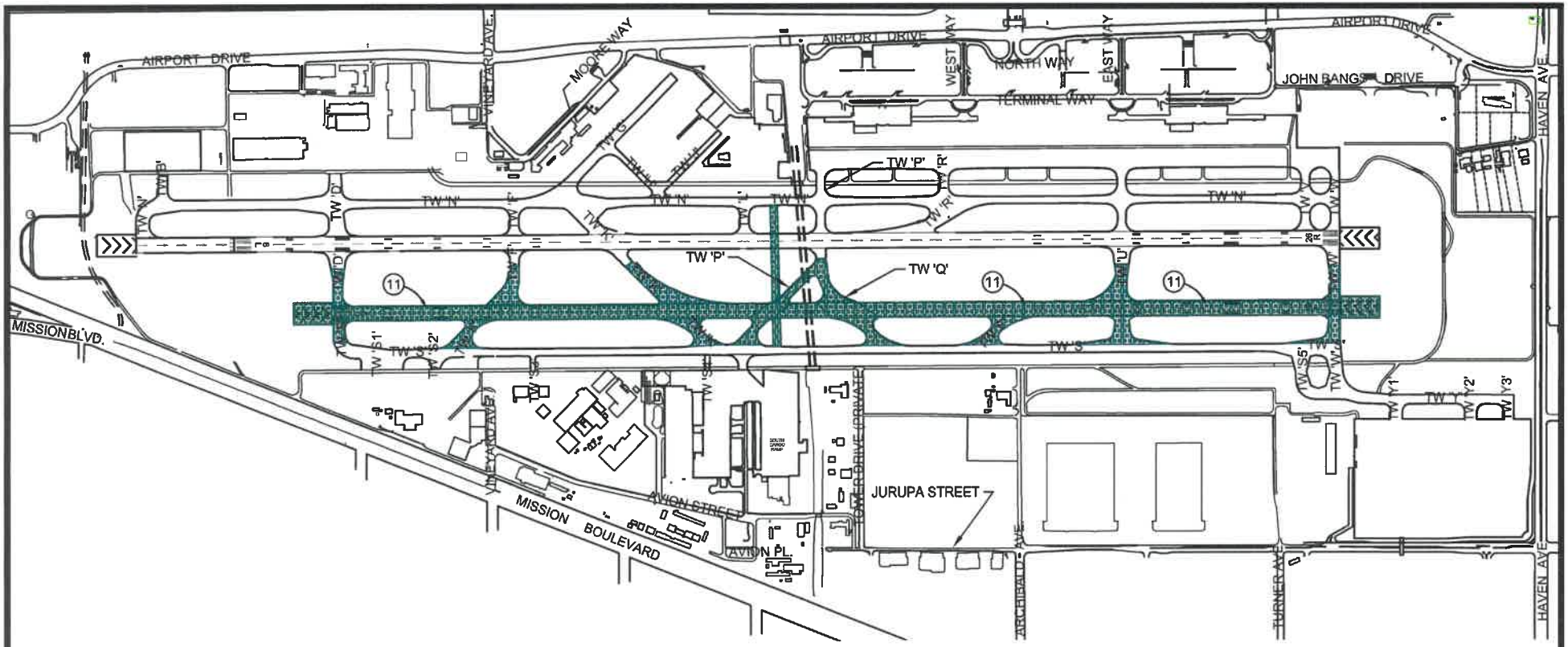
In Progress - Expected December 2019.

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith L Owens January 31, 2019	(909) 544-5383
Signature Date	Contact Phone (Print or Type)



LEGEND

(11) 2023-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 2

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2023 ACIP
REHABILITATE RUNWAY 8R-26L
PHASE 2

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	11 OF 12
DRAWN:	ELH		
MH PROJECT NO.:	1512800-180958.01		
ONA PROJECT NO.:			

Airport Name		Ontario International Airport	Fiscal Year 2024		12
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	D	Rehabilitate Runway 8L-26R Lighting, Taxiway Lighting, and Apron Lighting: Phase 1			
		Design / Coordination / Administration (10%)	$483,540	$116,460	$600,000
		Construction	$4,835,400	$1,164,600	$6,000,000
		Construction Management / Inspection / Monitoring (12.5%)	$604,425	$145,575	$750,000
		TOTAL	$5,923,365	$1,426,635	$7,350,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/LI** **NPR: 72**
Overall Development Objective: **Rehabilitate Runway 8L-26R Lighting, Taxiway Lighting and Apron**
Description:
Rehabilitate existing airfield lighting that is over 20 years old. Project also includes the relocation of the southern electrical vault.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2023	Grant Execution	July 25, 2024
Bid Opening	May 1, 2024	Construction Commencement	September 4, 2024
Grant Offer	June 15, 2024	Construction Completion	May 1, 2025

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

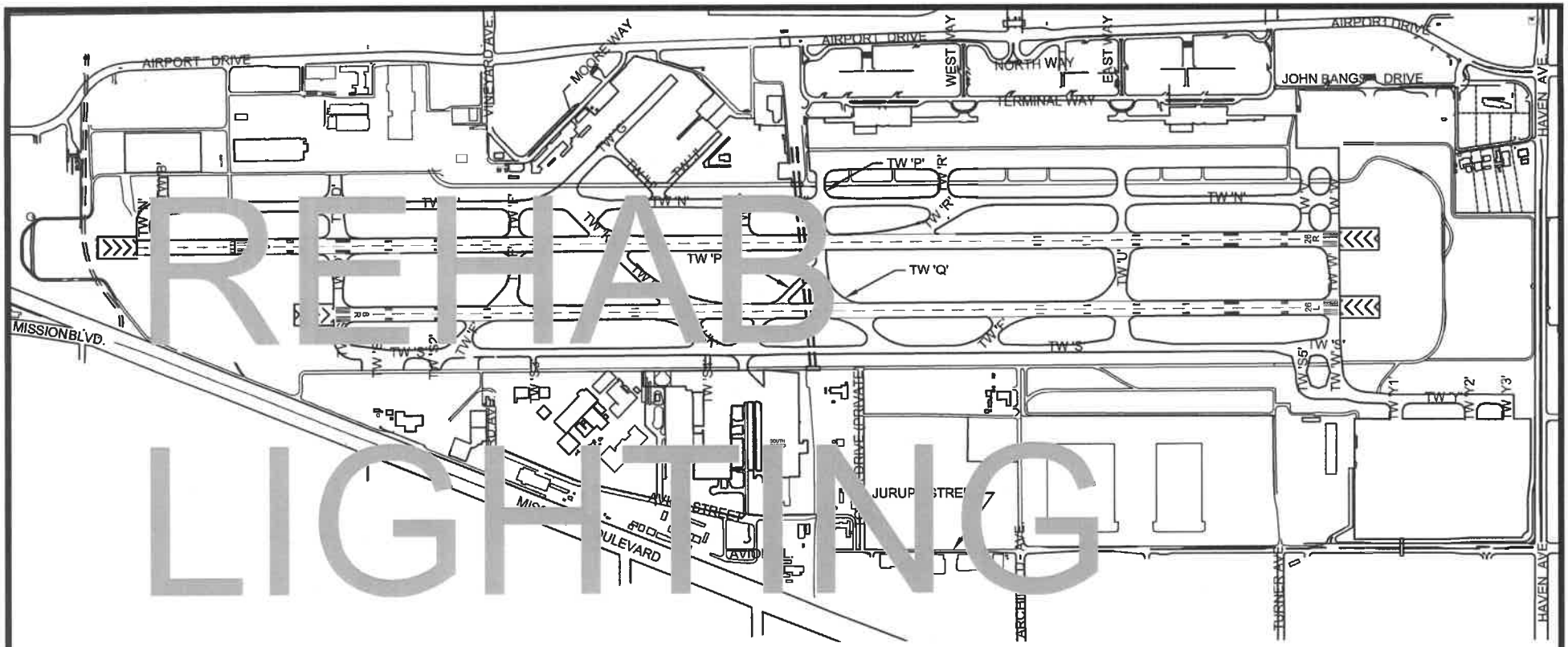
In Progress - Expected December 2019.

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

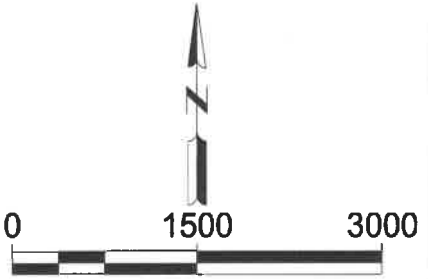
Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-040-2017	1) Taxiway S-W Intersection Repair and Construct Taxiway 'S5' (Construction)	Q1 2019
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2019
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2019
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q3 2019
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2019
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2019

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Keith Owens, Director of Program Management, OIAA	Keith Owens, Director of Program Management, OIAA
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Keith A Owens	(909) 544-5383
Signature — January 31, 2019 Date	Contact Phone (Print or Type)



LEGEND



⑫ 2024-REHABILITATE RUNWAY 8L-26R LIGHTING, TAXIWAY LIGHTING, AND APRON LIGHTING (PHASE 1)

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2024 ACIP

REHABILITATE AIRFIELD LIGHTING

CHECKED:	CJS	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2019	12 OF 12
DRAWN:	ELH		
MH PROJECT NO.:	1512800-180958.01		
OIAA PROJECT NO.:			

From:	Brantley, Michelle
To:	Perez, Brenda (FAA)
Cc:	Richardson, Al (FAA); Samad, Sam (FAA); Smith, Jeffrey; Owens, Keith; AFlake; Bruce Atlas; Schubert, John; Elkadi, Atif; Campos, Gail (FAA); mike.n.williams@faa.gov
Subject:	Ontario International Airport ACIP Submittal
Date:	Friday, January 31, 2020 6:50:30 PM
Attachments:	ONT Project Sheets and Exhibits 2020 1-30-20_r1.pdf
Importance:	High

Hi Brenda,

Our final Ontario International Airport ACIP data sheet, exhibits and project descriptions are attached.

Based on our meeting with you on January 7th, we have incorporated and addressed your comments with the following changes:

- Separated and moved up design for Project #4 Rehabilitate Runway 8R-26L and Connector Taxiways to take advantage of expiring entitlements.
- Updated the expected share of Federal and Local funds for the 2 years of construction for Projects #7 and #8 Rehabilitate Runway 8R-26L and Connector Taxiways.

To ensure we are able to utilize the expiring entitlements, please note that we have begun the necessary internal processes required to kick off the design of the 8R-26L project and have initiated coordination with our consultant to assist with the environmental planning required for CEQA and NEPA.

In regards to the federal funds for the Runway 8R-26L rehabilitation, the federal amount requested for the two years of construction in 2022 and 2023 was determined through an analysis of total grant amounts awarded to medium hub airports around the country over the last 10 years for similar runway rehabilitation projects. Based on this analysis and the fact that this project was identified in the previous ACIP with an NPR of 83, we believe the federal funds listed in our ACIP submission are reasonable. The Ontario International Airport Authority remains committed to pursuing additional revenue sources to help us pay for this and many more projects that are vital to the continued successful operation of the airport. We welcome further discussions in this area and would like to add it to the agenda of the monthly FAA check-in call we do with you.

Please note that, per the FAA's suggestion, we did consider alternative phasing of the construction over three years. Based on our professional experience and industry expertise, extending construction on the runway and associated taxiways does not benefit the funding plan due to the increase in the total cost of the project. Furthermore, it would extend closure/disruption of operations on this Continuous Power Airport runway without a justifiable benefit and introduces unnecessary risk to the project with the multiple phases. The extension of duration would also delay critical projects in the following years of the ONT ACIP.

Finally, we would like to bring your attention to the Project #9, 26L ALSF, which is listed in the ACIP as an FAA project. As we discussed, the initiation of this project soon is critical to being able to replace the ALSF during the reconstruction of the runway. We appreciate your willingness to address this topic with TechOps at your February 11 meeting and look forward to hearing about next steps.

Starting tomorrow, I will be out of the country for 10 days, but I will be checking emails while I'm away. On behalf of Ontario International Airport, I want to thank you for your partnership as we plan for the airport's future and I am happy to address any questions you may have.

Michelle Brantley
Director of Planning

M: 909.227.3055 | **O:** 909.544.5255
mbrantley@flyontario.com | @flyONT

U.S. Department of Transportation **Federal**
Aviation Administration

Airport Capital Improvement Plan (ACIP)

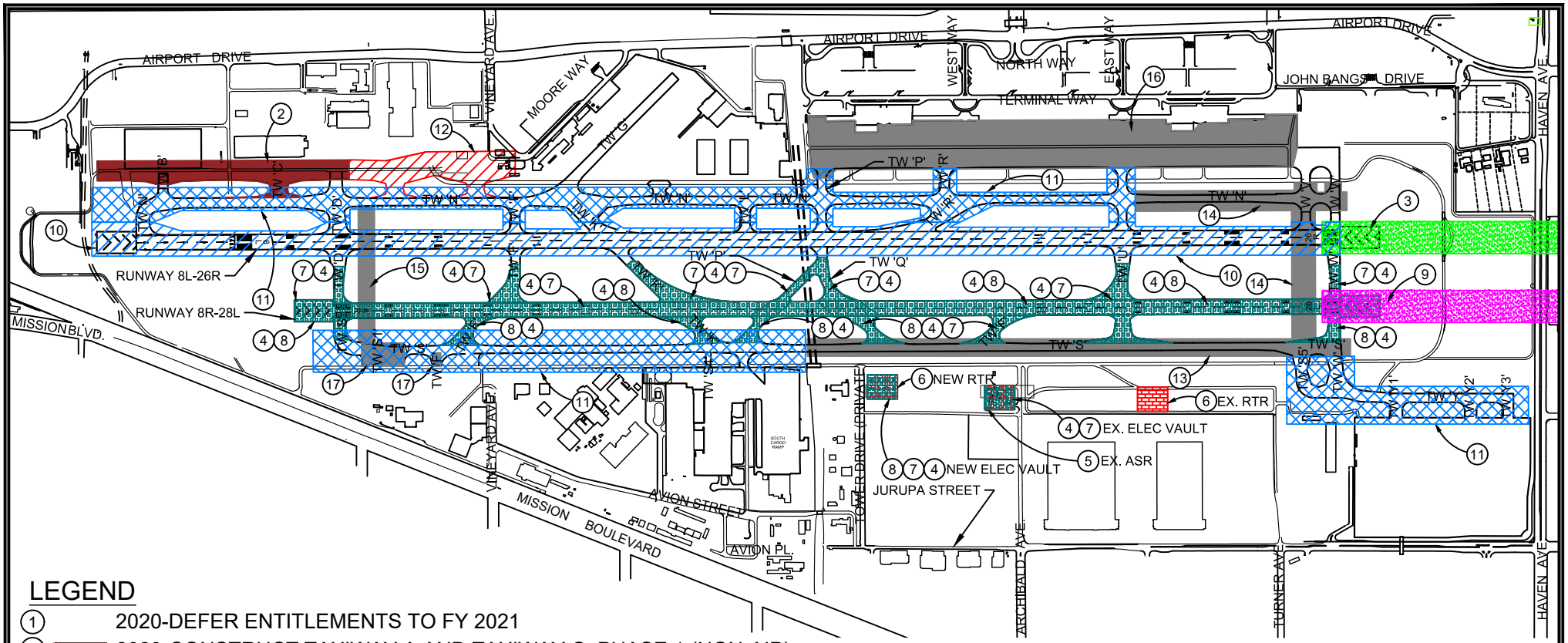
1. Airport:	2. State:	NPIAS No.:	4. LOCID:
Ontario International Airport (ONT)	**California**	**06-0175**	**ONT**

5. Project Description *(by Funding Year in Priority Order)*	Federal Funds	State Funds	LOCAL FUNDS		Total $	Environmental Impact	Start Date	Completion Date
			PFC	Other				
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1: 2020 - Defer Entitlements to FY 2021						N/A	N/A	N/A
2: 2020 - Construct Taxiway A and Taxiway C: Phase 1 (Non-AIP)				31,544	31,544	Cat-Ex	3/30/2020	12/31/2021
3: 2020 - Upgrade Runway 26R ILS (Non-AIP)				6,000	6,000	Cat-Ex	3/30/2021	12/31/2022
SUBTOTAL (2020)				**37,544**	**37,544**			
4: 2021 - Rehabilitate Runway 8R-26L and Connector Taxiways: Design	8,059			1,941	10,000	N/A	6/1/2020	2/1/2022
5: 2021 - ASR Relocation (Non-AIP)				14,296	14,296	Pending	3/1/2020	11/5/2025
6: 2021 - RTR Relocation (Non-AIP)				3,899	3,899	Pending	3/1/2020	11/5/2023
7: 2022 - Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 1	21,608			18,706	40,314	Pending	12/30/2021	4/30/2024
8: 2023 - Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 2	21,608			21,955	43,563	Pending	12/30/2021	4/30/2025
9: 2023 - Upgrade Runway 26L ALSF (FAA Funded)	TBD				TBD	Pending	1/1/2024	10/31/2024
10: 2024 - Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting: Phase 1	10,090			2,430	12,520	Pending	12/30/2023	6/1/2025
11: 2025 - Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting: Phase 2	8,035			1,935	9,970	Pending	5/1/2024	6/30/2026
12: 2025 - Construct Taxiway A: Phase 2 (Non-AIP)				102,797	102,797	Pending	11/4/2024	12/30/2025
SUBTOTAL (2021-2025)	**69,400**			**167,959**	**237,359**			
13: 2026 - Rehabilitate Taxiway S Phase 2: Channel to Taxiway W	35,575			8,568	44,143			
14: 2027 - Reconstruct Taxiway N East of U and Construct Taxiway V Extension to S5	10,851			2,613	13,464			
15: 2028 - Construct Taxiway E	15,773			3,799	19,572			
16: 2029 - Relocate Taxiway N1 and Rehabilitate Terminals 2, 3 and 4 Aprons Phase 1: Paving and Electrical Improvements	5,232			1,260	6,492			
17: 2030 - Rehabilitate Taxiway S1 and F South of Taxiway S Within Movement Area	2,628			633	3,261			
SUBTOTAL (2026-2030)	**70,059**			**16,874**	**86,933**			
TOTAL (2021-2030): DOES NOT INCLUDE 2020	**139,459**			**184,833**	**324,292**			

All costs on this sheet are expressed in $1,000's

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley — January 30, 2020	(909) 544-5255
Signature — Date	Contact Phone (Print or Type)



LEGEND

1. 2020-DEFER ENTITLEMENTS TO FY 2021
2. 2020-CONSTRUCT TAXIWAY A AND TAXIWAY C: PHASE 1 (NON-AIP)
3. 2020-UPGRADE RUNWAY 26R ILS (NON-AIP)
4. 2021-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: DESIGN
5. 2021-ASR RELOCATION (NON-AIP)
6. 2021-RTR RELOCATION (NON-AIP)
7. 2022-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 1
8. 2023-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 2
9. 2023-UPGRADE RUNWAY 26L ALSF (FAA FUNDED)
10. 2024-REHABILITATE RUNWAY 8L-26R LIGHTING AND TAXIWAY LIGHTING: PHASE 1
11. 2025-REHABILITATE RUNWAY 8L-26R LIGHTING AND TAXIWAY LIGHTING: PHASE 2
12. 2025-CONSTRUCT TAXIWAY A: PHASE 2 (NON-AIP)
13. 2026-REHABILITATE TAXIWAY S PHASE 2: CHANNEL TO TAXIWAY W
14. 2027-RECONSTRUCT TAXIWAY N EAST OF TAXIWAY U AND CONSTRUCT TAXIWAY V EXTENSION TO S5
15. 2028-CONSTRUCT TAXIWAY E
16. 2029-RELOCATE TAXIWAY N1 AND REHABILITATE TERMINALS 2, 3, AND 4 APRONS PHASE 1: PAVING AND ELECTRICAL IMPROVEMENTS
17. 2030-REHABILITATE TAXIWAY S1 AND F SOUTH OF TAXIWAY S WITHIN MOVEMENT AREA

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2021-2025 ACIP

OVERALL

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	0 OF 13
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2020		1
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	N/A	Defer Entitlements to FY 2021			
		Design / Coordination / Administration (10%)	$0	$0	$0
		Construction	$0	$0	$0
		Construction Management / Inspection / Monitoring (12.5%)	$0	$0	$0
		TOTAL	$0	$0	$0

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **N/A**
Description:
Defer entitlements - NO PROJECT

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	N/A
Grant Offer	N/A	Construction Completion	N/A
		Grant Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

N/A

Date of Last ALP Approval Depicting Proposed Projects

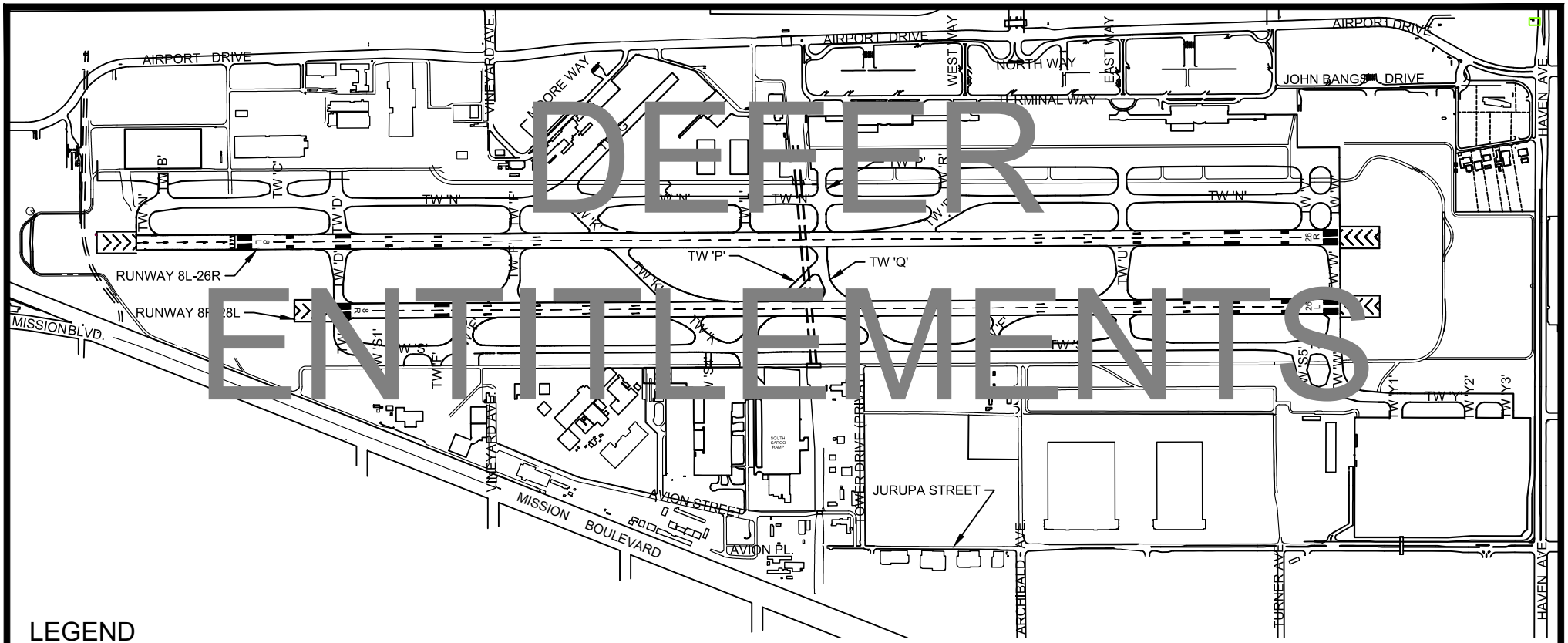
N/A

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley	(909) 544-5255
Signature — January 30, 2020 (Date)	Contact Phone (Print or Type)



DEFER
ENTITLEMENTS

LEGEND

① 2020-DEFER ENTITLEMENTS TO FY 2021

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2020 ACIP

DEFER ENTITLEMENTS

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	1 OF 13
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2020		2
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Construct Taxiway A and Taxiway C: Phase 1 (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$2,575,000	$2,575,000
		Construction	$0	$25,750,000	$25,750,000
		Construction Management / Inspection / Monitoring (12.5%)	$0	$3,218,750	$3,218,750
		TOTAL	$0	$31,543,750	$31,543,750

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **CA/TW/CO** **NPR: 79**
Overall Development Objective: **Construct Taxiway A and C**
Description:
Project is the construction of a parallel taxiway that runs east-west, along with connector Taxiway 'C'. Taxiway 'A' will eventually connect to Taxiway 'N1'. The project consists of building and pavement demolition, new pavement, airfield lighting, airfield signage, grading, pavement markings, and utility relocations.

Approximate Area:
Project includes 63,200 SY of paving.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	March 30, 2020
Grant Offer	N/A	Construction Completion	December 31, 2021
		Grant Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Project approved as Cat-Ex on November 6, 2018.

Date of Last ALP Approval Depicting Proposed Projects

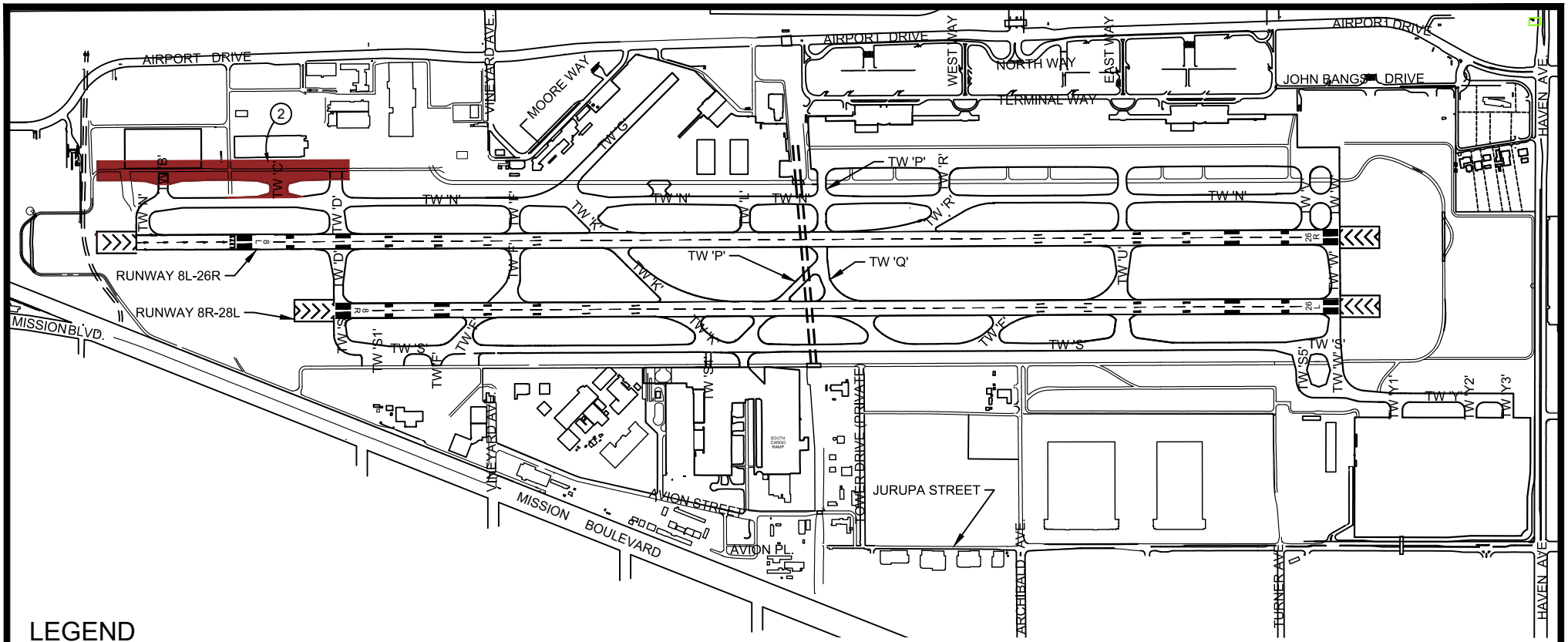
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley	(909) 544-5255
Signature — January 30, 2020 (Date)	Contact Phone (Print or Type)



LEGEND

(2) 2020-CONSTRUCT TAXIWAY A AND TAXIWAY C: PHASE 1 (NON-AIP)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2020 ACIP

CONSTRUCT TAXIWAY A AND C: PHASE 1

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 2
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2020		3
Shown On ALP	Project Type*	Project Description	Federal Share	Local Share	Total
Yes	D	Upgrade Runway 26R ILS (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$489,796	$489,796
		Construction	$0	$4,897,959	$4,897,959
		Construction Management / Inspection / Monitoring (12.5%)	$0	$612,245	$612,245
		TOTAL	$0	$6,000,000	$6,000,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **Enabling Project for *Rehabilitate Runway 8R-26L and Connector Taxiways***
Description:
Install ALSF-II approach lighting system to Runway 26R. Includes relocation of one (1) Runway Visual Range and back-up engine generator, with upgrades to glideslope and localizer array. Development of a Reimbursable Agreement for this project is underway. This project, along with the TDZ lighting upgrades (grant 3-06-0175-041-2018), allows Runway 8L-26R to be upgraded to a CAT-III to enable the Runway 8R-26L Rehabilitation Project in 2022.
From FAA Order 6030.20F: Continuous Power Airports (CPA) provide continuous operations in the event of area-wide utility power failures. CPA airports must have backup power to operate runway lighting and NAS services. This backup power must be available to supply power for at least 4 hours to the runway lighting as well as navigation, landing, and communications equipment. FAA Order 6030.20F, Appendix A: *Continuous Power Airports and Current Runway Codes* includes ONT Runway 26L in the listing of airports.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Process Initiation	December 18, 2018	Grant Execution	TBD
Bid Opening	TBD	Construction Commencement	March 30, 2021
Grant Offer	N/A	Construction Completion	December 31, 2022
		Grant Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Cat-Ex expected by December 2020.

Date of Last ALP Approval Depicting Proposed Projects

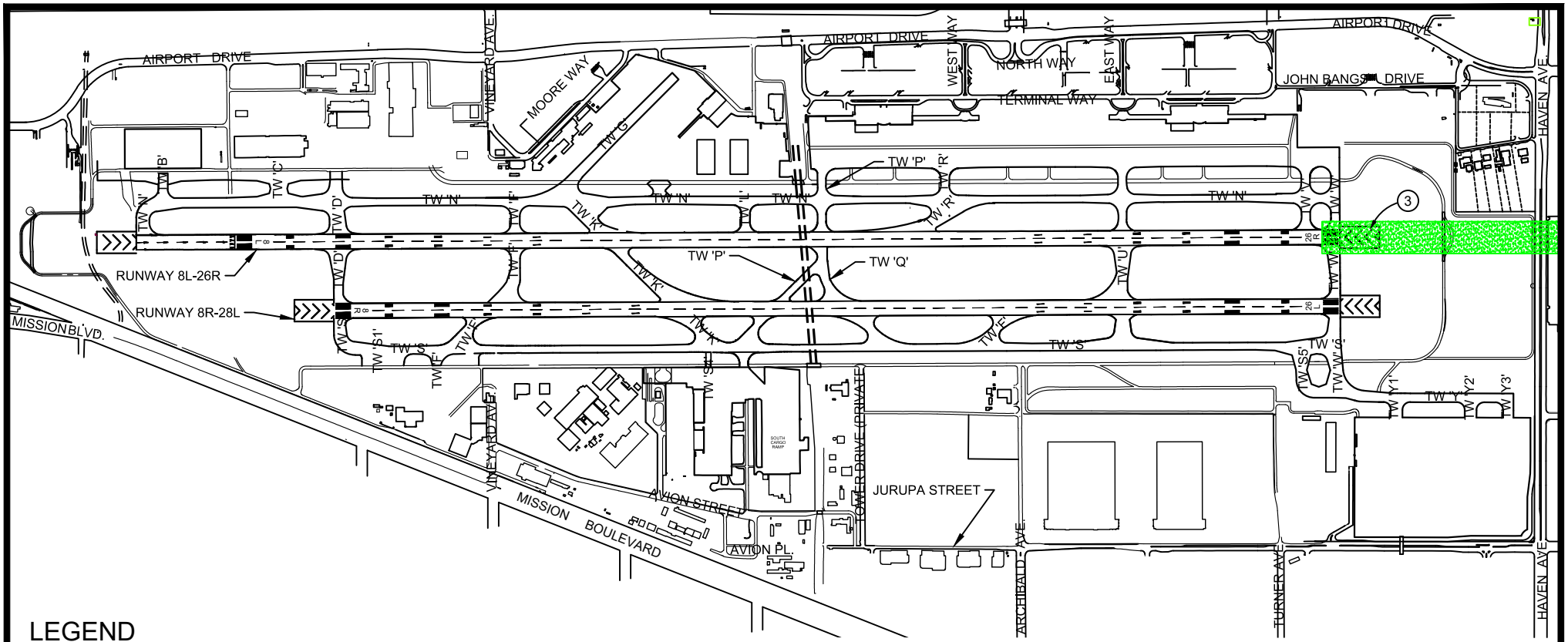
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(3) 2020-UPGRADE RUNWAY 26R ILS (NON-AIP)

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2020 ACIP
UPGRADE RUNWAY 26R ILS

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 3
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2021		4
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	N/A	Rehabilitate Runway 8R-26L and Connector Taxiways: Design			
		Design / Coordination / Administration	$8,059,000	$1,941,000	$10,000,000
		Construction	$0	$0	$0
		Construction Management / Inspection / Monitoring (12.5%)	$0	$0	$0
		TOTAL	$8,059,000	$1,941,000	$10,000,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/IM** **NPR: 83**
Overall Development Objective: **Rehabilitate Runway 8R-26L and Connector Taxiways**
Description:
Rehabilitation of Runway 8R-26L and Connector Taxiways (Taxiways D, F, K, P, Q, U, and W) will be an electrical, paving, grading, and marking project. Project also includes the relocation of the southern electrical vault. Runway 8R-26L was constructed in 1981 and will be 42 years old by the beginning of construction in 2022. Project was identified in the Airport Pavement Management System study and is on the ALP. **Grant application covers design of both phases.**

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2020	Grant Execution	September 1, 2021
Bid Opening	N/A	Design Commencement	June 1, 2020
Grant Offer	August 1, 2021	Design Completion	February 1, 2022
		Grant Closeout	September 30, 2022

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

N/A

Date of Last ALP Approval Depicting Proposed Projects

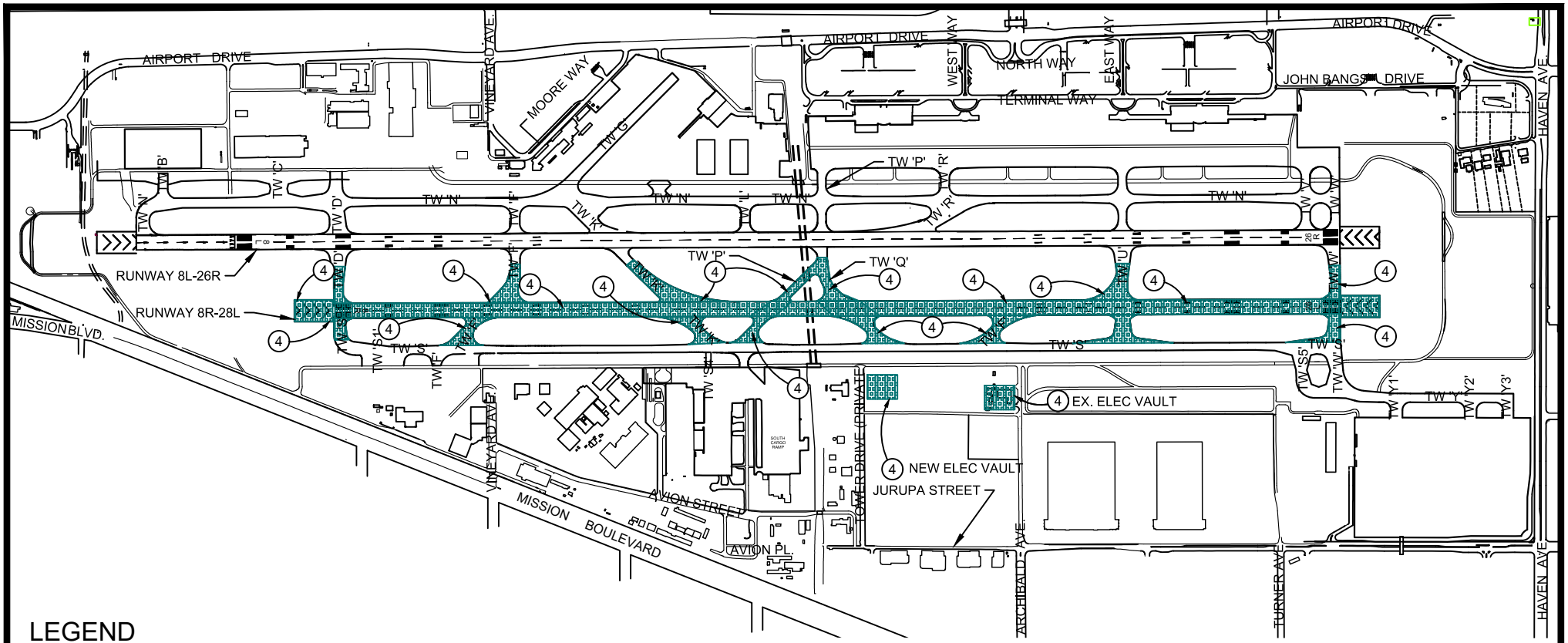
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(4) 2021-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: DESIGN

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2021 ACIP

REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: DESIGN

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 4
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2021		5
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
No	D	ASR Relocation (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$1,166,990	$1,166,990
		Construction	$0	$11,669,900	$11,669,900
		Construction Management / Inspection / Monitoring (12.5%)	$0	$1,458,738	$1,458,738
		TOTAL	$0	$14,295,628	$14,295,628

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **Relocate ASR**
Description:
The Airport Surveillance Radar (ASR) will require relocation to a site to-be-defined in the new ALP.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Reimbursable Agreement/Process Initiation	March 1, 2020	Grant Execution	N/A
Bid Opening	TBD	Construction Commencement	TBD
Grant Offer	N/A	Construction Completion	November 5, 2025
		Project Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending Application.

Date of Last ALP Approval Depicting Proposed Projects

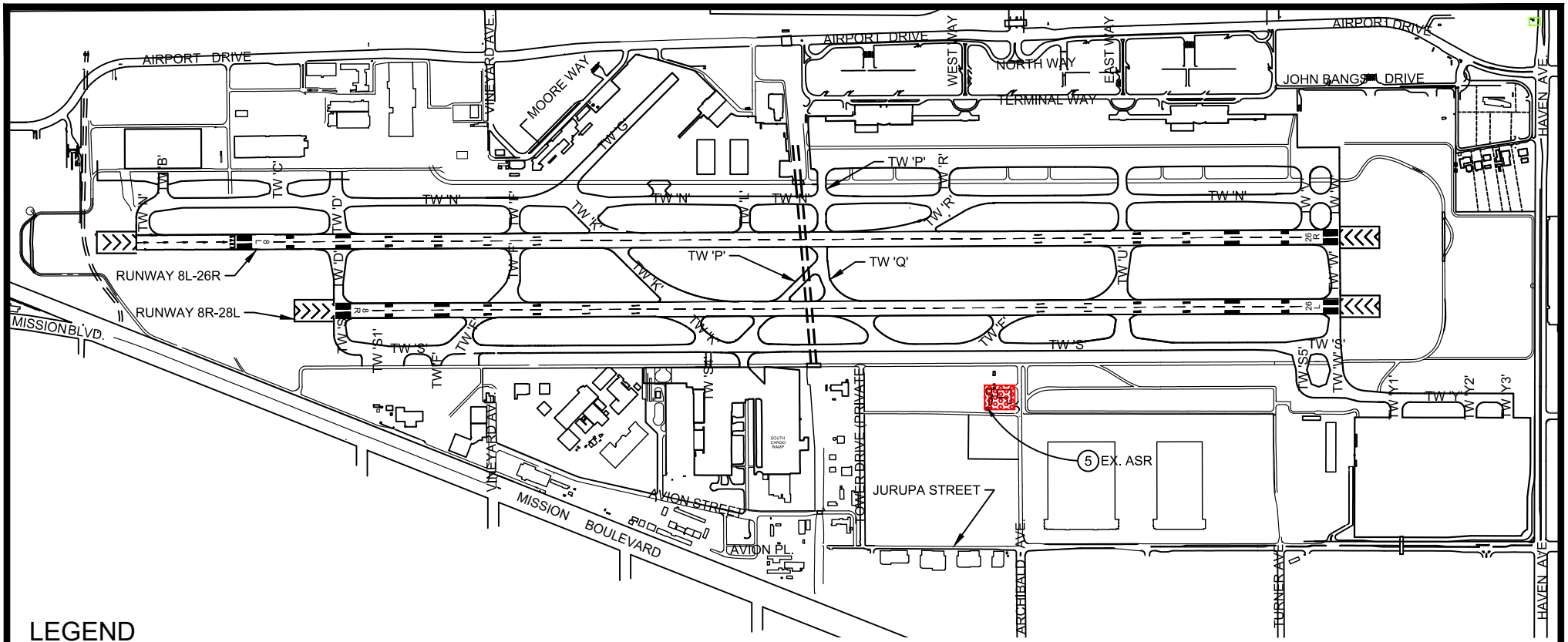
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley	(909) 544-5255
Signature — January 30, 2020 (Date)	Contact Phone (Print or Type)



LEGEND

(5) 2021-ASR RELOCATION (NON-AIP)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2021 ACIP

ASR RELOCATION

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 5
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2021		6
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
No	D	RTR Relocation (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$318,270	$318,270
		Construction	$0	$3,182,700	$3,182,700
		Construction Management / Inspection / Monitoring (12.5%)	$0	$397,838	$397,838
		TOTAL	$0	$3,898,808	$3,898,808

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **Relocate RTR**
Description:
The Remote Transmitter/Receiver (RTR) will require relocation to a site to-be-defined in the new ALP. Attached graphic shows preliminary location.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Reimbursable Agreement/Process Initiation	March 1, 2020	Grant Execution	N/A
Bid Opening	TBD	Construction Commencement	November 5, 2022
Grant Offer	N/A	Construction Completion	November 5, 2023
		Project Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending Application.

Date of Last ALP Approval Depicting Proposed Projects

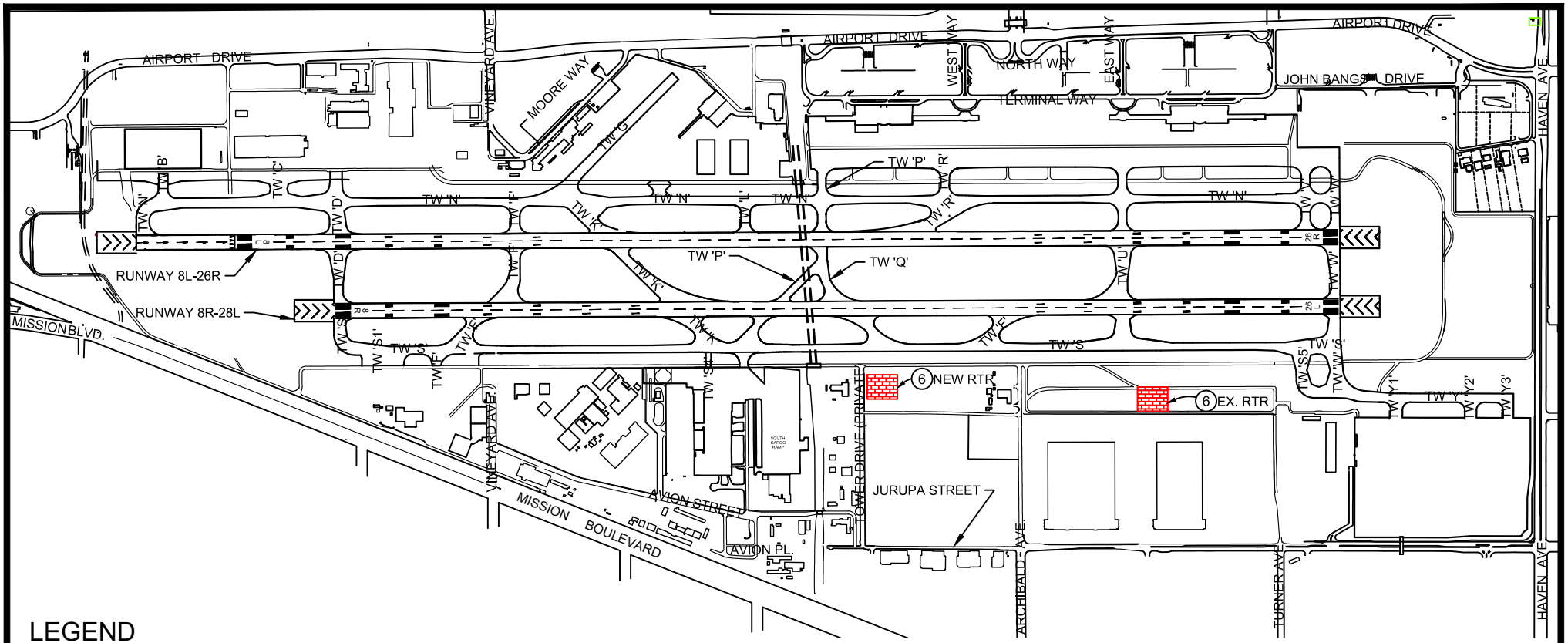
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(6) 2021-RTR RELOCATION (NON-AIP)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2021 ACIP

RTR RELOCATION

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 6
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2022		7
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 1			
		Construction	$18,708,225	$16,195,671	$34,903,896
		Construction Management / Inspection / Monitoring (15.5%)	$2,899,775	$2,510,329	$5,410,104
		TOTAL	$21,608,000	$18,706,000	$40,314,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/IM** **NPR: 83**
Overall Development Objective: **Rehabilitate Runway 8R-26L and Connector Taxiways**
Description:
Rehabilitation of Runway 8R-26L and Connector Taxiways (Taxiways D, F, K, P, Q, U, and W) will be an electrical, paving, grading, and marking project. Project also includes the relocation of the southern electrical vault. Runway 8R-26L was constructed in 1981 and will be 42 years old in 2022. Project was identified in the Airport Pavement Management System study and is on the ALP. **Phase 1 is the construction of the connector taxiways and the electrical vault.**
Approximate Area:
Approximate total area for Phases 1 & 2 is 297,200 SY.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2021	Grant Execution	September 1, 2022
Bid Opening	May 1, 2022	Construction Commencement	January 1, 2023
Grant Offer	August 1, 2022	Construction Completion	October 31, 2023
		Grant Closeout	April 30, 2024

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

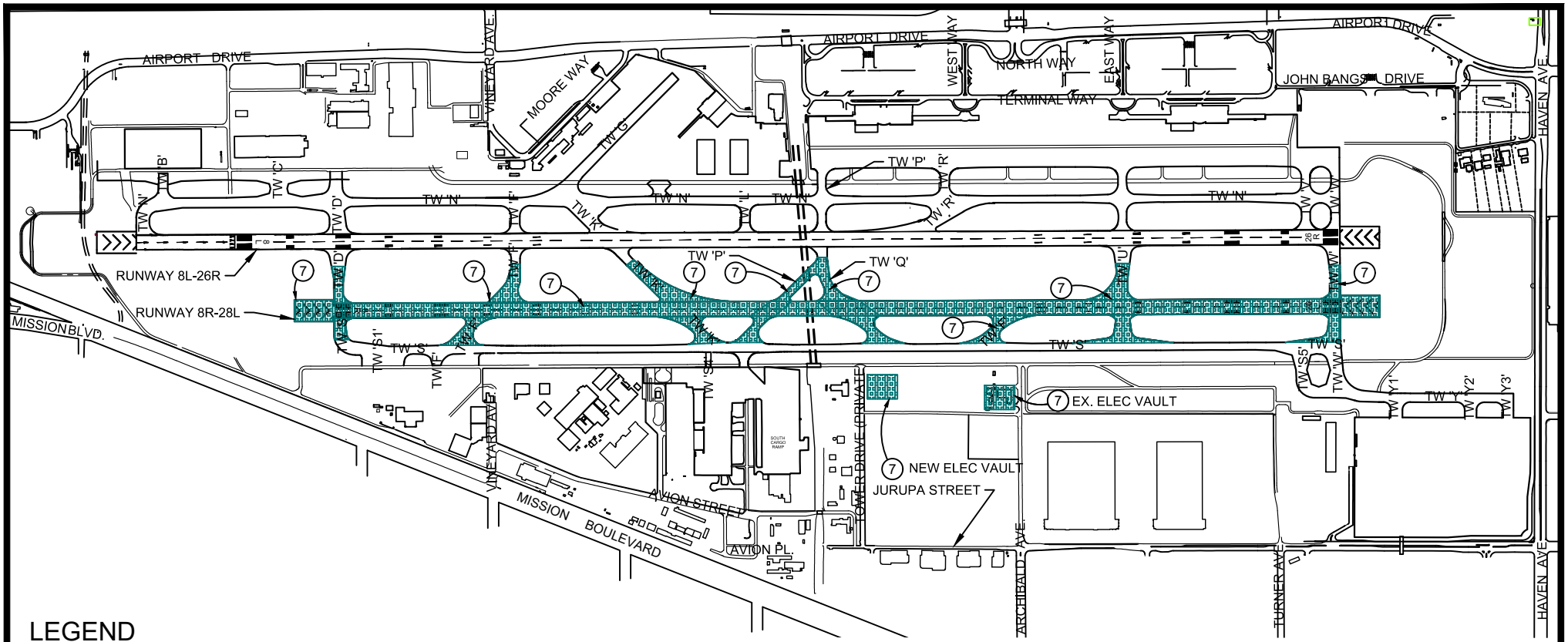
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley — January 30, 2020	(909) 544-5255
Signature — Date	Contact Phone (Print or Type)



LEGEND

(7) 2022-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 1

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2022 ACIP

REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PH 1

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 7
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2023		8
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Rehabilitate Runway 8R-26L and Connector Taxiways: Phase 2			
		Construction	$18,708,225	$19,008,658	$37,716,883
		Construction Management / Inspection / Monitoring (15.5%)	$2,899,775	$2,946,342	$5,846,117
		TOTAL	$21,608,000	$21,955,000	$43,563,000

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/IM** **NPR: 83**
Overall Development Objective: **Rehabilitate Runway 8R-26L and Connector Taxiways**
Description:
Rehabilitation of Runway 8R-26L and Connector Taxiways (Taxiways D, F, K, P, Q, U, and W) will be an electrical, paving, grading, and marking project. Runway 8R-26L was constructed in 1981 and will be 42 years old by the beginning of construction is 2022. Project was identified in the Airport Pavement Management System study and is on the ALP. **Phase 2 consists of the rehabilitation of Runway 8R-26L.**
Approximate Area:
Approximate total area for Phases 1 & 2 is 297,200 SY.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2021	Grant Execution	September 1, 2023
Bid Opening	May 1, 2022	Construction Commencement	January 1, 2024
Grant Offer	August 1, 2023	Construction Completion	October 31, 2024
		Grant Closeout	April 30, 2025

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

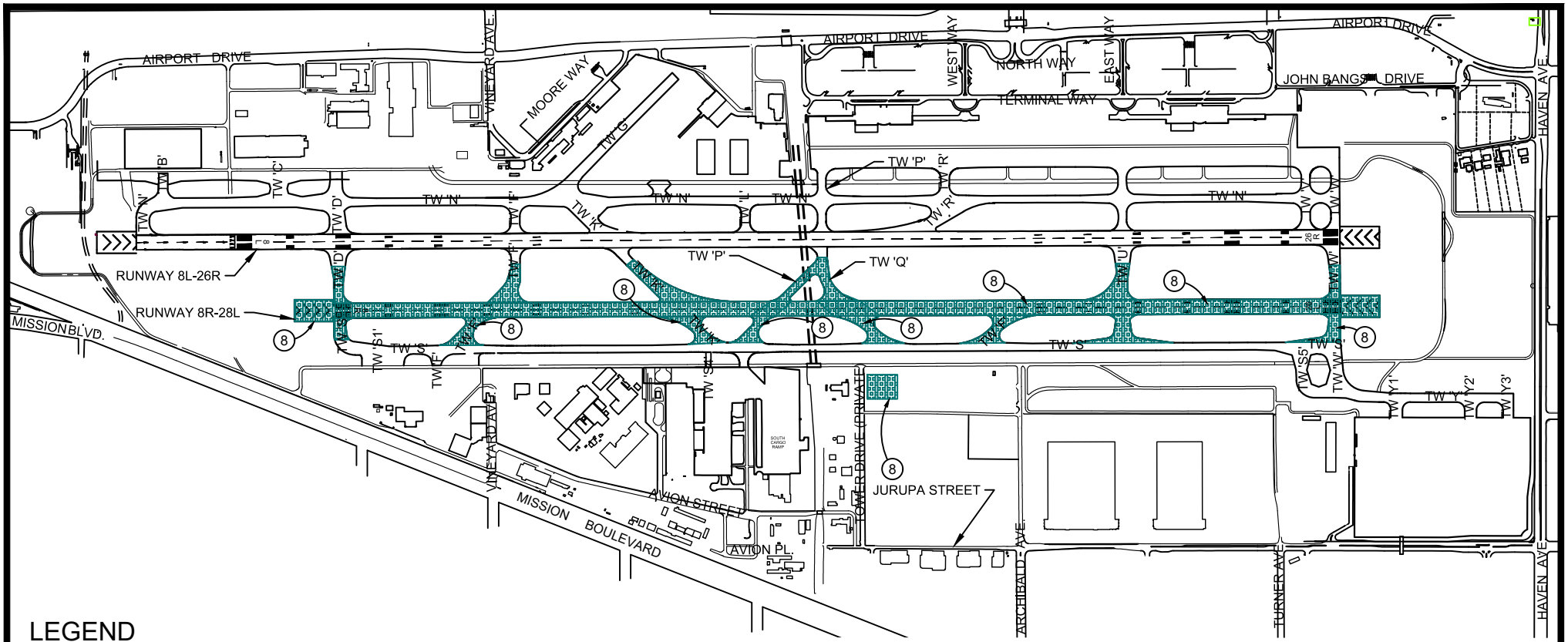
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(8) 2023-REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PHASE 2

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2023 ACIP

REHABILITATE RUNWAY 8R-26L AND CONNECTOR TAXIWAYS: PH 2

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 8
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2023		9
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Upgrade Runway 26L ALSF (FAA Funded)			
		Design / Coordination / Administration (10%)	TBD	$0	TBD
		Construction	TBD	$0	TBD
		Construction Management / Inspection / Monitoring (12.5%)	TBD	$0	TBD
		TOTAL	TBD	$0	TBD

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **Stand-alone project**
Description:
This project would be to upgrade the existing Runway 26L ALSF system, projected to occur before the end of FY 2023. This project would be fully funded by the FAA.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Process Initiation	February 1, 2020	Grant Execution	TBD
Bid Opening	TBD	Construction Commencement	January 1, 2024
Grant Offer	N/A	Construction Completion	October 31, 2024
		Project Closeout	April 30, 2025

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Not applicable.

Date of Last ALP Approval Depicting Proposed Projects

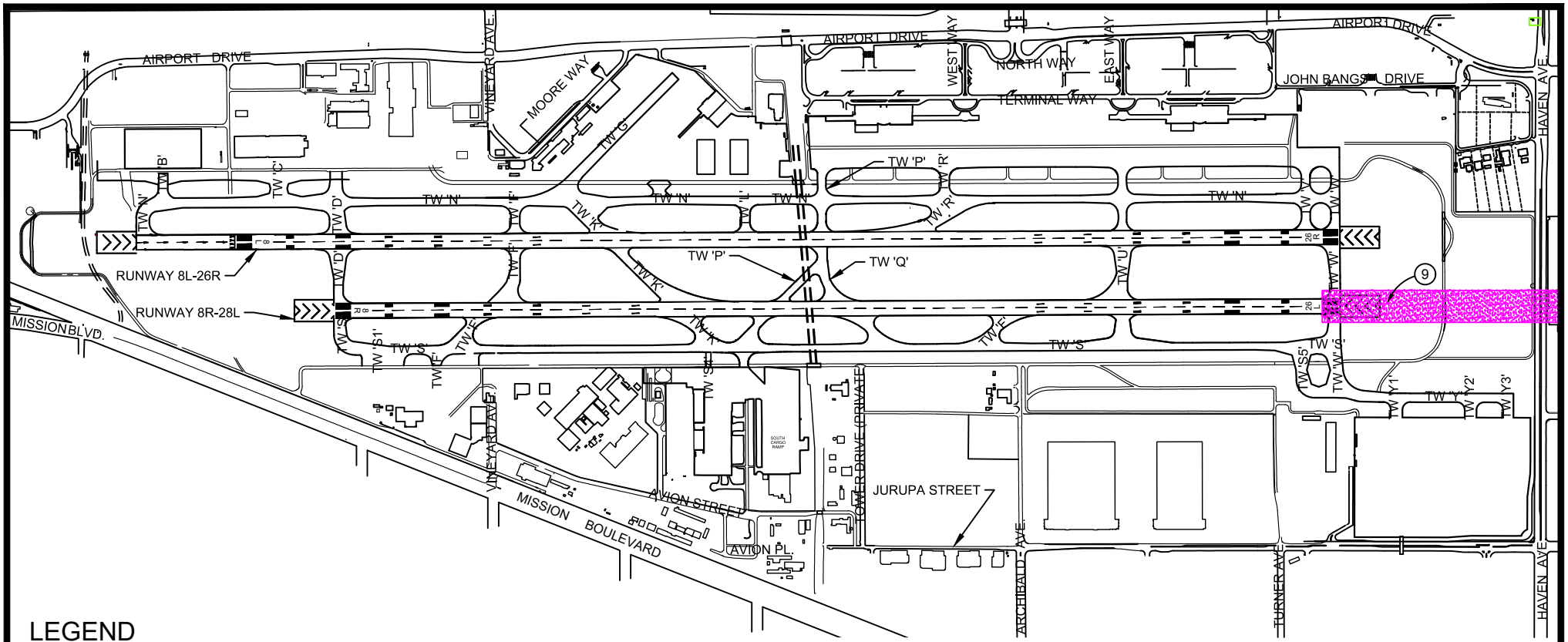
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(9) 2023-UPGRADE RUNWAY 26L ALSF (FAA FUNDED)

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2023 ACIP

UPGRADE RUNWAY 26L ALSF (FAA FUNDED)

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	OF 13 9
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2024		10
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting: Phase 1			
		Design / Coordination / Administration (10%)	$823,673	$198,381	$1,022,054
		Construction	$8,236,732	$1,983,807	$10,220,539
		Construction Management / Inspection / Monitoring (12.5%)	$1,029,592	$247,976	$1,277,567
		TOTAL	$10,089,997	$2,430,163	$12,520,160

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/LI** **NPR: 83**
Overall Development Objective: **Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting**
Description:
Rehabilitate existing airfield lighting that is over 20 years old, including runway edge lighting, signs, and an upgrade to the existing north airfield vault. Phase 1 is anticipated to be Runway 8L-26R and its connector taxiways 'N', 'D', 'F', 'K', 'L', 'R', 'U', 'V' and 'W' within the RSA. Associated work in the northern airfield electrical vault will be completed as well.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2023	Grant Execution	July 25, 2024
Bid Opening	May 1, 2024	Construction Commencement	September 4, 2024
Grant Offer	June 15, 2024	Construction Completion	December 31, 2024
		Grant Closeout	June 1, 2025

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

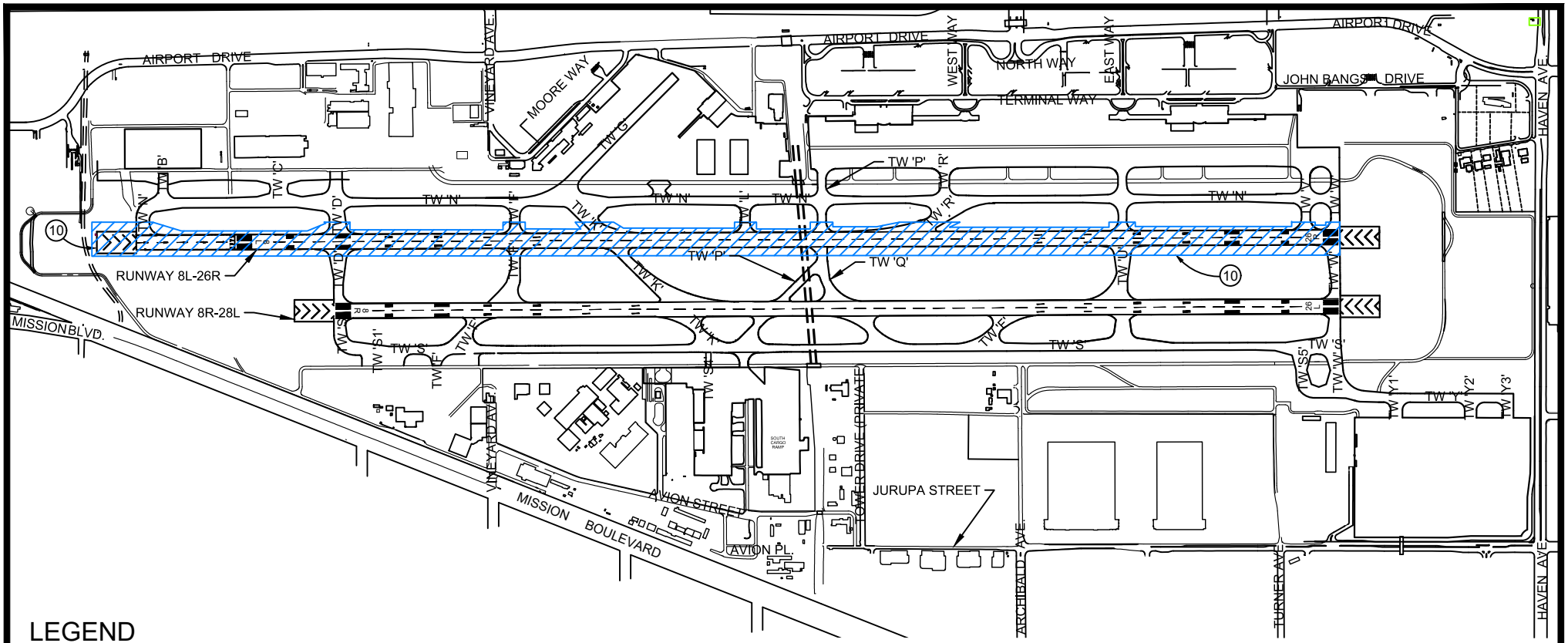
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley	(909) 544-5255
Signature — January 30, 2020 Date	Contact Phone (Print or Type)



LEGEND

(10) 2024-REHABILITATE RUNWAY 8L-26R LIGHTING AND TAXIWAY LIGHTING: PHASE 1

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2024 ACIP

REHABILITATE RUNWAY 8L-26R
LIGHTING AND TAXIWAY
LIGHTING: PH 1

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	10 OF 13
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01
X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2025		11
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting: Phase 2			
		Design / Coordination / Administration (10%)	$655,926	$157,979	$813,905
		Construction	$6,559,261	$1,579,790	$8,139,050
		Construction Management / Inspection / Monitoring (12.5%)	$819,908	$197,474	$1,017,381
		TOTAL	$8,035,094	$1,935,242	$9,970,337

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **RE/RW/LI** **NPR: 83**
Overall Development Objective: **Rehabilitate Runway 8L-26R Lighting and Taxiway Lighting**
Description:
Rehabilitate existing airfield lighting that is over 20 years old, including runway edge lights and signs. Phase 2 is anticipated to be Taxiways 'N', 'S' west of 'Q', and 'Y', as well as the minor connectors to these taxiways. These minor collectors include portions of 'D', 'F', 'K', 'L', 'R', 'S5', and 'W'. Associated work in the northern airfield electrical vault will be completed as well.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	December 30, 2023	Grant Execution	July 25, 2025
Bid Opening	May 1, 2024	Construction Commencement	September 4, 2025
Grant Offer	June 15, 2025	Construction Completion	December 30, 2025
		Grant Closeout	June 30, 2026

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

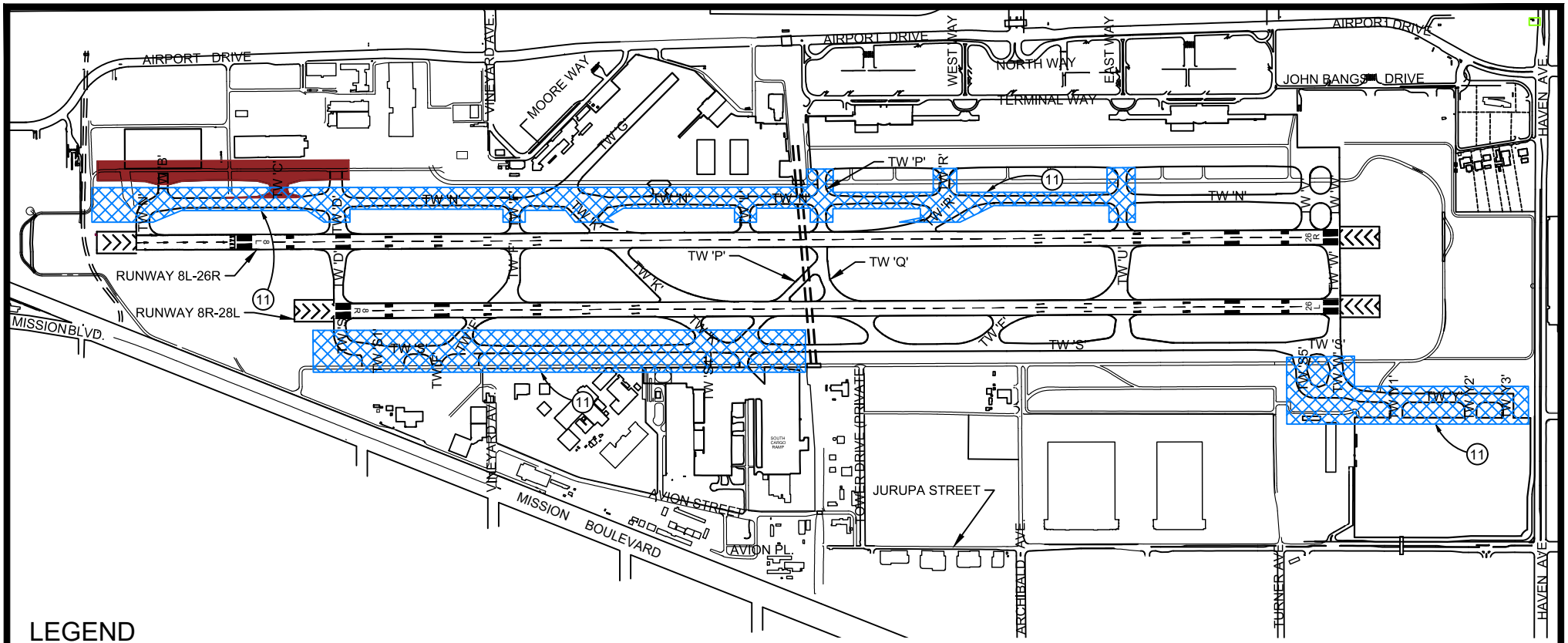
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning	Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)	Contact Name and Title (Print or Type)
Michelle R Brantley	(909) 544-5255
Signature — January 30, 2020 Date	Contact Phone (Print or Type)


AIRPORT DRIVE
VINEYARD AVE.
MOORE WAY
TW 'G'
AIRPORT DRIVE
WEST WAY
NORTH WAY
EAST WAY
TERMINAL WAY
AIRPORT DRIVE
JOHN BANGS DRIVE
HAVEN AVE.
TW 'P'
TW 'N'
TW 'N'
TW 'N'
TW 'N'
TW 'N'
TW 'P'
TW 'P'
TW 'Q'
TW 'U'
TW 'W'
TW 'W'
TW 'W'
26R
26L
RUNWAY 8L-26R
RUNWAY 8R-28L
11
TW 'D'
TW 'E'
TW 'K'
TW 'S'
TW 'S'
TW 'S

Airport Name		Ontario International Airport	Fiscal Year 2025		12
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	Construct Taxiway A: Phase 2 (Non-AIP)			
		Design / Coordination / Administration (10%)	$0	$8,391,621	$8,391,621
		Construction	$0	$83,916,213	$83,916,213
		Construction Management / Inspection / Monitoring (12.5%)	$0	$10,489,527	$10,489,527
		TOTAL	$0	$102,797,360	$102,797,360

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

NPS Purpose / Component / Type: **N/A** **NPR:** **N/A**
Overall Development Objective: **Construct Taxiway A**
Description:
The airport will construct the second phase of Taxiway 'A' , from 'Taxiway 'D' to 'F', using non-AIP funds. A future phase will include the extension to the Cucamonga channel.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	November 4, 2024
Grant Offer	N/A	Construction Completion	December 30, 2025
		Grant Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

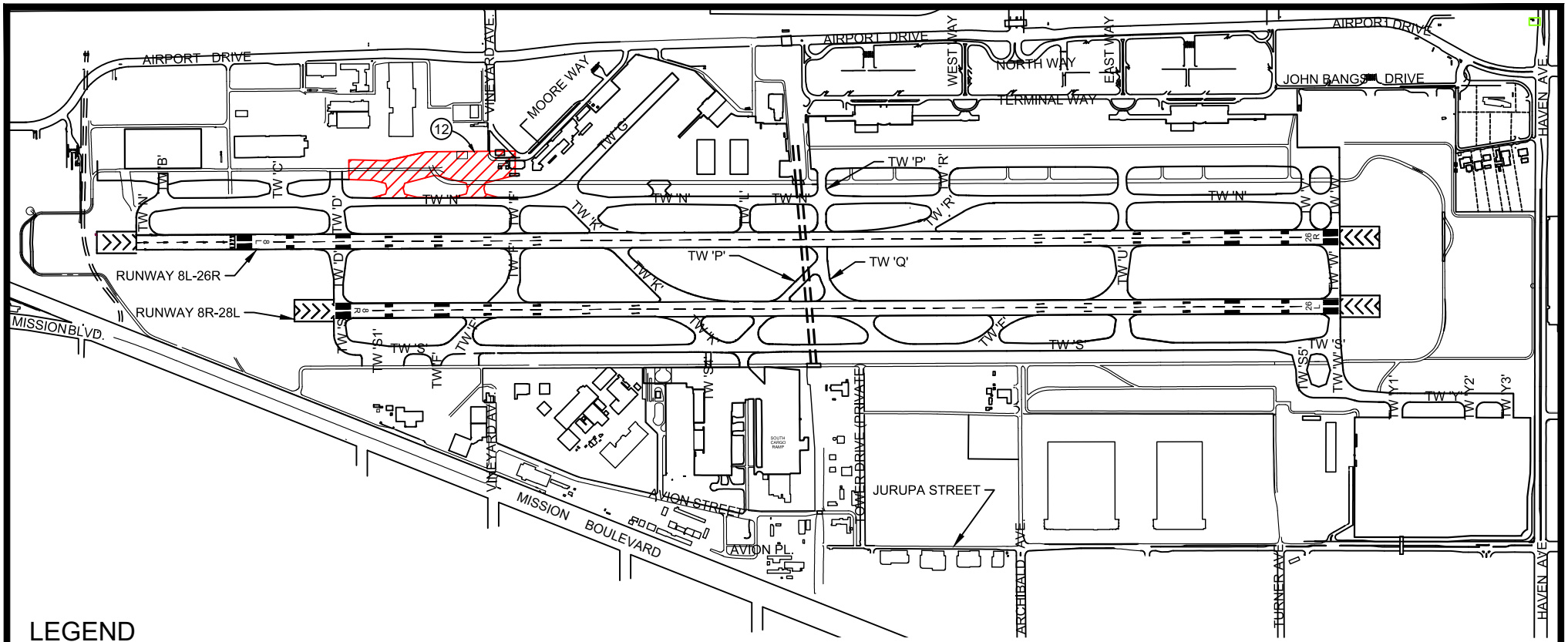
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q3 2021
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q3 2021
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q1 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q1 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2020
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

(12) 2025-CONSTRUCT TAXIWAY A: PHASE 2 (NON-AIP)

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2025 ACIP

CONSTRUCT TAXIWAY A: PHASE 2 (NON-AIP)

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	12 OF 13
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01

X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Airport Name		Ontario International Airport	Fiscal Year 2026-2030		13
Shown On ALP	**Project Type***	**Project Description**	**Federal Share**	**Local Share**	**Total**
Yes	D	2026 - Rehabilitate Taxiway S Phase 2: Channel to Taxiway W	$35,574,750	$8,568,134	$44,142,884
Pending	D	2027 - Reconstruct Taxiway N East of U and Construct Taxiway V Extension to S5	$10,851,040	$2,613,459	$13,464,499
Pending	D	2028 - Construct Taxiway E	$15,772,751	$3,798,847	$19,571,598
Yes	D	2029 - Relocate Taxiway N1 and Rehabilitate Terminals 2, 3 and 4 Aprons Phase 1: Paving and Electrical Improvements	$5,232,274	$1,260,186	$6,492,460
Yes	D	2030 - Rehabilitate Taxiway S1 and F South of Taxiway S Within Movement Area	$2,628,245	$633,010	$3,261,255
		TOTAL	**$70,059,059**	**$16,873,636**	**$86,932,696**

* D - Development; P - Planning; E - Environmental

PROVIDE THE FOLLOWING DETAILED INFORMATION FOR PROJECTS ANTICIPATED WITHIN 1-2 YEARS

Detail Project Description (Square/Lineal Footage or Length/Width)

Overall Development Objective: **Future Projects, 2026-2030**

Description:

This sheet lists projects planned for 2026-2030 and their projected costs.

Project Schedule (Anticipated date for bids or negotiated prices, consultant selection for planning or environmental projects, length of construction or design, planning or environmental process)

Grant Application	N/A	Grant Execution	N/A
Bid Opening	N/A	Construction Commencement	N/A
Grant Offer	N/A	Construction Completion	N/A
		Grant Closeout	N/A

NEPA Environmental Status (With grant application include copy of ROD, FONSI or CATEX letter of approval)

Pending application.

Date of Last ALP Approval Depicting Proposed Projects

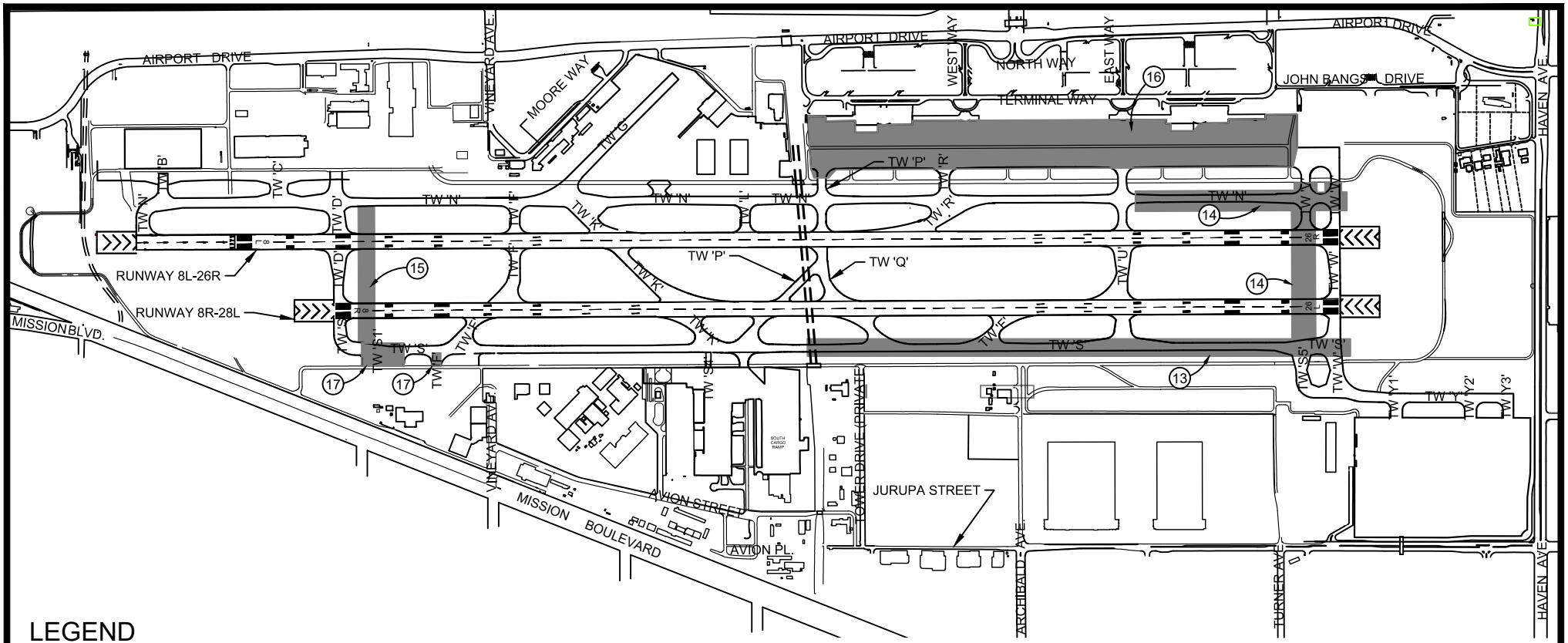
March 7, 2018

Land Title Status & Date of Exhibit "A" Status	Date
Airport owned.	August 24, 2016

Open AIP Funded Projects (include grant number and grant description)		Expected Close-out Date
3-06-0175-041-2018	1) Install RW 26R Lighting (Touchdown Zone) - Phase 1 (Design)	Q1 2020
3-06-0175-041-2018	2) Rehabilitate Taxiway S Phase 1: TW F to Channel (Design)	Q1 2020
3-06-0175-042-2018	1) Terminal 1 Gates 1-3 Apron and Taxilane 'G' Rehabilitation (Construction)	Q2 2020
3-06-0175-042-2018	2) South Cargo Ramp Rehabilitation (Construction)	Q2 2020
3-06-0175-044-2018	1) Development of Airport Pavement Management System	Q4 2021
3-06-0175-045-2019	1) Rehabilitate Taxiway S	Q3 2021
3-06-0175-045-2019	2) Runway 26R Lighting Installation	Q3 2021
3-06-0175-046-2019	1) Exhibit A Property Map, GIS Data Collection, Triggering Event Narrative Report and ALP	Q3 2021

Certification: To the best of my knowledge and belief, all information shown in the ACIP Data Sheet is true and correct and had been duly authorized by the Sponsor.

Michelle R. Brantley, Director of Planning		Michelle R. Brantley, Director of Planning
Name / Title of Authorized Representative (Print or Type)		Contact Name and Title (Print or Type)
Michelle R Brantley	January 30, 2020	(909) 544-5255
Signature	Date	Contact Phone (Print or Type)



LEGEND

- (13) 2026-REHABILITATE TAXIWAY S PHASE 2: CHANNEL TO TAXIWAY W
- (14) 2027-RECONSTRUCT TAXIWAY N EAST OF TAXIWAY U AND CONSTRUCT TAXIWAY V EXTENSION TO S5
- (15) 2028-CONSTRUCT TAXIWAY E
- (16) 2029-RELOCATE TAXIWAY N1 AND REHABILITATE TERMINALS 2, 3, AND 4 APRONS PHASE 1: PAVING AND ELECTRICAL IMPROVEMENTS
- (17) 2030-REHABILITATE TAXIWAY S1 AND F SOUTH OF TAXIWAY S WITHIN MOVEMENT AREA

N

0 1500 3000

Mead & Hunt

ONT ONTARIO INTERNATIONAL AIRPORT

2026-2030 ACIP
PROJECTS IN OUTLYING YEARS

CHECKED:	CM	DATE	DRAWING NO.
DESIGNED:	SAS	JAN. 2020	13 OF 13
DRAWN:	ELH		

MH PROJECT NO.: 1512800-180958.01
X:\1512800\180958.01\TECH\ACIP\2020-2024\CAD\AIRPORT MAP ACIP_120619.DWG

Appendix K-3

FAA, "Overview: What is AIP? – Airports"

An official website of the United States government Here's how you know

The latest general information on the Coronavirus (COVID-19) is available on . For FAA-specific COVID-19 resources, please visit .

United States Department of Transportation

Federal Aviation Administration

Overview: What is AIP? – Airports

On this Page …

- What Is the Airport Improvement Program?
- How Much of the Project Cost Does the Grant Cover?
- What Airports are Eligible?
- What Types of Projects Are Eligible?
- What Are the Obligations for Accepting AIP Funds?
- How Does FAA Determine Which Projects Will Receive AIP Funds?
- What is the History of the AIP?

What Is the Airport Improvement Program?

The Airport Improvement Program (AIP (Airport Improvement Program)) provides grants to public agencies — and, in some cases, to private owners and entities — for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems (NPIAS (National Plan of Integrated Airport Systems)). See the AIP Glossary for a description of AIP-related terms.

How Much of the Project Cost Does the Grant Cover?

For large and medium primary hub airports, the grant covers 75 percent of eligible costs (or 80 percent for noise program implementation). For small primary, reliever, and general aviation airports, the grant covers a range of 90-95 percent of eligible costs, based on statutory requirements. Please contact your local Airports Office for more details.

What Airports are Eligible?

AIP grants for planning, development, or noise compatibility projects are at or associated with individual public-use airports (including heliports and seaplane bases). A public-use airport is an airport open to the public that also meets the following criteria:

- Publicly owned, or
- Privately owned but designated by FAA as a reliever, or
- Privately owned but having scheduled service and at least 2,500 annual enplanements.

Further, to be eligible for a grant, an airport must be included in the NPIAS. The NPIAS, which is prepared and published every 2 years, identifies public-use airports that are important to public transportation and contribute to the needs of civil aviation, national defense, and the Postal service.

Recipients of grants are referred to as "sponsors." The description of eligible grant activities is described in the authorizing legislation and relates to capital items serving to develop and improve the airport in areas of safety, capacity, and noise compatibility. In addition to these basic principles, a sponsor must be legally, financially, and otherwise able to carry out the assurances and obligations contained in the project application and grant agreement.

Finally, sponsors planning to acquire AIP-funded NavAids and/or AWOS must coordinate closely with the FAA Non-Federal Program, from the beginning of the planning process.

What Types of Projects Are Eligible?

Eligible projects include those improvements related to enhancing airport safety, capacity, security, and environmental concerns. In general, sponsors can get AIP funds for most airfield capital improvements or rehabilitation projects and in some specific situations, for terminals, hangars, and nonaviation development. Certain professional services that are necessary for eligible projects (such as planning, surveying, and design) can also be eligible. The FAA must be able to determine that the projects are justified based on civil aeronautical demand. The projects must also meet Federal environmental and procurement requirements.

Projects related to revenue producing facilities may be eligible at non-primary airports if the airport has already satisfactorily addressed all airside needs and the improvement will increase revenue for the airport.

Projects related to airport operations are not eligible for funding. Operational costs - such as salaries, equipment, and supplies - are also not eligible for AIP grants.

The table below lists typical examples of eligible and ineligible projects; the list is not exhaustive. Questions about AIP eligibility should be directed to the appropriate Regional Airports Office.

Examples of Eligible Versus Ineligible AIP Projects	
Eligible Projects	**Ineligible Projects**
Runway construction/rehabilitation	Maintenance equipment and vehicles
Taxiway construction/rehabilitation	Office and office equipment
Apron construction/rehabilitation	Fuel farms*
Airfield lighting	Landscaping
Airfield signage	Artworks
Airfield drainage	Aircraft hangars*
Land acquisition	Industrial park development
Weather observation stations (AWOS)	Marketing plans
NAVAIDs such as REILs and PAPIs	Training
Planning studies	Improvements for commercial enterprises
Environmental studies	Maintenance or repairs of buildings
Safety area improvements	
Airport layout plans (ALPs)	
Access roads only located on airport property	

Eligible Projects	Ineligible Projects
Removing, lowering, moving, marking, and lighting hazards	
Glycol Recovery Trucks/Glycol Vacuum Trucks** **(11/29/2007)**	

---

*May be conditionally eligible at non-primary airports. Contact your local Airport District or Regional Office for more information.

**To be eligible, the vehicles must be owned and operated by the Airport and meet the Buy American Preference specified in the AIP grant. Contact your local Airport District or Regional Office for more information.

In addition, the following must also apply for FAA to consider a project for AIP funding:

- The project sponsorship requirements have been met.
- The project is reasonably consistent with the plans of planning agencies for the development of the area in which the airport is located.
- Sufficient funds are available for the portion of the project not paid for by the Federal Government.
- The project will be completed without undue delay.
- The airport location is included in the current version of the NPIAS.
- The project involves more than $25,000 in AIP funds.
- The project is depicted on a current airport layout plan approved by FAA.

What Are the Obligations for Accepting AIP Funds?

Airports sponsors who accept a grant offer are also accepting conditions and obligations associated with the grant assurances. These include obligations to operate and maintain the airport in a safe and serviceable condition, not grant exclusive rights, mitigate hazards to airspace, and use airport revenue properly.

How Does FAA Determine Which Projects Will Receive AIP Funds?

Because the demand for AIP funds exceeds the availability, FAA bases distribution of these funds on present national priorities and objectives. AIP funds are typically first apportioned into major entitlement categories such as primary, cargo, and general aviation. Remaining funds are distributed to a discretionary fund. Set-aside projects (airport noise and the Military Airport Program) receive first attention from this discretionary distribution. The remaining funds are true discretionary funds that are distributed according to a national prioritization formula.

What is the History of the AIP?

To promote the development of a system of airports to meet the Nation's needs, the Federal Government embarked on a grants-in-aid program to units of state and local governments shortly after the end of World War II. The early program, the Federal-Aid Airport Program (FAAP) was authorized by the Federal Airport Act of 1946 and drew its funding from the general fund of the U.S. Treasury.

In 1970, a more comprehensive program was established with the passage of the Airport and Airway Development Act of 1970. This Act provided grants for airport planning under the Planning Grant Program (PGP) and for airport development under the Airport Development Aid Program (ADAP). These programs were funded from a newly established Airport and Airway Trust Fund, into which were deposited revenues from several aviation-user taxes on such items as airline fares, air freight, and aviation fuel. The authority to issue grants under these two programs expired on September 30, 1981. During this 11-year period, 8,809 grants totaling $4.5 billion were approved.

The current program, known as the Airport Improvement Program (AIP), was established by the Airport and Airway Improvement Act of 1982 (Public Law 97-248). Since then, the AIP has been amended several times, most recently with the passage of the FAA Modernization and Reform Act of 2012. Funds obligated for the AIP are drawn from the Airport and Airway Trust fund, which is supported by user fees, fuel taxes, and other similar revenue sources.

Read a more complete AIP History (PDF).

Page last modified: November 02, 2021 5:47:19 PM EDT

Appendix K-4

Email from FAA to OIAA, "Ontario Int' Airport (ONT) – ACIP (Additional Info Request), March 19, 2020

Smith, Jeffrey

From: Brantley, Michelle
Sent: Thursday, March 19, 2020 2:03 PM
To: Williams, Darlene (FAA); Owens, Keith; Smith, Jeffrey; Chuck McCormick
Cc: Richardson, Al (FAA); Samad, Sam (FAA)
Subject: RE: Ontario Int'l Airport (ONT) - ACIP (Additional Info Request)

Thanks Darlene! We'll work on this and get back to you. Thanks again!

Michelle Brantley
Director of Planning
M: 909.227.3055 | **O:** 909.544.5255
mbrantley@flyontario.com | @flyONT

From: Williams, Darlene (FAA) <Darlene.Williams@faa.gov>
Sent: Thursday, March 19, 2020 1:51 PM
To: Brantley, Michelle <MBrantley@flyontario.com>
Cc: Richardson, Al (FAA) <Al.Richardson@faa.gov>; Samad, Sam (FAA) <Sam.Samad@faa.gov>
Subject: Ontario Int'l Airport (ONT) - ACIP (Additional Info Request)

Michele,

You probably have this information available. On a separate sheet could you provide us (FAA) with the following information starting with ACIP year 2021. We would like to rehabilitate the entire runway at one time and the same for the connector taxiways, but there may not be enough funds to do both in one grant year so we may need to break up the elements. Give us the dimensions and pavement condition index (PCI) in 2021 only. If you have any questions, give me a call or send me an email.

2021 Phase 1, Design

Project	Dimensions	PCI	Federal Share
Rehabilitation of Runway 8R-26L			$
Connector Taxiway D			
Connector Taxiway F			
Connector Taxiway K			
Connector Taxiway P			
Connector Taxiway Q			
Connector Taxiway U			
Connector Taxiway W			$
		Total	**$8,059,000**

2022 Phase 2, Construction

Project	Federal Share
Rehabilitation of Runway 8R-26L	$

2023 Phase 3, Construction

Project	**Federal Share**
Rehabilitate Taxiway (Connectors) D, F, K, P, Q, U, W	$

Darlene Williams
Airport Planner/PFC Specialist
Federal Aviation Administration
Los Angeles Airports District Office
777 S. Aviation Boulevard, Suite 150
El Segundo, CA 90245
(424) 405-7279
darlene.williams@faa.gov

Appendix K-5

Construction Workforce Labor Shortages References

CONSTRUCTION LABOR SHORTAGE WEBSITE/DOCUMENT REFERENCES

KTVU FOX 2 News, "California Construction Workers in Short Supply," 6/9/2021, https://www.ktvu.com/news/california-construction-workers-in-short-supply

The Construction Association, "Skilled Labor Shortage is Contributing to Construction Services Costs," 3/8/22. Skilled Labor Shortage is Contributing to Construction Services Costs, Marcum LLP Says | Rental Equipment Register (rermag.com)

The Registry Southern California Real Estate, "Report: Material, Labor Shortages Continue to Affect Construction Industry," 10/7/21, Report: Material, Labor Shortages Continue to Affect Construction Industry - The Registry SoCal Real Estate News

Cumming Management Group, "U.S. Construction Market, Los Angeles, Orange County, CA, Market Snapshot Q1 – 2022," https://ccorpinsights.com/wp-content/uploads/2022/03/CCORP22Q1_MarketOverview-LA.pdf

Competitive Edge Insurance, WHAT TO EXPECT FROM CHANGING CONTRACTOR COSTS, 11/8/2021, What to Expect from Changing Contractor Costs - Competitive Edge Insurance (compedgeins.com)

California State University San Bernardino, "2022 Mobility Dialog Series," website, February 2022, https://www.csusb.edu/leonard-transportation-center/conversations

Competitive Edge Insurance, "How the California Labor Shortage is Affecting the Construction Industry," 12/12/21, How the California Labor Shortage Is Affecting the Construction Industry - Competitive Edge Insurance (compedgeins.com)

Inland Empire Regional Planning Unit, "Inland Empire 2021 2024 Regional Workforce Development Plan," April 2021. https://wp.sbcounty.gov/workforce/wp-content/uploads/sites/5/2021/08/IE-Regional-Plan-FINAL.pdf

Galf and Berger LLP"How Serious is the Shortage in the Construction Industry?" August 2, 2021 https://www.galfandberger.com/2021/08/03/labor-shortage-construction-industry/.

Watch Live

California construction workers in short supply

By Tom Vacar | Published June 9, 2021 | Coronavirus in the Bay Area | KTVU FOX 2

California construction workers in short supply

California's construction industry is feeling a labor shortage that could slow down the state's economic recovery.

MARIN COUNTY, Calif. - California's economy is poised for a post-COVID comeback even faster than the rest of the nation. But one obstacle could be standing in the way: a lack of available workers. The construction industry, in particular, is feeling that shortfall.

In the North Bay alone 40,000 more homes are needed just to catch up and meet demand.

Sponsored Links

Unsold Alaska Cruise Cabins Are Almost Being Given Away: See Prices
Alaska Cruise Deals | sponsored searches

Scarborough: Immaculate Unsold Cars Now Almost Being Given Away: See Prices
SUV Deals | Search Ads

Ditch Cooking - America's Top Chefs Are Sending Meals to Your Door
foodie-bloggers.com/

Most Affordable Camper Vans
Camper Van Warehouse | Search Ads

Though the pandemic slightly slowed down construction work, worker shortages remain rampant.

"The situation is dire. There was a worker shortage before the pandemic and before our tragic fires from three years ago. It was bad then as a problem. Now, it's a full fledged crisis," said CEO Keith Woods/North Coast Builders Exchange.

As a result, housing growth will slow.

"There's very few weeks that go by that our organization doesn't hear from our thousand plus members about workers. ‘Do you have any workers? Entry level? Experienced?’ They are really in short supply," said Mr. Woods.

Many parents discourage their children to take up construction careers and there are far too few women. Though some contractors will hire to train, the Builder's Exchange has two programs to get people shovel ready in an industry where the pay starts higher and goes up quicker.

"For every five workers retiring, only one coming in," said Builders Exchange Workforce Development Director Robin Bartholow.

Ms. Bartholow heads up the North Bay Construction Corps, a program for high school seniors.

"Building skills that we know are really important to entry level employees and so we work with then over the four and a half to five moths to instill those basic skills like how to read a tape measure, basic construction math, how to use power tools," said Bartholow.

The Exchange also works closely with Santa Rosa Junior College to teach more sophisticated skills, techniques and technologies, to speed placement and career advancement.

But many workers are needed right this second.

"I would pay a ridiculous amount of money to get a qualified person in here. I would hire 15 people today," said contractor Michael Wolff who also says ads produced no results and many qualified workers prefer to stay at home on stimulus or double dip by working under the table.

"Unless you have a strong work ethic and a desire to get out there and do something, why would you?" said Mr. Wolff.

The shortage will last for quite some time, giving earlier seniority to those who enter now.

Ad Content by Taboola |

Doctor Tells: Do You Have Too Much Belly Fat? (Eat This Before Bed)

Sponsored | Gundry MD

These Cars Are So Loaded It's Hard to Believe They're So Cheap

Sponsored | Luxury SUVs | Search Ads

This material may not be published, broadcast, rewritten, or redistributed. ©2022 FOX Television Stations

LATEST FROM CONTRACTOR NEWS

AGC THE CONSTRUCTION ASSOCIATION

Ma
Co
an

Fel
20

Co
Ne



SP
CO
TH
67
SE

Lea

AGC THE CONSTRUCTION ASSOCIATION

Oc
En
La

No



NEWS & ANALYSIS > CONTRACTOR NEWS

Skilled Labor Shortage is Contributing to Construction Services Costs, Marcum LLP Says

March 8, 2022

The construction industry continues to face a skilled labor shortage, with worker scarcity exacerbated since the onset of the pandemic, said Marcum LLP's annual analysis of the Bureau of Labor Statistics' Job Openings and Labor Turnover Survey.

Posted Michael Roth

The construction

Co
Ne

industry



SP
CO
TH
67
SE
Le

continues to face a skilled labor shortage, with worker scarcity exacerbated since the onset of the pandemic, said Marcum LLP's annual analysis of the Bureau of Labor Statistics' Job Openings and Labor Turnover Survey (JOLTS). The resulting surge in construction wages, combined with climbing materials prices, has produced significant increases in the cost of delivering construction services.



No
Co
Sp
Oc
Co



Re
St
Co
Se
Co
Ne



No
Co
En
Jul
Co

The 2021 Marcum JOLTS Analysis was produced by Marcum's National Construction Services Group.



Co
Jol
La
Jur
Co
Ne

Under the banner *Construction Workers Are Scarce, Aging and Really Popular,* Marcum's chief construction economist, Dr. Anirban Basu, details hiring trends, quit rates, and the economic environment shaping the demand for labor in the residential and nonresidential construction sectors.



Yo
No
So
Jur
Co
Ne

"The pandemic resulted in a 14.5 percent decline in construction employment from February to April of 2020," said Basu. "Rather than helping the situation, that further exacerbated industry challenges by persuading some workers to enter retirement earlier than anticipated

and inducing others to seek employment in other industries, including those that offer the ability to work remotely and/or on flexible schedules."

The construction industry currently faces a historical level of unfilled jobs. On average in 2021, 4.4 percent of construction jobs were unfilled. "That was easily the highest proportion over the course of the two decades that the Bureau of Labor Statistics has monitored such things," Basu noted. "The share of unfilled jobs expanded over the course of last year, rising from 3.9 percent in January to 5.7 percent by October."

Labor Shortages and Demographics Jeopardize Industry Recovery

These labor shortages have resulted in rising wages as contractors compete for workers. Over the past 12 months, construction wages climbed 5.1 percent, increasing $0.19 in January 2022 alone. "Construction input prices have also raced higher. Not only does that squeeze industry margins, it jeopardizes industry recovery altogether by causing certain project owners to delay or cancel projects because of elevated bids," Basu said.

The median age of construction workers has risen in recent years, and more construction workers than ever consider themselves general construction laborers. "This suggests that the industry doesn't simply face a worker shortage, it faces a skills shortage," added Basu. "While

these dynamics predated the pandemic, they have become especially apparent over the past two years. Above all, this threatens industry profitability as well as creating circumstances that could result in widespread firm failure."

There is some good news, however. "With inflationary prices rising and stimulus payments increasingly in the rearview mirror, more people are reentering the workforce," said Basu. "Construction is no exception. By December 2021, the proportion of positions that remained unfilled had declined to 4.3 percent, though that remains well above the 2.5 percent average that prevailed during the decade preceding the pandemic."

To download the full report and for more information, visit www.marcumllp.com.



SPONSORED CONTENT

THE NEW 670SJ SELF-LEVELING BOOM CUTS THE PREP WORK

The new 670SJ automatically self-levels on slopes up to 10 Degrees in any direction, even at its full 67-ft platform height. Cribbing? Grading? Cut the costly prep work. Just get to work. Visit SelfLevelingBoom.com to see all the features in action.

Learn More

VOICE YOUR OPINION!

This site requires you to register or login to post a comment.

Email Address*

By submitting this form and personal information, you understand and agree that the information provided here will be processed, stored and used to provide you with the requested services in accordance with Endeavor Business Media's Terms of Service and Privacy Policy.

As part of our services, you agree to receive magazines, e-newsletters and other communication about related offerings from Endeavor Business Media, its brands, affiliates and/or third-party partners consistent with Endeavor's Privacy Policy. Contact us at emailsolutions@endeavorb2b.com or by mail to Endeavor Business Media, LLC, 331 54th Avenue N., Nashville, TN 37209.

You can unsubscribe from our communications at any time by emailing emailsolutions@endeavorb2b.com.

Continue

No comments have been added yet. Want to start the conversation?

Sign up for Rental Equipment Register eNewsletters

Email Address

SIGN UP

Load More Content

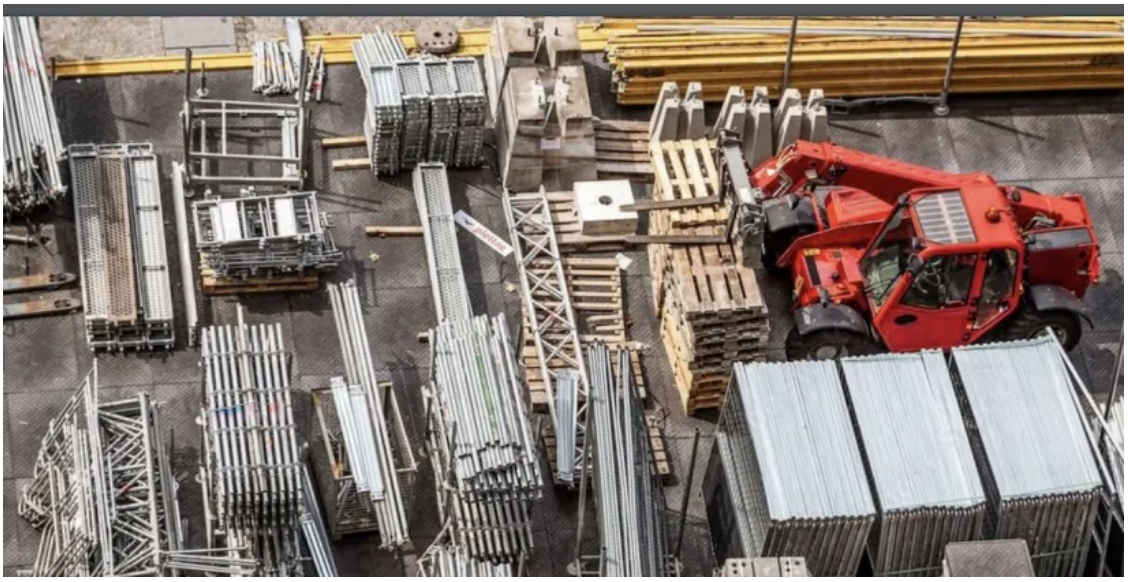
RER. Rental Equipment Register

About Us
Contact Us
Advertise
California Do Not Sell
Privacy & Cookie Policy
Terms of Service

© 2022 Endeavor Business Media, LLC. All rights reserved.

Report: Material, Labor Shortages Continue to Affect Construction Industry

October 7, 2021



By Catherine Sweeney

Despite nearly two years of difficulty caused by the COVID-19 pandemic, the construction industry is making a steady comeback. According to a recent construction outlook report from JLL, the construction industry continues to see heightened demand, though the industry's labor shortage and materials shortage continue to drive up prices and cause major challenges.

"Earlier in 2020, there was a lot of fear and concern about how long it would take for the economy to recover, what that would look like and what that would mean for the construction industry long term. We've avoided by far the worst case scenarios, which is excellent," Henry D'Esposito, who heads research for JLL, said.

According to the report, there continues to be a need for construction. Residential projects have seen the most demand, with a 7.6 percent increase from July 2020 to 2021. Nonresidential demand, however, has declined 9.5 percent in the past year, but still continues to see interest as the economy recovers.

Heightened demand has led to an increase in construction costs. According to JLL, final construction costs for a commercial project have increased 4.5 percent through August, with total cost growth expected to exceed 6 percent over the next year.

e increased costs are largely due to issues in finding labor as well as supply chain

slightly, with the unemployment rate at 4.6 percent. In 2020, the industry's unemployment rate was at 7.6 percent. From August 2020 to August 2021, total employment in the construction industry has gone from 7.2 million to 7.4 million across the U.S.

"The challenge has been on the actual supply factor, getting both material and labor that you need for a reasonable price on the job site has made it very hard for owners and contractors to actually operate in this environment despite the fact that there is demand," D'Esposito said.

However, labor shortages in construction are not new and have been growing since the Great Recession. From 2015 to 2019, the number of open and unfilled jobs in construction across the U.S. increased from 150,000 to 300,000 openings, and by 2019, more than 80 percent of construction firms ranked the cost and lack of labor as a top concern, the report showed.

"The labor shortage unfortunately isn't a pandemic issue, it is much more of a structural issue, and it's not one that's going away anytime soon so that's something that will continue to play out. It may even worsen over the next three to five years, D'Esposito said.

However, the rise in construction material prices is new. According to the report, lumber ans steel prices are the highest they have been since the earliest available data in 1949. Other materials, such as aluminum, have not seen as much of a price increase since 1995 and plastic prices have not increased as fast as they have since 1976. Overall, average material prices for a commercial project have increased 23.1 percent year-over-year.

"The place where it is now is easily a step above anything we've seen in any past recovery cycle," D'Esposito said.

While there is much uncertainty caused by the Delta variant, JLL predicts that supply chain issues are likely to continue into the next year, with total construction cost growth expected to increase 4 to 7 percent over the next 12 months. Individual construction materials are still expected to see a wide variety of price changes as supply chain issues are sorted out. Currently, JLL predicts an average 5 to 11 percent increase across all material costs.

"I would say the cost of materials, assuming things head back to normal over the next several years, that's a situation that will mostly resolve itself. We'll still end up with higher prices than normal, but a lot of issues have been caused by the pandemic. Whether that's construction at the production level, either in the U.S. or internationally, where countries or states are closing factories or closing borders or that sort of thing," D'Esposito said.

"It's really a compound issue and then global shipping and logistics have been really backed up. So, as those supply chains stabilize I would expect that by 2022 that would become



Los Angeles, Orange County, CA

U.S. Construction Market | Market Snapshot Q1 - 2022

CUMMING
Building Value Through Expertise

Many of the issues that have been facing the Los Angeles (LA) market represent new opportunities for the construction industry. Earthquakes and wildfires pose unique threats to the city, but the ways that officials have chosen to combat them can potentially add billions of dollars to an already very active market. Buildings will need to be renovated to comply with the city's seismic ordinances, while changes to the city's zoning laws will open up new parts of LA to high-density developments. The last few years have been a challenge, but there are still plenty of reasons to be optimistic.

The next few years should be relatively tepid for the LA market. America's second-largest city has only grown by about 5% over the last 20 years, and it is likely slowing down as a higher-than-average cost of living deters prospective residents. Construction employment only made modest gains in 2021 and unemployment is still very high. These will hinder the city's recovery for some time. LA is also expected to invest heavily in transit in the coming years, as single-use zoning has led almost all available land to be built on. The city is betting that walkable, interconnected neighborhoods will bring people back to the city center and in the process alleviate some of its environmental woes.

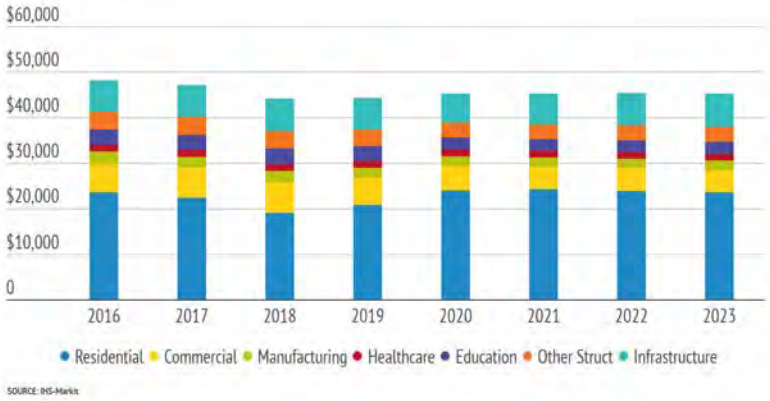
Total Construction Market Volume by Sector (x $1m, Nominalized 2012$)

HISTORIC ⟲ ⟳ FORECAST

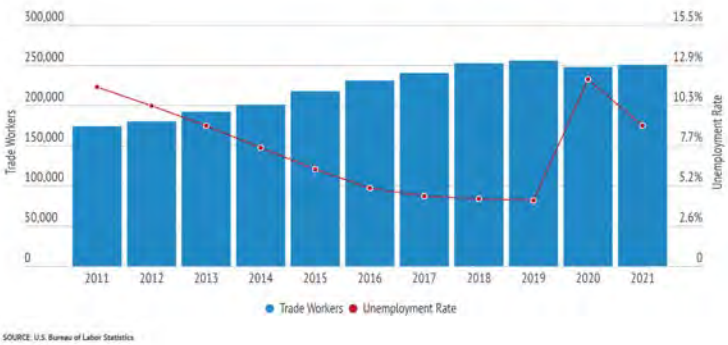
Sector		2016	2017	2018	2019	2020	2021	2022	2023
Total Increase		**Y-O-Y %**	**-2.1%**	**-6.4%**	**0.3%**	**2.2%**	**-0.2%**	**0.4%**	**-0.4%**
Residential		Y-O-Y %	-5.1%	-14.5%	8.5%	15.9%	0.8%	-1.4%	-1.4%
Commercial		Y-O-Y %	2.8%	0.4%	-7.6%	-11.2%	-6.5%	-0.5%	-2.0%
Manufacturing		Y-O-Y %	-5.4%	4.1%	-15.2%	-5.5%	-2.6%	2.4%	0.8%
Healthcare		Y-O-Y %	-2.9%	-1.1%	1.3%	-2.1%	-2.3%	1.9%	1.4%
Education		Y-O-Y %	1.5%	3.5%	-5.2%	-16.5%	-3.8%	0.2%	1.1%
Other Struct*		Y-O-Y %	1.2%	-3.6%	-4.4%	-14.3%	-0.7%	5.5%	4.4%
Infrastructure		Y-O-Y %	1.4%	1.9%	-3.5%	-6.0%	4.2%	4.3%	0.7%

* This includes religious buildings, amusement, government communications, and public recreation projects.

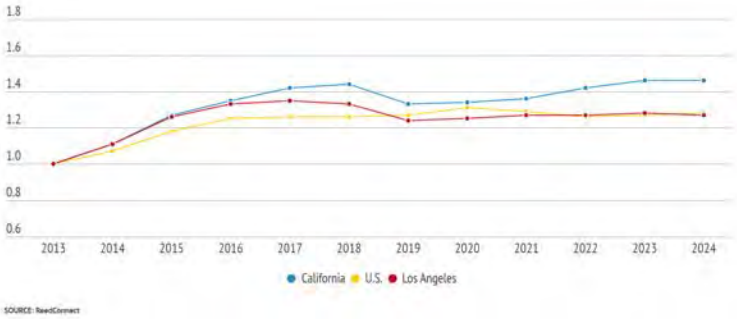
Annual Volume (x$1M, 2012$)



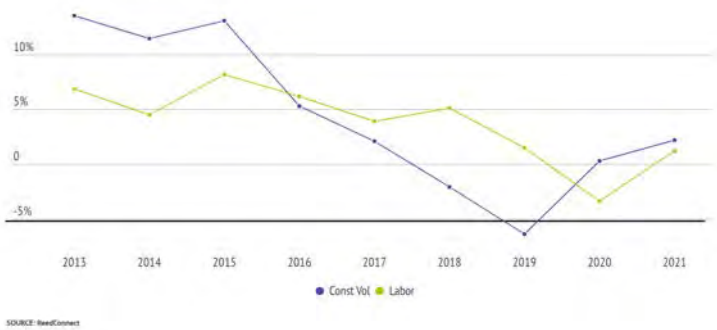
Regional Construction Employment



Construction Spending Index 2010-2021 (2010=1.0)



Construction Volume vs Labor - Annual Increase/Decrease



Top Regional Projects Sorted by Construction Value

Project	Location	Value
Purple Line Extension Section 2 Stations Project	Los Angeles	31.0B
I-605 Hot Spots Projects / Valley/ Beverly / South and SR 60/7th - (LA Metro)	Norwalk	10.0B
The Centennial Specific Plan Project	Santa Clarita	10.0B
Sepulveda Transit Corridor Project	Los Angeles	9.5B
West Santa Ana Branch Light Rail Line - West Santa Ana Branch Transit Corridor	Los Angeles	8.5B
I-710 LA River Bike Path - Maywood to Long Beach - (LA Metro)	East Los Angeles	4.0B
Crenshaw Line Extension - City of West Hollywood	West Hollywood	2.2B
Fourth & Central Mixed-Use Redevelopment	Los Angeles	2.0B
6AM Development	Los Angeles	2.0B
One Beverly Hills - Century City	Beverly Hills	2.0B

SOURCE: ReedConnect

Copyright © 2022 Cumming Management Group, Inc.

CONTACT: Trevor Shulters, Managing Director: tshulters@cumming-group.com

Tel: 619-259-5459

EDGE

Early this year, we put together a 2021 outlook for v builders' risk and construction.

The pandemic sent the world of construction array. The cost of materials skyrocketed while contractors and those in the construction and v building industries faced increased costs. v

The demand for builders was high due to the pandemic's stay-at-home order and the essential v status most builders received during the lockdown. Almost every business insurance renewal saw increases in insurance costs as well.

Needless to say, it was a busy year. But now, as 2021 comes to a close, it's important to similarly analyze the upcoming year: 2022. So, here's what v to expect from changing contractor costs v according to Brenda Jo Robyn, founder of v Competitive Edge Insurance. v



WHAT IS HAPPENING WITH CHANGING CONTRACTOR COSTS?

CATEGORIES

Se ect Category

RECENT POSTS



OSHA's Consultatio n Services: What You Need to Know
March 20, 2022 - 7:00 am



Seven Steps to Avoid Cyber Security Threats
March 13, 2022 - 7:00 v am



Will Homeowner s Insurance Cover a Constructio n Project?
March 6, 2022 v - 7:00 am

Tel: 619-259-5459

Prices are going up everywhere, according to Bren a J r r t r , it' been the perfect r t at ly, [contractor] we abl to k p going fo wa d and making things mov ."

As a result of the COVID-19 pandemic, a high v volume of money was made available to contractors from the government so that these construction projects did not halt to a standstill. At the same time, interest rates plummeted. v

This, in turn, increased homeowners' desire to renovate their properties. And lastly, as Brenda Jo mentions, we had a massive sell off of homes during this last summer. Now is the time that v people want to update.

POTENTIAL CONTRACTING ISSUES

Although the cost of materials is starting to level off quite a bit—down 20 to 25%, according to v Brenda Jo—the delays are not lifting. Brenda Jo v works with a high number of contractors, and word has it they're being forced to purchase materials up front to combat delays. The problem with this, however, is that some contractors aren't getting paid back from developers or homeowners.

"Because stuff is so delayed, a lot of [vendors] are requiring payment upfront before they even v order it out," says Brenda Jo. Another thing that is starting to really impact costs is the shortage of employees.

The solution? "There has to be some strategic planning by a contractor in moving forward with v contracts," says Brenda Jo. v

CONNECT WITH US

VIDEO POSTS v


What Does Workers' Comp Look Like for Remote Employees?
January 23, 2022 - 7:00 am


Workers' Compensation Policy Renewals: What to Expect
January 9, 2022 v7:00 am


Certificates of Insurance (COIs): What You Need to Know
December 19, 2021 - 7:00 v am

Tel: 619-259-5459

HOW ARE WE SEEING CONTRACT S REACT?

“More str tegic contr ctors re putting these material increases into their contracts. There is an agreement between the owner, developer, and contractor that if there are increases... it’s signed off on before they go ahead and outlay.”

HOW CAN CONTRACTORS MITIGATE RISK?

Written contracts are especially golden right now.

Be sure to include caveats on:

- Shortages in materials
- Delay in materials
- Increased cost of materials
- Shortages in labor

These elements should all be addressed in your contract.

It’s equally important to document everything. As Brenda Jo likes to say, “Document, document document.” This doesn’t mean solely the written contract mentioned above, but documentation of:

- Progress payment requests
- Material purchase invoices coupled with the photos of how the project was when you started
- When you got to the next phase with the invoice that you’re sending... v

payment fr m y ur devel per r h me wner," rec mmends Brenda J .

Lastly, according to Brenda Jo, the most powerful tool to get payments is with the mechanic's lien. "Get a pre-lien, send out the notices, and if you're not paid, go ahead and enforce the mechanic's lien on the property."

WHAT DO HOMEOWNERS NEED TO KNOW?

If you delay, you may find that costs go down in the materials. You also, however, may find that you don't have any contractors left that are able to actually work for you.

Brenda Jo recommends you do your due diligence on the homeowner's side and work with your banks. She also doesn't feel that costs will decrease anytime soon. "You're [either] going to have a lengthier build or you're going to have more costs," says Brenda Jo. "And if you wait too long, you're going to have both."

LOOK TO THE EXPERTS

As you look at your coverage, think of the potential for shock losses, evaluate your tolerance for risk, review your industry's compliance guidelines, and take the time to look at your policies in detail. As experts, we at Competitive Edge can tell you where you are vulnerable and what the risk might cost you. From there, it is your decision to accept the risk or mitigate it v

f r tricky insuranc needs a d guidance.

outloo , read on below:

2021 BUILDERS' RISK AND CONSTRUCTION OUTLOOK

The cost of materials is skyrocketing while contractors and those in the construction and building industries face increased costs. Demand is high for builders thanks to the pandemic's stay-at-home order and the essential status most builders received during the lockdown. With a busy year ahead, it can be easy to take your eye off the potential for increased risk with heightened business and scope of work.

Insurance rates spiked during the pandemic. The elevation in loss claims from the many businesses that were negatively impacted by caused insurance rates that have been flat or close to flat for close to a decade to increase rapidly. Almost every business insurance renewal is seeing increases in insurance costs. v

Line of Coverage	Projected Rate Change
Commercial Property	+5-15%
Builders Risk-Frame	+10-20%
Builders Risk-Fire Resistive	Flat to +10%
General Liability	Flat to +10%
Owner Controlled Insurance Programs/Contractor Controlled Insurance Programs (OCIP's and CCIP's)	+25-50% or more
Contractors Professional and Pollution Liability (CPrL/CPL)	Flat to + 10%
Automobile	+15-20%
Umbrella/Excess	+10-50%
Workers Compensation	-5% to +5%
Directors & Officers Liability	+10-25%
Employment Practices Liability	+10-25%
Cyber Insurance	+5-20%
Based on average risk with a decent loss ratio	

This chart shows projections of increases by lines of coverage and is meant as a reference since each insured party will have its own risk and coverage limitations.

This chart from Construction Executive shows projections of increases by lines of coverage and

Tel: 619-259-5459

EDGE

SKILLED LABOR SHORTAGES

Shortages persist throughout the construction and building industries. When coupled with the increase in material costs and the need to pay more for labor in order to get any labor at all, contractors may feel some pressure. The balance sheets of contractors who received PPP funds have yet to find resolution on forgiveness of those debts can drive up their risk profiles causing carriers to increase rates or even deny v renewals.

SOME INSURANCE MARKETS REMAIN STEADY

Worker's Compensation is holding steady with estimates of -5% – +5%. The possible increase, however, will happen when employers see their rates go up to offset COVID-related layoffs and v furloughs as yet unaccounted for in the above numbers. California is especially affected in this regard and in terms of employment practices v liability coverage.

CYBER LIABILITY COVERAGE

No longer the purview of only tech companies, every business will need cyber liability coverage. Online billing, work orders, web-based CRMs, and other data collection methods are the way of the future (and the present). Construction companies that do not invest in cyber coverage v

estimated that _ yber rime is ommitted e ery 11 se onds.

For the first time in decades, the commercial insurance industry is in a hard market cycle. With increasing rates and more stringent criteria for everything from umbrella policies to surety bonds, the time to price-shop coverage is long since passed. v

---

LET'S TALK v

WANT TO KNOW HOW MUCH YOU COULD BE SAVING ON YOUR INSURANCE COSTS?

WANT TO KNOW HOW MUCH YOU COULD BE SAVING ON YOUR INSURANCE COSTS?

LET'S TALK v

CONNECT WITH US

COMPETITIVE EDGE INSURANCE

LIC #0H31982

P: 619-259-5459
F: 619-377-0144

830 Orange Ave Suite L Coronado, CA 92118

Privacy Policy

HOURS OF OPERATION

Monday – Friday 8:00AM – 5:00PM

Saturday Closed

Sunday Closed

© Copyright 2021- Competitive Edge v Insurance

site design by digitalstoryteller.io v

© Copyr ght 2021- Compe itive Edg Insurance v
site design by digitalstoryte ler.io

William and Barbara Leonard Transportation Center

Conversations

Return of the Pack Stay Informed →

Page Menu

2022 Mobility Dialogue Series

Mobility is key to the Inland Empire's future economic growth and quality of life. This dialogue series has been developed to address the numerous regional projects and initiatives designed to improve mobility. Advanced technology will be the dominant factor in our automobiles, rail transportation, the movement of freight, and the organization of our communities. Few will doubt the assertion the change we are about to face is at least as great in the 21st Century as was the transportation changes that occurred in the early 20th Century as we moved from horse and buggies to planes, trains, and automobiles.

As exciting as this impending future may be, it is very important to remind ourselves that we live in a democratic society in which an informed electorate is the best guarantee of a strong and stable society. However, given the rapid pace of events, most people today are not informed about the many issues related to the immanent changes in our transportation infrastructure, few are aware the many transportation-related projects and initiatives, and fewer still are involved in any meaningful way in the decisions that are being made. There are differing opinions regarding the magnitude of the problems and the relative merit of various potential solutions. Moreover, there is currently no authoritative place that people who are not directly involved in ongoing discussions can go to obtain a comprehensive overview of our mobility needs, the related social concerns, and the projects and initiatives now being discussed to address them. These past couple years the Leonard Transportation Center hosted a series of educational and interactive breakfast dialogues bringing together community leaders like you in a discussion of how to best address the region's mobility needs. The 2018 and 2019 series were successful in bringing together policymakers and thought leaders from both the public and private sectors as well as CSUSB faculty experts, students, and members of the public to address a number of transportation challenges, issues and solutions. After receiving positive feedback throughout our Dialogue Series, we will continue the series in the Inland Empire for 2022. Due to COVID-19, until further notice the remainder of the series will be held virtually online.

Take a Look at This Year's Topics:

2022 Inland Empire Dialogue Topics

Previous Dialogues



2021 Inland Empire Dialogue Series



2020 Inland Empire Dialogue Series



2019 Inland Empire Dialogue Series



2019 Coachella Dialogue Series





2018 Inland Empire Dialogue Series



Sponsorship Opportunities

CALIFORNIA STATE UNIVERSITY
SAN BERNARDINO
Jack H. Brown College
Business and Public Administration

Make a Gift to JHBC

JHBC Schedule Advising Appt

Contact Us

Leonard Transportation Center

ltc@csusb.edu
(909) 537-5094
CE-214

Office Hours

Monday - Friday:

8:00 am - 5:00 pm

Saturday - Sunday:
Closed

Social Media

CSUSB

California State University, San Bernardino
5500 University Parkway
San Bernardino, CA 92407
+1 (909) 537-5000

Follow Us

Login

myCoyote

Canvas

Blackboard

Employment

Job Listings

Faculty Jobs

Career Center

Student Email
Faculty & Staff Email
Drupal Login

Of Interest to...

Future Students
Current Students
Faculty & Staff
Full-Time Faculty
Part-Time Faculty
Community & Visitors
Alumni & Friends
University Partners
Military/Veterans

Campus Services

Academic Advising
Housing & Residential Life
Ombuds Services
Parking
Police
Psychological Counseling
Services to Students with Disabilities
Student Health Center
Transcripts

Human Resources
Student Employment

Resources

Contact
Clery Act
Annual Safety Reports
Title IX Notice
Disclosure of Consumer Information

Accessibility Privacy and Security Non-Discrimination Notice Website Copyright/DMCA Policy

William and Barbara Leonard Transportation Center

February Event Details

Return of the Pack Stay Informed →

Page Menu

The Issue

Across the country including the Inland Empire, we have recently experienced labor shortages and its negative effects in almost every sector – particularly so in the transportation sector. Labor is at the very core of these effects and therefore, it is vital to analyze data and its impact on demand and supply, and to create viable solutions to address the problems we face using that data. Several organizations in the region are working to address this labor shortage through programs focused on training and education at all levels.

In the first installment of the 2022 LTC Regional Dialogue, we will learn about the impacts from the workforce shortage in the transportation sector as well as practical workforce development solutions. Within this theme, we have put together a panel of experts who will share their ideas on what is currently happening and possibilities for the near future.

View the Program Agenda Here

Speakers

Dr. Beverly A. Scott's career in the public transportation industry spans more than three decades in the United States, including four appointments as CEO/General Manager – Boston (MBTA), Atlanta (MARTA), Sacramento (SRTD), and Rhode Island (RIPTA). In 2018, she founded Introducing Youth to American Infrastructure, Inc. ("Iyai+"), a non-profit dedicated to inspiring, educating, and engaging today's youth to be tomorrow's "community builders" -- American infrastructure leaders, skilled workforce, innovators, and entrepreneurs, – with special emphasis on improving the active participation of our most vulnerable youth and historically underutilized groups in infrastructure careers – people of color and women (www.iyai.org).

Throughout her career, she has received numerous national and local awards and recognitions. Nationally, the



Dr. Beverly A. Scott

American Public Transportation Authority's Hall of Fame in 2020; Hubert Humphrey Award for Distinguished Service, American Political Science Association (APSA), Sharon A. Banks, Humanitarian Service Award, Transportation Research Board, National Academies of Sciences; Woman of the Year, Women's Transportation Seminar International (WTS); Women Who Move the Nation, Conference of Minority Transportation Officials (COMTO); and recognized as a "Transportation Agent of Change" by President Barack Obama/USDOT in 2012.

Dr. Scott currently serves on the national Board of the American Public Transportation Association, APTA (www.apta.com); African Heritage Studies Association, AHSA (www.ahsa50.org), Equiticity Advisory Committee (www.equiticity.org); International Transportation Learning Center (labor-management workforce development consortium) Founding Board Member and current Senior Advisor (www.transportcenter.org); Research Associate, Mineta Transportation Institute, San Jose State University (www.minteta-institute@sjsu.edu); Jobs To Move America, JMA, Vice Chair (www.jobstomoveamerica.org); and was recently appointed to the Zero Emissions Transportation Association (ZETA), Education Fund Board (info@zeta2030.org).

In 2011, she was appointed by President Obama to the National Infrastructure Advisory Council (NIAC), a panel of experts including top business executives, leading academics and local government officials who report to the White House through the U.S. Department of Homeland Security with responsibility for making policy recommendations to protect and preserve the physical assets that are critical to the U.S. economy and national security. In 2012, she was appointed NIAC Vice-Chair and currently serves in that capacity (www.cisa.gov>niac-reports-and-recommendations).

She was recently appointed by the U.S. Global Change Research Program as an Author, Transportation Chapter, Fifth National Climate Assessment. In 2019, she was appointed by State Treasurer Fiona Ma to the California High Speed Rail Peer Review Group (www.cahsrprg.com). She also serves on the Pacific Gas &Electric Sustainability Advisory Council (www.pge.com).

Dr. Scott holds a doctorate in political science from Howard University; and a Bachelor of Arts in Political Science from Fisk University (magna cum laude and Phi Beta Kappa).

Lilly Acuña grew up in L.A. County and graduated from California Polytechnic State University, San Luis Obispo with a degree in Business Administration. Currently, she works in Los Angeles as an environmental planner and professional development manager for HNTB, a firm founded in 1914 that specializes in architecture, engineering, and planning. Besides working on environmental documents for transportation projects, Lilly leads the SPARK LA program, a STEM-focused after-school program introducing students to careers in design, construction and engineering of roads, trains, bridges, tunnels and airports. Lilly has a passion for helping others, and has served as a United States Peace Corps Volunteer in Paraguay and Guatemala. She loves traveling, being outdoors as much as possible, and eating her way through all the whole-food plant-based recipes she can get her hands on!



Lilly Acuña



Michael Goss

Michael Goss is the Director of the Inland Empire/Desert COE and has over ten years of labor market experience. His work focuses on delivering the latest research that leads to in-demand and high-wage jobs for career education students. In addition to his work with the community colleges, he serves on the U.S. Bureau of Labor Statistics Data User Advisory Committee and the Southern California Association of Governments, Global Land Use & Economic Council.

CALIFORNIA STATE UNIVERSITY
SAN BERNARDINO
Jack H. Brown College
Business and Public Administration

JHBC Schedule Advising Appt

Contact Us

Leonard Transportation Center

ltc@csusb.edu
(909) 537-5094
LCE-214

Office Hours

Monday - Friday:

8:00 am - 5:00 pm

Saturday - Sunday:
Closed

Social Media

California State University, San Bernardino
5500 University Parkway
San Bernardino, CA 92407
+1 (909) 537-5000

Follow Us

Login

myCoyote
Canvas
Blackboard

Employment

Job Listings
Faculty Jobs
Career Center

Student Email

Faculty & Staff Email

Drupal Login

Of Interest to...

Future Students

Current Students

Faculty & Staff

Full-Time Faculty

Part-Time Faculty

Community & Visitors

Alumni & Friends

University Partners

Military/Veterans

Human Resources

Student Employment

Resources

Contact

Clery Act

Annual Safety Reports

Title IX Notice

Disclosure of Consumer Information

Campus Services

Academic Advising

Housing & Residential Life

Ombuds Services

Parking

Police

Psychological Counseling

Services to Students with Disabilities

Student Health Center

Transcripts

Accessibility Privacy and Security Non-Discrimination Notice Website Copyright/DMCA Policy

Tel: 619-259-5459

COMPETITIVE EDGE INSURANCE



HOW THE CALIFORNIA LABOR SHORTAGE IS AFFECTING THE CONSTRUCTION INDUSTRY

December 12, 2021 / in Construction, News /

For anyone in California who has taken a stroll around town lately, you've likely noticed a myriad of 'now hiring' signs every which way you look. Restaurants and retail stores are experiencing obvious shortages, but the construction industry is especially feeling the deficit of ready labor right now.

Let's talk about how the California labor shortage is specifically affecting the construction industry.

WHY IS THERE A LABOR SHORTAGE IN CALIFORNIA?

When asked about the California labor shortage, Brenda Jo Robyn [https://compedgeins.com/about-us/] , founder of Competitive Edge Insurance, had a this to say.

"You can see labor shortages everywhere," says Brenda Jo. "And the shortage of skilled labor is

CATEGORIES

Select Category

RECENT POSTS


OSHA's Consultation Services: What You Need to Know
March 20, 2022 - 7:00 am


Seven Steps to Avoid Cyber Security Threats
March 13, 2022 - 7:00 am


Will Homeowners Insurance Cover a Construction Project?
March 6, 2022 - 7:00 am

Tel: 619-259-5459

COMPETITIVE EDGE INSURANCE

shortage-of-workers-whats-going-on-experts-explain.html] , some reasons include:

- Aging
- Retiring workers
- Border control and immigration limits
- Demands for better pay and working arrangements
- Workers leaving California due to increased housing costs

The labor shortage in the construction industry specifically, however, is not only a California issue.



A LARGER ISSUE AT HAND

According to the Associated General Contractors of America (AGC) and Autodesk [https://www.agc.org/sites/default/files/Files/Com

VIDEO POSTS



What Does Workers' Comp Look Like for Remote Employees?
January 23, 2022 - 7:00 am



Workers' Compensation Policy Renewals: What to Expect
January 9, 2022 - 7:00 am



Certificates of Insurance (COIs): What You Need to Know
December 19, 2021 - 7:00 am

Tel: 619-259-5459

COMPETITIVE EDGE INSURANCE

[https://www.nbcsandiego.com/news/local/Construction-Worker-Shortage-Reported-Around-The-Country--492013131.html] , include:

- Drywallers
- Pipelayers
- Carpenters
- Sheet metal workers
- Plumbers
- Bricklayers

Even if a wave of individuals wanted to get into the construction field right now, it takes a great deal of time to become proficient in many of these jobs. Not to mention the time required to receive proper licensure from the California Contractors State License Board [https://www.cslb.ca.gov/About_Us/Library/Forms_And_Applications.aspx] (CSLB). And projects need laborers—now.

Some companies have even had to turn to out-of-state workers, bringing them in for individual projects to meet demands.

THE CONSTRUCTION INDUSTRY DURING COVID AND TODAY

Contractors have managed to stay busy during COVID. The high volume of money made available to contractors from the government, coupled with historically low interest rates and the massive sell-off of homes we had during this

Tel: 619-259-5459

COMPETITIVE EDGE INSURANCE

their properties.

But now the supply can't meet the high demand.

In an article [https://www.ktvu.com/news/california-construction-workers-in-short-supply] written by Fox, contractor Michael Wolff was interviewed. "I would pay a ridiculous amount of money to get a qualified person in here. I would hire 15 people today," said Wolff. He, like many other contractors, acknowledges that many qualified laborers would prefer to stay at home on unemployment or stimulus or work under the table.

INCREASED COSTS

Brenda Jo of Competitive Edge elaborates on the trickle-down effect of the labor shortage. As a result, the construction industry is hiking up costs to complete projects in an efficient manner.

Brenda Jo explains. "When there's a shortage, that means there's a competition. When there's a competition, wages go up in that industry or that skillset." Projects then cost more.

She continues with the two options contractors are faced with. "Either: the employer can't find enough labor and so the job takes longer *or* you contract more laborers, shortening your project time, but increasing costs," says Brenda Jo. "There's a fine balance between those." And, as we've observed, it's a difficult balance to strike.

LOOKING FORWARD

bringing an additional 747,600 industry jobs to fill.

Today, fewer and fewer children are exposed to the construction world—which, in turn, will further drag out the shortage. Only 3% of people ages 18-25 wanted to work in construction, according to an article done by Builder [https://www.builderonline.com/building/trades-subcontractors/why-dont-young-americans-want-to-do-construction-work_o] in 2017.

Moreover, "for every five workers retiring, [there is] only one coming in," according to Robin Bartholow, Builders Exchange Workforce Development Director.

The facts considered, the shortage does not appear to be ending anytime soon. 45% of companies surveyed by AGC reported that they anticipate continuing difficulty in hiring craft and salaried workers.

According to The Los Angeles Times [https://www.latimes.com/politics/la-pol-ca-union-developer-housing-deal-20190128-story.html] , the construction workers union is partnering with the U.S. government to craft new legislation in hopes of providing:

- Minimum pay
- Benefits
- Training

Immigration reform is an additional solution that could allow skilled, out-of-country workers to aid the shortage, according to the San Francisco Chronicle [https://www.sfchronicle.com/business/article/Cali

careers in construction could help solve the labor shortage in the long run.

For those who are interested in reading up on what to expect from changing contractor costs as a result of both labor shortages and shipping delays, visit this page [https://compedgeins.com/2021/11/08/2021-builders-risk-and-construction-outlook/] to hear Brenda Jo give the rundown.

Tags: california, construction, construction industry, labor shorage

SHARE THIS ENTRY

YOU MIGHT ALSO LIKE

The Key Differ betwe Gener Contr and Const Mana	Paym and Perfor Bonds Explai	EPLI: Does Your Const Busin Need It?	How does Worke Comp Insura Work	Bund Insura Pros and Cons	What Classi High Risk?	Cyber Liabili Cover for the New Era of Ransc	What the Differ Betwe a Surety Bond and a Contr Bond

Tel: 619-259-5459

COMPETITIVE EDGE INSURANCE

LET'S TALK

WANT TO KNOW HOW MUCH YOU COULD BE SAVING ON YOUR INSURANCE COSTS?

WANT TO KNOW HOW MUCH YOU COULD BE SAVING ON YOUR INSURANCE COSTS?

LET'S TALK

CONNECT WITH US

COMPETITIVE EDGE INSURANCE

Tel: 619-259-5459

COMPETITIVE EDGE INSURANCE

Privacy Policy

HOURS OF OPERATION

Monday – Friday 8:00AM – 5:00PM

Saturday Closed

Sunday Closed

© Copyright 2021- Competitive Edge Insurance

site design by digitalstoryteller.io

© Copyright 2021- Competitive Edge Insurance
site design by digitalstoryteller.io

Inland Empire

2021-2024

Regional Workforce Development Plan

Inland Empire Regional Planning Unit

San Bernardino County Workforce Development Board
Riverside County Workforce Development Board

Primary Contacts:

Mariann Johnson
Deputy Director, Special Projects
San Bernardino County
Workforce Development Department
(909) 387-9841
Mariann.Johnson@wdd.sbcounty.gov

Tammy Mathis
Senior Development Specialist
County of Riverside
Workforce Development Agency
(951) 955-3434
TAmathis@rivco.org

Table of Contents

Executive Summary 3
I. Introduction 4
Inland Empire Region 4
Inland Empire Regional Planning Unit and its Vision 4
Future of Work 5
Impacts of COVID-19 6
Regional Workforce Plan Development Process 7
II. Analytical Overview of the Region 9
Current Employment, Largest Industries and Most Common Occupations 9
Inland Empire Labor Force Participation 13
Unemployment 17
Labor Market Demand 19
III. Fostering Demand-Driven Skills Attainment 28
IERPU Goals and Regional Indicators 28
In-Demand Industry Sectors and Occupations 30
Implementation of Regional Sector-Based Career Pathways 32
IV. Enabling Upward Mobility for All Californians 36
High Road Workforce System 36
Equity and Economic Justice 37
V. Aligning, Coordinating, and Integrating Programs and Services 41
System Alignment 41
VI. Conclusion 43
Appendix A: Stakeholder and Community Engagement Summary 44
Appendix B: Inland Empire Regional Workforce Goals 49
Appendix C: Public Comments Received that Disagree with the Regional Plan 56
Appendix D: Signature Pages 57

Executive Summary

As part of a four-year planning process, the Inland Empire Regional Planning Unit (IERPU) has developed this regional workforce development plan to address the needs of the Inland Empire community. The purpose of the planning process and this plan is to develop equitable, regional, sector-based career pathways in target sectors, ensuring access and inclusion for all of the region's residents, businesses and organizations. The counties of San Bernardino and Riverside are recipients of Workforce Innovation and Opportunity Act (WIOA) funding, and so the region ensured this process and plan document were in alignment with the State of California Workforce Development Board (CWDB)'s Unified Strategic Workforce Development Plan.

The region began the planning by conducting an inclusive process gathering input for this plan from partner organizations, employers and other stakeholders in a series of interactive virtual meetings held between December 2020 and January 2021. Participants were asked to provide ideas for how the region's workforce system can meet the needs of the community in five key areas: responding to COVID-19; developing career pathways to the middle class; providing access and inclusion for all; preparing for the future of work; and building a high road workforce system. The IERPU worked together as members of both workforce development boards, the San Bernardino County Workforce Development Board and the Riverside County Workforce Development Board, to process the input received and incorporate it into the plan.

A detailed workforce and economic analysis was provided to the region by the University of California, Riverside. The regional labor market information and workforce demographic data appears in Section II of the report and provided an empirical grounding for the planning process. The data reaffirmed the region's selection of three target sectors of Healthcare, Manufacturing and Transportation and Logistics due to the current demand and expected growth over the next several years.

Five key goal areas were developed as a result of the planning process and form the backbone of this workforce development plan: 1) Regional Sector-Based Career Pathways, 2) High Road Workforce System, 3) Access and Inclusion for All, 4) Future of Work and 5) Regional Coordination and Alignment. Several specific goals that address the region's response to COVID-19 were also developed and are highlighted where they intersect with the areas listed above.

Sections III-V provide additional details on how the region intends to operationalize its goals, including the development of four regional indicators. Each section discusses how the plan aligns with the CWDB's priorities to foster demand-driven skills attainment, provide high road employment, ensure equity and economic justice and align/coordinate services across the region. Appendices provided at the end provide additional documentation on the process, how the plan will be executed and public comment received about the plan.

I. Introduction

Inland Empire Region

The Inland Empire region consists of San Bernardino and Riverside Counties in Southern California. Representing a richly diverse region of the state, among San Bernardino County's population of 2,180,085, over half of the residents are Hispanic or Latino, over 9% are Black, 8% are Asian and about 3.6% are of two or more races.[1] The county makes up more than half of the region geographically, and is the largest county in the U.S. San Bernardino County covers over 20 thousand square miles and a vast majority of its residents live in the southeastern corner of the county known as the Valley Region.[2] Over 80% of the rest of the County land is under federal jurisdiction including areas like the Mojave National Preserve and the San Bernardino National Forest.

Riverside County, a contiguous county to the south of San Bernardino, includes a smaller amount of land but is home to more residents. With about 53% of the Inland Empire region's population (2,470,546) calling the county home, just about half of the residents are Hispanic or Latino, over 7% are Black, another 7.2% are Asian and about 3.6% are of two or more races. Including the San Jacinto Mountains, Riverside County covers a little over 7,200 square miles with large swaths of uninhabited natural lands.[3] Together, the two counties make up the scenic, culturally diverse and dynamic Inland Empire region that has a thriving economy and a need for a strong, high-road workforce development system to ensure there is a path to the middle class for all.

Inland Empire Regional Planning Unit and its Vision

The Inland Empire Regional Planning Unit (IERPU) is comprised of the San Bernardino County Workforce Development Board (SBCWDB) and the Riverside County Workforce Development Board (RCWDB). The two WDBs of the IERPU created a vision statement for the region to set the strategic direction for planning and implementation. See Figure 1 for the IERPU vision.

Figure 1: The IERPU Vision for Workforce Development

The workforce development vision for the Inland Empire is a reinvented regional system that engages business and industry in identifying high quality jobs and designing training programs to prepare a competitive workforce. The IERPU partners will prepare the workforce by ensuring that services address barriers to employment and promote educational attainment to create pathways from dependency to prosperity.

[1] Census (2020). QuickFacts: Riverside County, California; San Bernardino County, California. Retrieved from: https://www.census.gov/quickfacts/fact/table/riversidecountycalifornia,sanbernardinocountycalifornia/AFN120212.
[2] San Bernardino County (2020). County Profile. Retrieved from: https://wp.sbcounty.gov/indicators/county-profile/.
[3] Census (2020).

With this vision in mind, the regional partners across both counties and boards developed several objectives for the development of the Inland Empire 2021-2024 WIOA Regional Workforce Development Plan:

- To create strategies that develop equitable, regional, sector-based career pathways in target sectors, ensuring access and inclusion for all of the region's residents, businesses and organizations
- To learn from what worked and identify what still needs to be done in response to COVID-19, both in the short- and long-term
- To build a high-road employment system, leveraging the support of high-road employers to build robust career pathways that lead to family-sustaining wages
- To increase efficiencies, reduce duplication and improve overall quality of services through synergistic regional cooperation and mutually reinforcing strategies
- To consider how automation, new technologies, the gig economy and related "future of work" concepts will impact the regional economy, targeted sectors and jobs

Future of Work



In addition to regional sector-based career pathways, high road employment, access and inclusion and regional coordination, a fifth overarching concept, the future of work, was addressed by the region and its partners. Changes to the economy and jobs brought about by automation, remote working and the gig economy, for example, are highly likely over the next four years. In 2017, the McKinsey Global Institute analyzed individual activities within jobs and found that as much as 50 percent of time spent on activities across all sectors could be automated with current technology.[4] A more recent survey of businesses conducted by McKinsey in June 2020 of 800 executives found that over 67 percent have accelerated their adoption of automation due to the COVID-19 pandemic.[5]

[4] "Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation," McKinsey Global Institute, December 2017, https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages

[5] "What 800 Executives Envision for the Postpandemic Workforce," McKinsey & Company, Sept 2020, https://www.mckinsey.com/featured-insights/future-of-work/what-800-executives-envision-for-the-postpandemic-workforce



Automation is only one facet, however, and the growth of the gig economy is another. When last analyzed by the Bureau of Labor Statistics (BLS) in 2017, "contingent workers" (including independent contractors, on-call workers, temp workers and workers provided by contract firms) made up 3.8% of all workers at 5.9 million, down from 4.1% in 2005 when the survey was last conducted.[6] The Freelancer Union calculated a much higher figure for gig workers at 57.3 million in 2017, or 37% of the workforce, staying relatively consistent at this number through 2019.[7] The BLS study has been scrutinized for using survey questions that may have left out many contingent workers and the Freelancer Union, who works with gig work platform Upwork on their research, may have a bias toward overestimating the number of gig workers.[8] This probably means the actual number of gig or contingent workers likely falls somewhere between the two figures. In any case, the number of workers engaged in the gig economy is considerable, nationally and also in the Inland Empire region.

Impacts of COVID-19

As the Inland Empire continues to manage a public health response to the COVID-19 pandemic, an economic response has also been necessary in light of many business closures and reductions in early 2020. Workers and families were significantly impacted by the losses of income, childcare and in-person schooling while trying to keep themselves safe from the virus. Individuals in training programs saw delays, shifts to virtual classes or outright cancellations of their program, impacting their ability to upskill. County staff offering employment services to the community had to quickly pivot to virtual services and other means to safely continue to provide services. The multiple layers of challenges faced all at once are likely to have long-term impacts, even as a vaccine is now becoming more available and the region is plotting a course to economic recovery.

There are a few potential long-term impacts the region considered in relation to the pandemic hit. First, workers who lost their job looked to the gig economy to replace their income. Many of these jobs are not high-quality jobs and these workers will need assistance in charting a path and getting support in obtaining a better job. Second, there was a tremendous increase in remote working across the region. For some, this actually may have provided a higher degree of work-life balance, but for others, it proved to be a difficult transition and exacerbated inequities related to access to technology and reliable internet access. It is likely that some businesses will choose to keep more of

[6] "A Look at Contingent Workers," Bureau of Labor Statistics, September 2018, https://www.bls.gov/spotlight/2018/contingent-workers/home.htm
[7] "Freelancing in America", Freelancers Union, October 2019, https://www.freelancersunion.org/about/freelancing-in-america/
[8] "Experts Puzzled by New BLS Contingent Workforce Data," Society for Human Resource Management, June 2018, https://www.shrm.org/ResourcesAndTools/hr-topics/talent-acquisition/Pages/Experts-Puzzled-New-BLS-Contingent-Workforce-Data.aspx

their workers working remotely, even after the pandemic is no longer a major issue due to cost savings and other efficiencies.

As the restrictions on in-person gatherings loosen and workplaces reopen, bringing workers back on the job, as well as participants back in for workforce services, brings in a third potential long-term impact – new health and safety policies in the workplace. This might include new regulations on how workplaces are designed for the sake of physical distancing, policies about mask-wearing and/or requiring "workplace infection control plans".[9] With these potential long-term developments in mind, the region considered how to incorporate the impacts of COVID-19 on the economy and jobs into its workforce development strategies.

Regional Workforce Plan Development Process

The IERPU developed this plan as mandated by the Workforce Innovation and Opportunity Act (WIOA), with guidance provided by the State of California's Workforce Development Board via Directive WSD20-05 and in alignment with the CWDB Unified Strategic Workforce Development Plan. The process included initial planning and document review, stakeholder and community input, plan development and public posting, and regional leadership approval and finalization. These four phases are described below.

Initial Planning and Document Review

Staff members of the IERPU, which includes both San Bernardino and Riverside Counties, met to create a process for developing the plan, scheduling partner input meetings, setting dates for plan development and a process for regional leadership review and finalization. The prior 4-year regional plan and modification documents were reviewed for historical reference and documents related to current programming and services across the region were gathered for analysis. Guided by a plan outline, the IERPU began gathering input from stakeholders and community partners.

Stakeholder and Community Input

A total of nine virtual meetings were scheduled to gather stakeholder and community input for the regional plan. AJCC MOU Partners, RCWDB members, SBCWDB members, regional employers and nonprofit community partners all took part in these meetings as detailed in Appendix A. In these virtual meetings, participants were able to give input via breakout sessions covering five areas: COVID-19, Career Pathways to the Middle Class, High Road Employment System, Access and Inclusion and Future of Work. These highly engaging sessions provided input into the design of the regional and local plans, particularly in developing goals, tactics and indicators. Meetings were followed by an online survey that asked for feedback on each meeting as well as provided an opportunity for additional input for the plan.

Feedback from participants in the region is gathered on an ongoing basis by two primary methods – participant surveys and focus groups. In these processes, participants are asked questions such as "What are your primary reasons for visiting the AJCC?", "Share your experience with the service

[9] "Former OSHA Head Talks Biden's Executive Order on Workplace Safety", National Public Radio, January 23, 2020, https://www.npr.org/2021/01/23/959985609/former-osha-head-talks-bidens-executive-order-on-workplace-safety

provided by the AJCC including your interaction with staff." and "What other resources and services have you been referred to by staff at the AJCC?" The feedback received is reported back to the oversight and coordination bodies in the region for incorporation into planning. A few examples of feedback from participants in these processes that have been incorporated include:

- Include a description of the AJCC system partner services (to participants)
- Add online workshops for participants to access
- Add networking opportunities for job seekers to engage with employers

Plan Development and Public Posting

Between January and February 2021, the plan was written based on state guidance, SBCWDB and RCWDB priorities, staff expertise and the input received from all stakeholders. After an initial draft was reviewed and approved by both WDBs in February 2021, the plan was then posted for public comment for 30 days.

Finalization Regional Leadership Approval

After the public posting period, the draft plan was reviewed in light of feedback received and updated accordingly (see Appendix C). The last step in the process was approval of this final plan by the workforce development boards and boards of supervisors for each county. The dates of approval from each body are below:

- April 14th, 2021: San Bernardino County Workforce Development Board
- April 20th, 2021: San Bernardino County Board of Supervisors
- April 21st, 2021: Riverside County Workforce Development Board
- April 27th, 2021: Riverside County Board of Supervisors

Please see Appendix D for signatures representing these oversight bodies.

II. Analytical Overview of the Region

In the following section, an analytical overview of the Inland Empire region is provided. The analysis was provided to the region by the University of California Riverside (UCR) Center for Economic Forecasting and Development. For most of the subsections here, data was only available through 2019; however, the region considered the economic impacts of the pandemic in 2020 in the planning process as well.

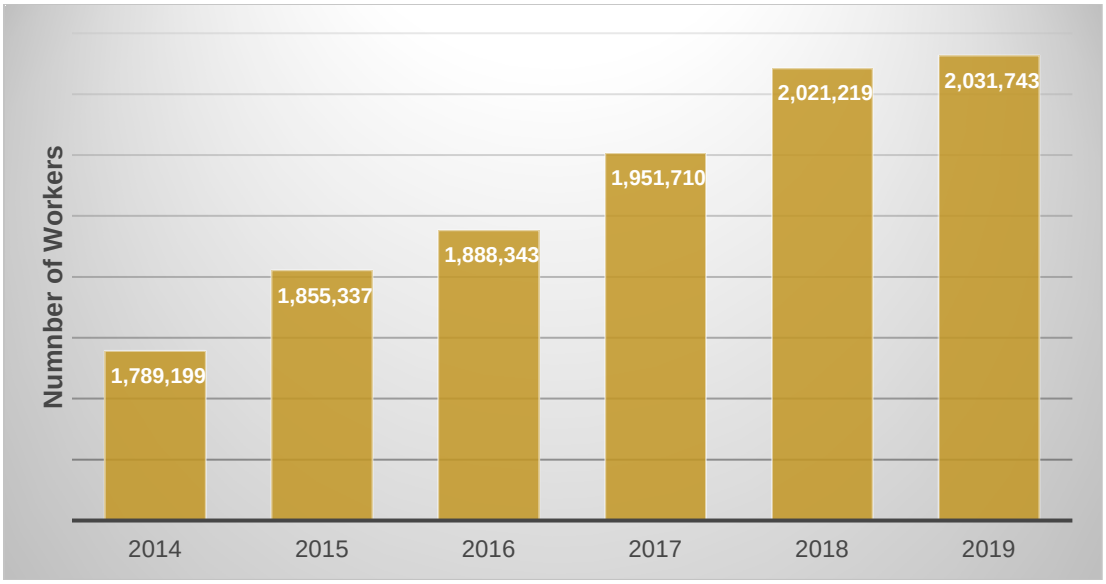
The next subsection begins with a look at the Inland Empire workforce – current employment, largest industries and most common occupations. This is followed by a breakdown of the region's labor force participation including demographics and educational attainment. Next, unemployment is analyzed, then employer needs are described in terms of emerging demand and an occupational skills assessment. Finally, relevant gaps between employer needs and the workforce's qualifications are described.

Current Employment, Largest Industries and Most Common Occupations

Current Employment

Total nonfarm employment reached 2.03 million in 2019 in the Inland Empire, up 0.5% compared to 2018. 2019 marks the year with the slowest year-over-year growth in employment in the Inland Empire since 2014. Except for 2016, when employment increased 1.8% compared to the previous year, other years had year-over-year employment increases of over 3% (Figure 2).

Figure 2: Total Nonfarm Employment in the Inland Empire, 2014-19



Source: American Community Survey. Analysis by UCR Center for Economic Forecasting and Development

Largest Industries

In the Inland Empire, Health Care and Social Assistance is the largest industry sector (Table 1), employing over a quarter of a million workers, followed by Retail Trade, Professional and Business Services, Educational Services, and Manufacturing. These five industry sectors employed over one million people or 52.3% of total employment in 2019, down from 53.4% in 2014. Compared to 2014, these industries sector grew 12.3%, 7.1%, 13.5%, 22.0%, and 4.5%, respectively.

Table 1: Nonfarm Employment and Wage by Sector in the Inland Empire, 2014-2019

	NUMBER OF WORKERS			AVERAGE ANNUAL WAGE		
						% Change
Health care and social assistance	230,994	259,436	12.3%	$45,549	$54,143	18.9%
Retail trade	228,703	244,950	7.1%	$28,503	$33,421	17.3%
Professional and business services	179,225	203,384	13.5%	$36,768	$47,831	30.1%
Educational services	146,212	178,322	22.0%	$42,126	$49,749	18.1%
Manufacturing	169,761	177367	4.5%	$46,315	$53,659	15.9%
Transportation, warehousing, and utilities	132,736	176,113	32.7%	$43,511	$45,133	3.7%
Construction	140,855	175,017	24.3%	$39,371	$48,065	22.1%
Accommodation and food services	136,901	153,296	12.0%	$18,349	$24,929	35.9%
Other services, except public administration	91,710	108,971	18.8%	$24,452	$28,228	15.4%
Public administration	90,907	107,639	18.4%	$66,773	$72,873	9.1%
Wholesale trade	58,636	62,241	6.1%	$43,002	$53,574	24.6%
Finance and insurance	53,519	56,647	5.8%	$51,136	$63,628	24.4%
Arts, entertainment, and recreation	44,269	48,299	9.1%	$25,466	$32,588	28.0%
Real estate and rental and leasing	39,414	37,009	-6.1%	$35,150	$53,203	51.4%
Information	23,217	25,111	8.2%	$52,393	$51,803	-1.1%
Natural resources and mining	22,140	17,941	-19.0%	$30,597	$36,861	20.5%
Total/Average	**1,7891,99**	**2,031,743**	**13.6%**	**$38,823**	**$46,215**	**19.0%**

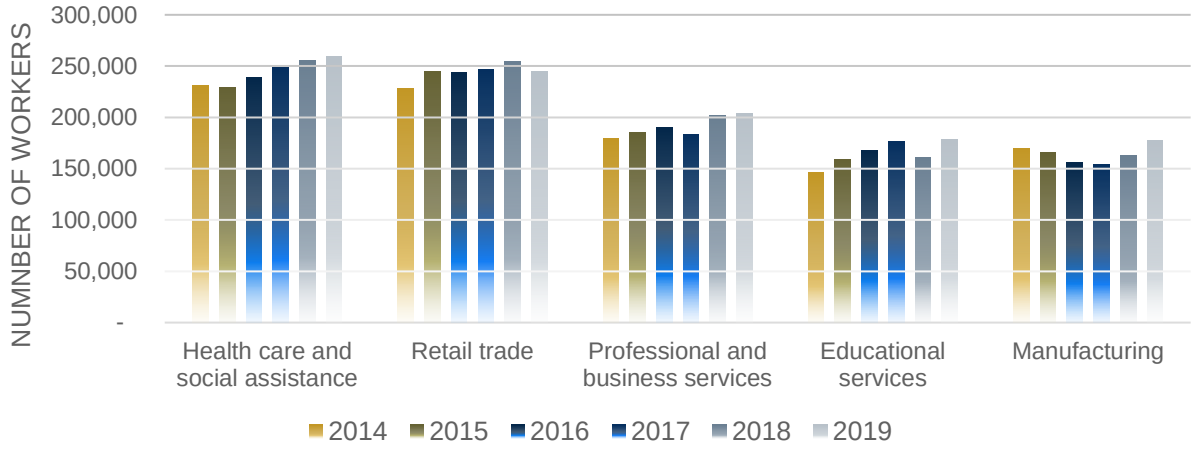
Source: American Community Survey. Analysis by UCR Center for Economic Forecasting and Development

In 2019, except for Retail Trade ($33,400), the average wages for the largest industry sectors paid above the total average of all jobs ($46,200) in Inland Empire: Health Care and Social Assistance ($54,100), Professional and Business Services ($47,800), Educational Services ($49,700), and Manufacturing ($53,700). The average wages of Health Care and Social Assistance and Manufacturing paid 17.2% and 16.1% more than the total average of all jobs, respectively. On the other hand, the average wage in Retail Trade is 27.7% lower than the total average. Public Administration ($72,900) has the highest average wage in Inland Empire. The average wage increased in all industry sectors from 2014 to 2019 except for Information, which contracted 1.1%.

Except for Manufacturing, the largest industries in the Inland Empire had sustained and gradual increases during the period of 2014 to 2019 (Figure 3). The sustained and gradual increases are most prominent in Health Care and Social Services and Professional and Business Services.

Meanwhile, after years of declining employment, Manufacturing employment rebounded after 2017. From 2017 to 2019, Manufacturing added 22,900 jobs, or a 14.8% increase.

Figure 3: Largest Industries by Employment in the Inland Empire, 2014-19



Source: American Community Survey. Analysis by UCR Center for Economic Forecasting and Development

Largest industry Subsectors

The largest industry subsectors in Inland Empire are Educational Services (Primary/Secondary), Construction, Food Services and Drinking Places, Professional and Technical Services, and Ambulatory Health Care Services (Table 2). The first three subsectors each employed over 100,000 workers and just under half a million workers altogether, while the other two subsectors each employed almost 100,000 workers. Altogether, the 15 largest industry subsectors shown in this table employed 1.2 million workers; three in five workers in the Inland Empire work in one of these 15 subsectors.

In recent years, the Inland Empire has seen a tremendous growth in the Transportation and Warehousing industry, and correspondingly, Warehousing and Storage more than doubled in employment (+130.8%) from 2014 to 2019. On the other hand, employment in Truck Transportation declined 18.1% during the five-year period. Employment in General Merchandise Stores (-14.6%) and Food and Beverage Stores (-3.7%), both of which are client facing and contact heavy, had declined significantly. Collectively, there are 15,900 fewer jobs in these three industry subsectors in 2019 than in 2014.

Table 2: Largest Subsectors by Employment in the Inland Empire, 2014-2019

	NUMBER OF WORKERS			AVERAGE ANNUAL WAGE		
						% Change
Educational services (primary/secondary)	146,212	178,322	22.0%	$42,126	$49,749	18.1%
Construction	140,855	175,017	24.3%	$39,371	$48,065	22.1%
Food services and drinking places	118,672	132,936	12.0%	$16,593	$23,441	41.3%
Professional and technical services	74,258	97,857	31.8%	$50,520	$65,190	29.0%
Ambulatory health care services	80,489	97,522	21.2%	$45,959	$55,343	20.4%
Administrative and support services	96,678	96,431	-0.3%	$25,554	$29,513	15.5%
Hospitals	79,562	85,037	6.9%	$63,227	$73,672	16.5%
Warehousing and storage	24,238	55,950	130.8%	$29,662	$31,025	4.6%
Public administration	46,953	51,970	10.7%	$80,955	$92,078	13.7%
Social assistance	46,199	51,652	11.8%	$23,459	$28,922	23.3%
Food and beverage stores	42,260	40,684	-3.7%	$30,127	$33,339	10.7%
Repair and maintenance	30,535	39,113	28.1%	$30,095	$35,241	17.1%
Amusements, gambling, and recreation	34,179	37,017	8.3%	$27,285	$34,785	27.5%
Truck transportation	45,068	36,893	-18.1%	$38,697	$43,889	13.4%
General merchandise stores	42,131	35,964	-14.6%	$23,987	$28,047	16.9%
Inland Empire Overall	**1,7891,99**	**2,031,743**	**13.6%**	**$38,823**	**$46,215**	**19.0%**

Source: American Community Survey. Analysis by UCR Center for Economic Forecasting and Development

Most Common Occupations

The Inland Empire has a strong Transportation and Warehousing industry, and intuitively Material Moving Workers (SOC 53-7000) is by far the most common occupation, with 129,100 workers employed in this occupation in 2019. Motor Vehicle Operators is another major occupation in transportation and warehousing, employment 80,500 workers (Table 3). Other popular occupations in the Inland Empire include: Construction Trade Workers, Retail Sales Workers, and Other Management Occupations. Altogether, the five largest occupations employed over half a million people and the 15 largest occupations employed over a million people in 2019.

Given that Health Care and Social Assistance is the largest industry by employment, healthcare related occupations also make the list of largest occupations in the Inland Empire. Specifically, 71,300 workers are Healthcare Diagnosing or Treating Practitioners and 54,000 are Home Health and Personal Care Aides; and Nursing Assistants, Orderlies, and Psychiatric Aides.

The boom in the Transportation and Warehousing industry translates into a significant increase in the number of people working as Material Moving Workers (+61.0%). Meanwhile, the increase in healthcare and related jobs are bifurcated: The number of people working as Home Health Aides, which are low paying, had increased by 278.3%, while the number of Healthcare Diagnosing or Treating Practitioners, which are significantly higher paying, increased by only 20.6%, which is still above the Inland Empire overall of 13.6%.

Table 3: Most Common Occupations by Employment in the Inland Empire, 2014-2019

	NUMBER OF WORKERS			AVERAGE ANNUAL WAGE		
						% Change
Material Moving Workers	80,196	129,125	61.0%	$23,506	$27,834	18.4%
Construction Trades Workers	89,260	115,487	29.4%	$31,818	$42,254	32.8%
Retail Sales Workers	101,411	104,552	3.1%	$16,723	$22,698	35.7%
Other Management Occupations	87,763	99,114	12.9%	$61,708	$70,273	13.9%
Motor Vehicle Operators	75,002	80,541	7.4%	$36,736	$40,225	9.5%
Information and Record Clerks	61,189	76,876	25.6%	$25,817	$30,967	19.9%
Healthcare Diagnosing or Treating Practitioners	59,164	71,343	20.6%	$82,209	$102,048	24.1%
Preschool, Elementary, Middle, Secondary, and Special Education Teachers	52,719	66,888	26.9%	$52,715	$59,254	12.4%
Supervisors of Sales Workers	52,441	62,464	19.1%	$51,338	$46,379	-9.7%
Building Cleaning and Pest Control Workers	49,195	54,981	11.8%	$18,206	$21,841	20.0%
Home Health and Personal Care Aides; and Nursing Assistants, Orderlies, and Psychiatric Aides	14,271	53,987	278.3%	$22,434	$22,276	-0.7%
Business Operations Specialists	34,788	47,822	37.5%	$55,907	$62,690	12.1%
Cooks and Food Preparation Workers	45,412	47,036	3.6%	$14,368	$20,593	43.3%
Other Production Occupations	39,516	44,316	12.1%	$34,616	$36,822	6.4%
Other Office and Administrative Support Workers	37,964	39,349	3.6%	$29,797	$34,362	15.3%
Inland Empire Overall	**1,789,199**	**2,031,743**	**13.6%**	**$38,823**	**$46,215**	**19.0%**

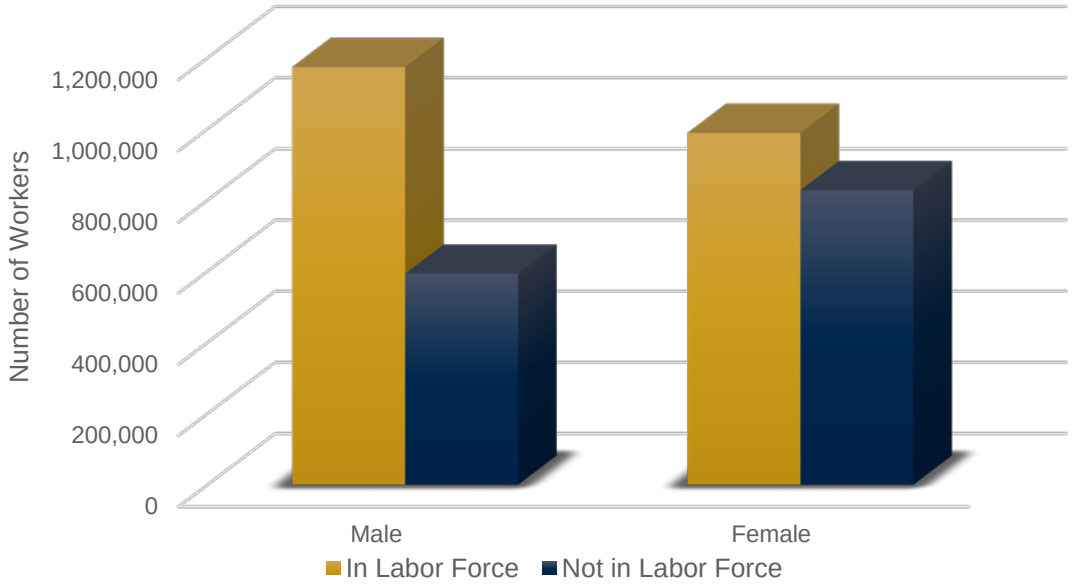
Source: American Community Survey. Analysis by UCR Center for Economic Forecasting and Development

Inland Empire Labor Force Participation

Gender

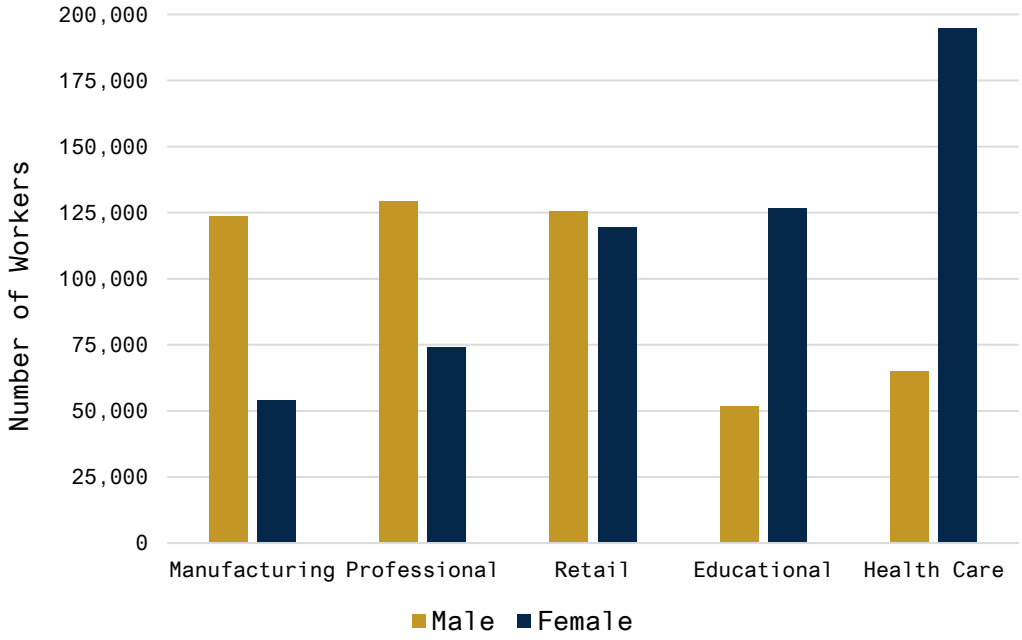
There are about 988,721 females in the labor force, compared to about 1,173,904 males in the labor force. This translates to 66.4% of all males in the region who are part of the labor force in the Inland Empire, a significantly higher rate compared to the 54.4% labor participation rate seen in females (Figure 4). Over the last five years, female participation increased by about 8.1%, and the largest five-year growth took place among women in the educational sector, which grew 25.6% from 100,690 workers in 2014 to 126,488 workers in 2019. There was a faster growth rate among women than men across each of the five sectors represented in the data, with the only exception being the Professional Services sector (Figure 5). Men in this group represented a 15.3% increase across the population in the Inland Empire, compared to 10.4% for women.

Figure 4: Labor Force by Gender in Inland Empire, 2019



Source: American Community Survey. UCR Center for Economic Forecasting and Development

Figure 5: Industry Employment by Gender in Inland Empire, 2019

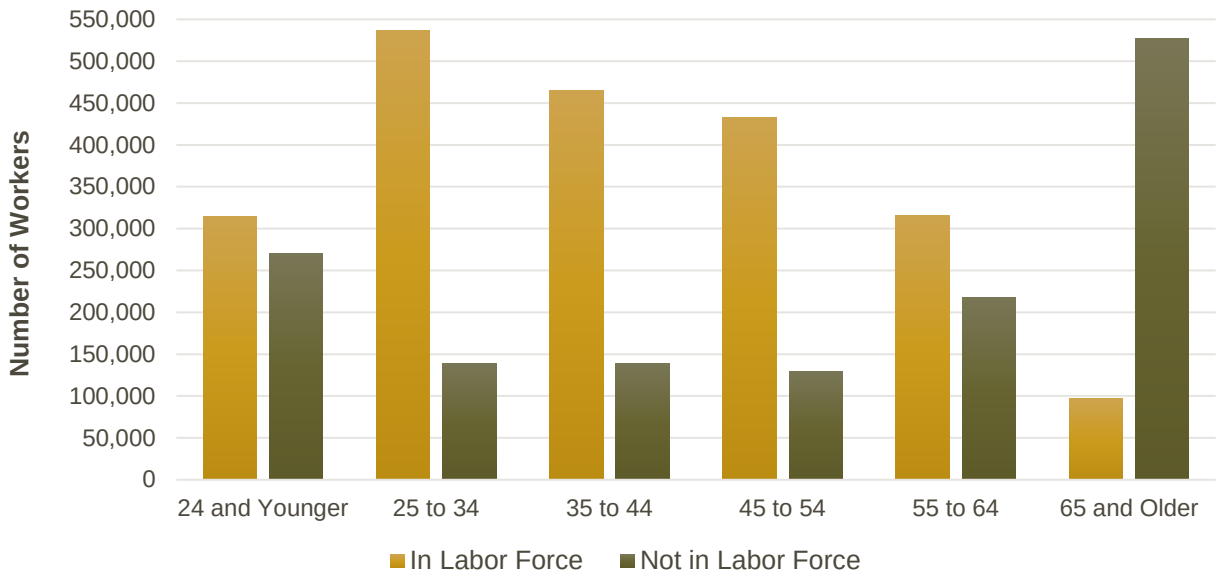


Source: American Community Survey. UCR Center for Economic Forecasting and Development

Age

Labor force participation rates in the Inland Empire are strongest among the residents between ages 25 and 34, who made up 537,000 of the County's workforce in 2019 (Figure 6). Although the number of residents outside the labor force held steady for workers between ages 25 and 54, the number of residents in the labor force tapered off as workers grew older (with a steep drop off workers age 65 and older due to retirement). That said, for each of the region's top five sectors, employment for workers over 25 actually increased across all age groups from 2014 to 2019 with the one exception of decline of nearly 1,000 workers between the ages of 45 and 54 in the Professional Services sector.

Figure 6: Labor Force Participation by Age Group in Inland Empire, 2019

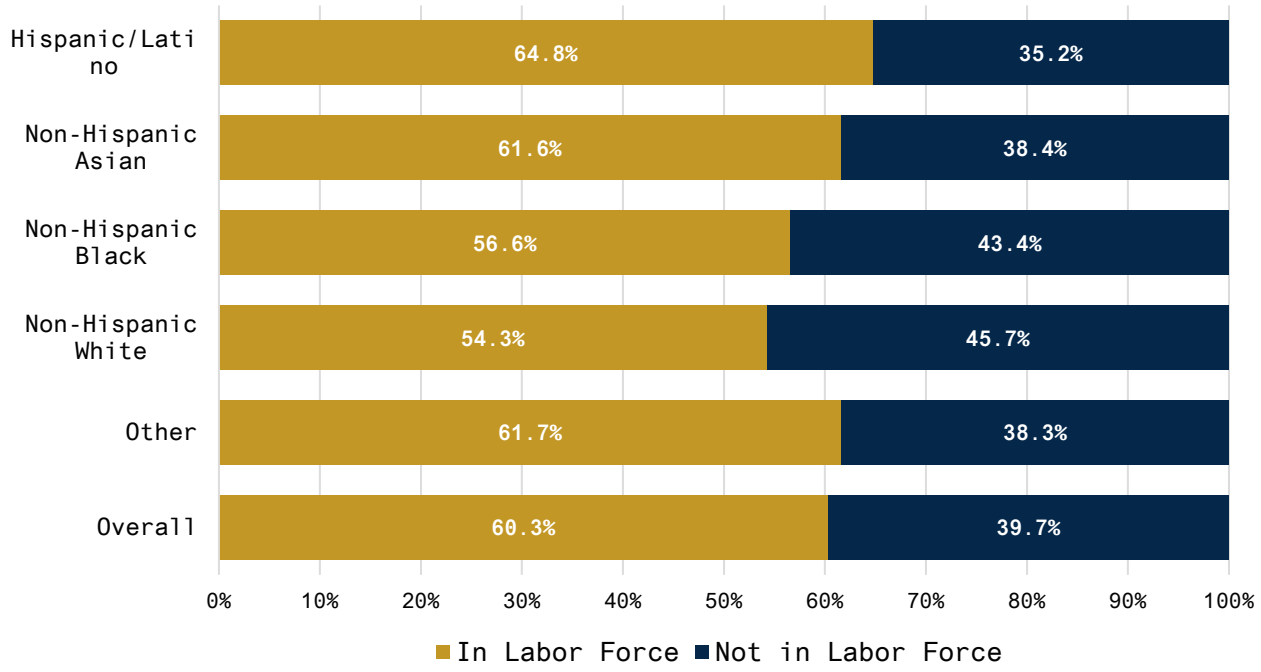


Source: American Community Survey. UCR Center for Economic Forecasting and Development

Race and Ethnicity

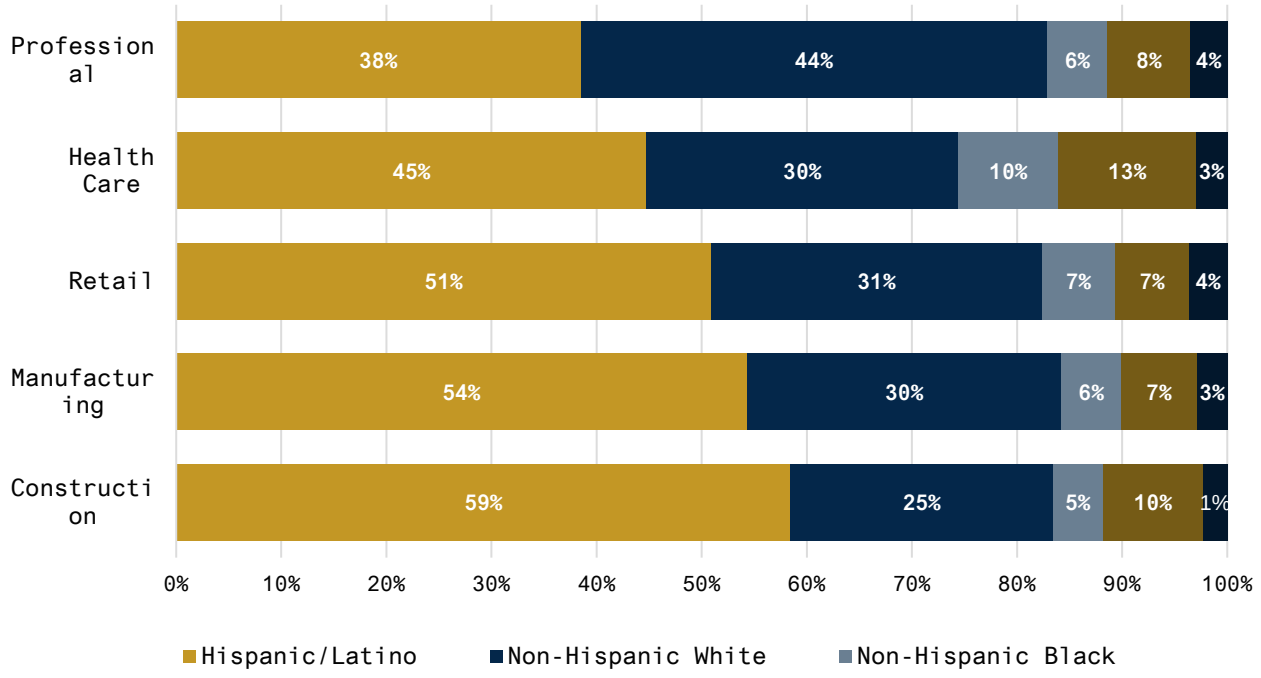
Across the Inland Empire, labor force participation rates among Hispanic/Latino and non-Hispanic Asian residents (at 64.8% and 61.6%, respectively) were markedly higher than non-Hispanic White (54,3%) and Non-Hispanic Black (56.6%) residents (Figure 7). Across each of the race groups, the largest five-year change took place among Hispanic/Latinos in the labor force, which grew over 15% from 988,098 in 2014 to 1,137,859 in 2019. Hispanic/Latino workers comprised the largest share of the workforce for four out of the five largest sectors (Figure 8) – in Professional Services, non-Hispanic Whites made up the largest share – and made up a majority of the workforce in Construction (at a 59% share), Manufacturing (54%), and Retail (51%). Non-Hispanic Black and non-Hispanic Asian workers contributed a combined share of 23% of the Healthcare workforce but were otherwise not highly represented among the Inland Empire's five largest sectors.

Figure 7: Labor Force Participation by Race in Inland Empire, 2019



Source: American Community Survey. UCR Center for Economic Forecasting and Development

Figure 8: Industry Employment by Race in Inland Empire, 2019

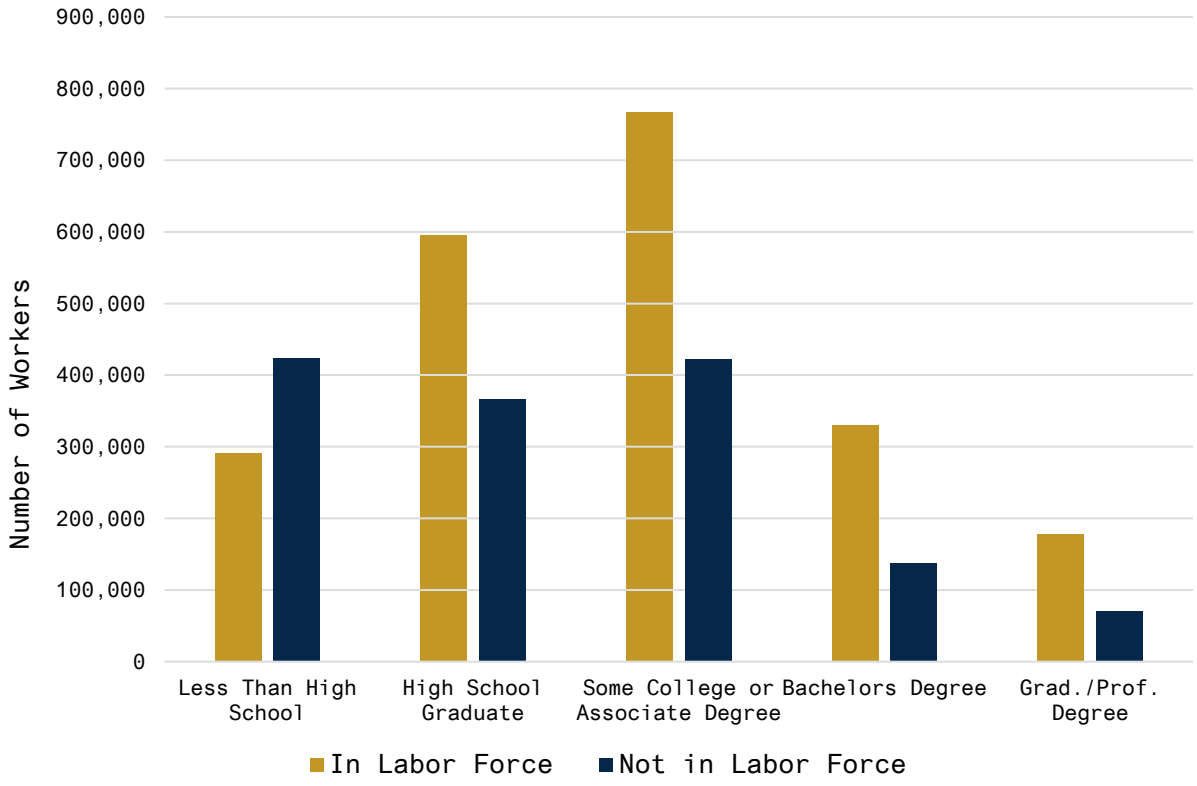


Source: American Community Survey. UCR Center for Economic Forecasting and Development

Educational Attainment

The majority of workers in Inland Empire have at least some college education: 1,275,470 workers (66.9%) fall into this category, compared to the 630,612 (33.1%) workers that have at most a high school degree (Figure 9). Across each of the educational attainment categories listed, the fastest growth has been among those with a bachelor's degree who are in the labor force, which grew 26.2% between 2014 and 2019.

Figure 9: Labor Force Participation by Educational Attainment in Inland Empire, 2019

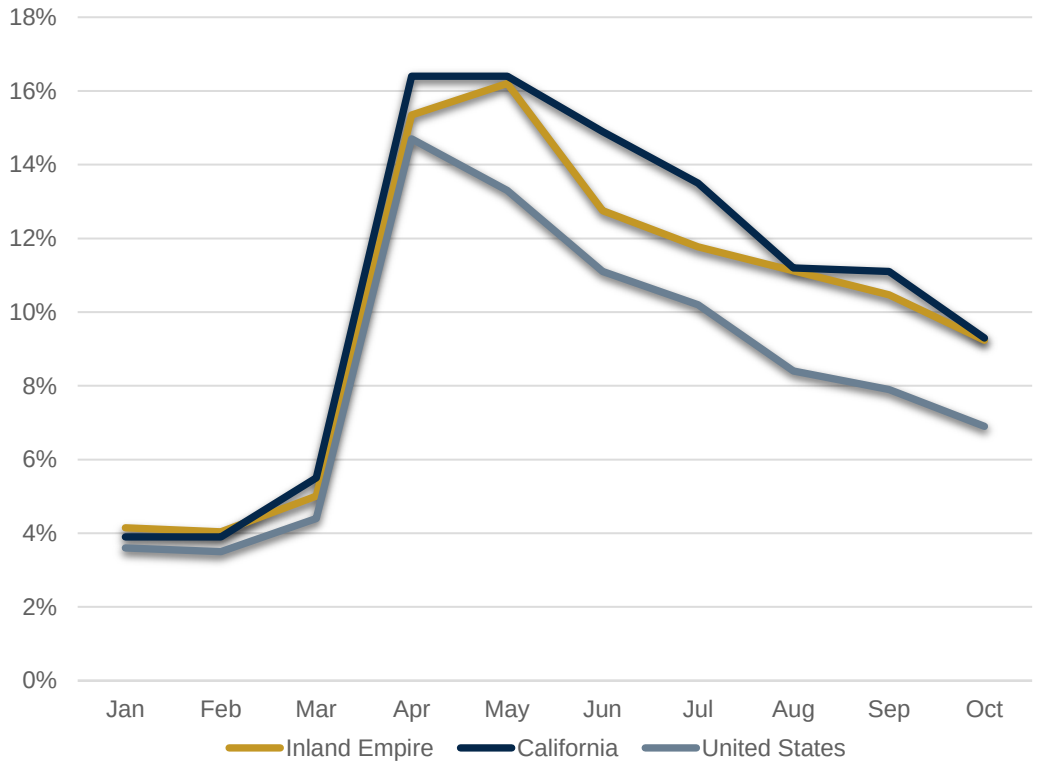


Source: American Community Survey. UCR Center for Economic Forecasting and Development

Unemployment

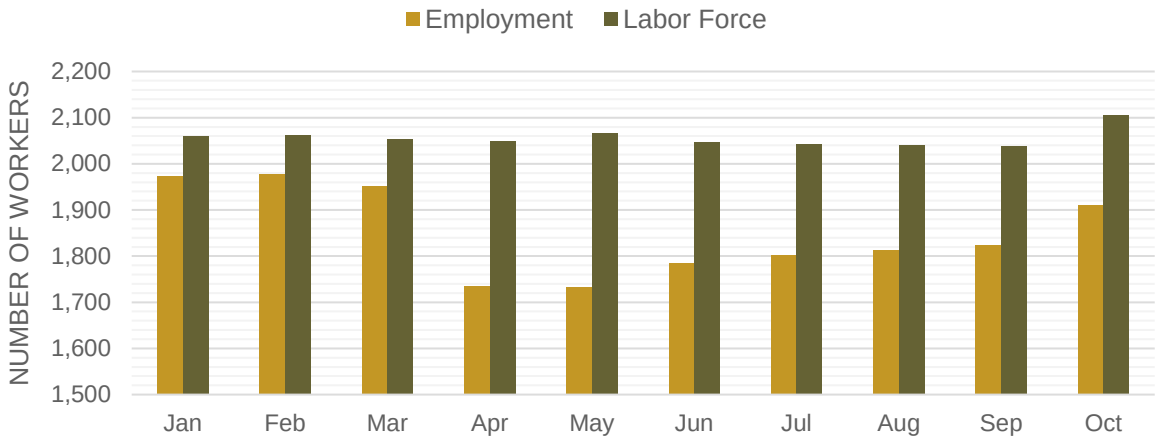
The pandemic has caused the Inland Empire's unemployment rate to increase over the last year, however it has also improved from the lows immediately following statewide lockdown orders (Figure 10). The Inland Empire's unemployment rate is now 9.2%, a far cry from the 4.0% rate a year earlier. The unemployment rate in the Inland Empire is higher relative to the United States (6.9%), but is below California (9.3%). Although unemployment rates remain elevated, the region's labor force has largely recovered (Figure 11). From October 2019 to October 2020, 28,300 workers entered the Inland Empire's labor force, a 1.4% increase. This increase is in stark contrast to declines in the state (-1.1%) and nation (-2.1%) over the period. Without the decrease in California's labor force, the state's unemployment figure would be even higher than the Inland Empire's.

Figure 10: Change in Unemployment Rate in the Inland Empire, January to October 2020



Source: California EDD. Analysis by UCR Center for Economic Forecasting and Development

Figure 11: Change in Employment and Labor Force in the Inland Empire, January to October 2020 (in Thousands)



Source: California EDD. Analysis by UCR Center for Economic Forecasting and Development

Labor Market Demand

Emerging Demand

The Inland Empire's labor market has continued to steadily recover from the COVID-19 pandemic, adding 93,100 jobs since April's lows. Despite the ongoing labor market recovery, year-over-year employment fell 7.1% (-110,600 jobs), one of the largest annual declines on record. The sizeable loses over the last year has also pushed down long-run growth for the region. From October 2015 to October 2020, the Inland Empire has expanded payrolls by just 4.5%.

Although job losses have been widespread, a few bright spots exist. The surge in e-commerce has helped keep the region's Logistics resilient over the last several months. Payrolls in Logistics expanded by 100 employees over the last year, compared with a 3.3% decline in the state over the same period. From a longer-term perspective, Logistics has also been a significant source of job gains for the region. From October 2015 to October 2020, Logistics payrolls expanded by a 45.3%, well above the 4.5% growth in the region overall (Table 4). Health Care (20.4%), Natural Resources and Construction (16.2%), and Wholesale Trade (8.0%) also posted growth levels well above average over the last year.

The short-term job losses caused by the mandates related to the COVID-19 pandemic are also impacting longer-run growth rates. From October 2015 to October 2020, Information (-18.6%), Leisure and Hospitality (-18.1%), and Other Services (-16.8%) %) all posted sizeable declines in employment levels relative to five years ago. Still, once containment measures related to the virus are able to ease these sectors should have significant job gains as companies ramp up production to meet surging consumer demand.

Table 4: Change in Employment by Industry in the Inland Empire, October 2016 to October 2020 (in Thousands)

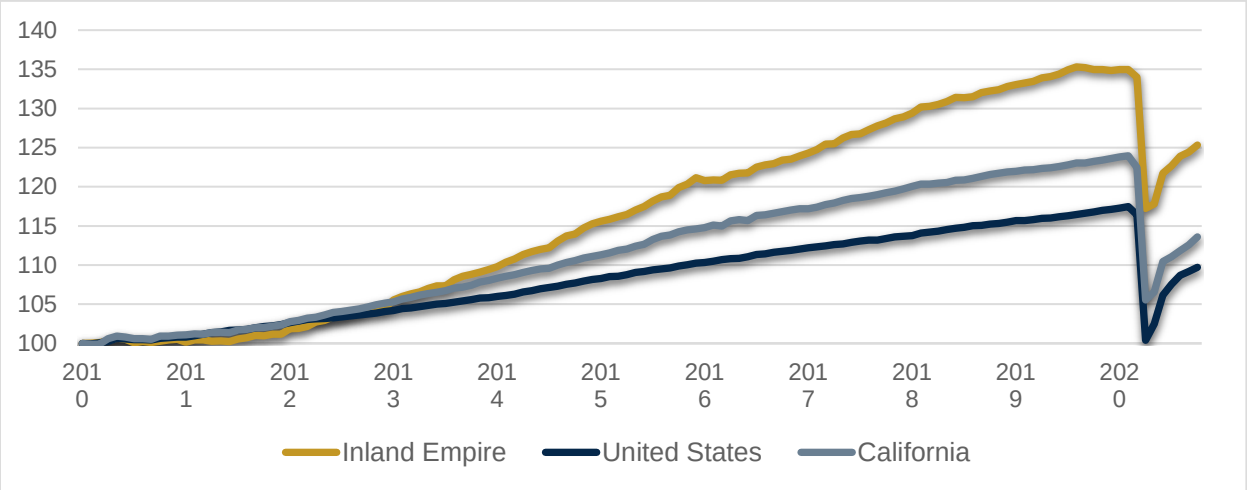
	October 2020	1 Year Percentage Change	2 Year Percentage Change	5 Year Percentage Change
Government	249.45	-4.7%	-3.2%	5.8%
Health Care	230.38	-1.2%	3.3%	20.4%
Retail Trade	170.82	-6.2%	-5.9%	-3.5%
Logistics	146.64	0.0%	8.7%	45.3%
Leisure and Hospitality	126.38	-27.6%	-26.5%	-18.1%
NR/Construction	104.58	-2.0%	-2.7%	16.2%
Administrative Support	97.94	-6.4%	-3.5%	-3.1%
Manufacturing	88.86	-11.6%	-12.7%	-8.9%
Wholesale Trade	66.53	-0.2%	0.5%	8.0%
Financial Activities	44.09	-0.9%	0.8%	0.0%
Professional Services	40.34	-4.9%	-5.6%	3.1%
Other Services	36.97	-18.5%	-19.6%	-16.8%

Information	9.66	-15.2%	-15.0%	-18.6%
Total Nonfarm Employment	**1,438.70**	**-7.1%**	**-5.2%**	**4.5%**

Source: California EDD. Analysis by UCR Center for Economic Forecasting and Development

Employment growth since mid-2020 has kept pace with California and the U.S. (Figure 12).

Figure 12: Indexed Employment Growth for the Inland Empire Compared to California and the United States, 2010 to 2020



Source: California EDD. Analysis by UCR Center for Economic Forecasting and Development

Of all of the industries, Transportation and Warehousing grew at the fastest pace, adding 43,400 jobs, followed by Construction, which added 34,200 jobs and Educational Services, which added 32,100 jobs from 2014 to 2019 (Table 5). The ten fastest growing industries listed in Table 5 added 236,500 jobs in the Inland Empire, or 97.5% of all jobs added in the region between 2014 and 2019.

Table 5: Fastest Growing Industries in the Inland Empire by Number of Workers Added, 2014-2019

	NUMBER OF WORKERS		
			Change
Transportation, warehousing, and utilities	132,736	176,113	+43,377
Construction	140,855	175,017	+34,162
Educational services	146,212	178,322	+32,110

Health care and social assistance			+28,442
Professional and business services	179,225	203,384	+24,159
Other services, except public administration	91,710	108,971	+17,261
Public administration	90,907	107,639	+16,732
Accommodation and food services	136,901	153,296	+16,395
Retail trade	228,703	244,950	+16,247
Manufacturing	169,761	177,367	+7,606
Inland Empire Overall	**1,789,199**	**2,031,743**	**+242,544**

Source: American Community Survey. Analysis by UCR Center for Economic Forecasting and Development

At the industry subsector level, Construction added the most jobs (+34,200), followed by Educational Services (+32,100 jobs) and Warehousing and Storage (+31,700 jobs). These three subsectors added almost 100,000 jobs in the Inland Empire alone. These ten fastest growing subsectors added 197,900 jobs, or 81.6% of the region's total jobs added (Table 6).

Table 6: Fastest Growing Subsectors in the Inland Empire by Number of Workers Added, 2014-2019

	NUMBER OF WORKERS		
			Change
Construction	140,855	175,017	+34,162
Educational services (primary/secondary)	146,212	178,322	+32,110
Warehousing and storage	24,238	55,950	+31,712
Professional and technical services	74,258	97,857	+23,599
Ambulatory health care services	80,489	97,522	+17,033
Nonstore retailers	5,871	21,881	+16,010
Food services and drinking places	118,672	132,936	+14,264
Administration of human resource programs	10,822	21,684	+10,862
Couriers and messengers	11,790	21,327	+9,537
Repair and maintenance	30,535	39,113	+8,578
Inland Empire Overall	**1,7891,99**	**2,031,743**	**+242,544**

Source: American Community Survey. Analysis by UCR Center for Economic Forecasting and Development

In just five years, the presence of e-commerce has expanded significantly (Table 7). Correspondingly, employment in Nonstore Retailers have almost quadrupled (+272.7%) from 2014 to 2019. Employment in Warehousing and Storage (+130.8%) and Administration of Human Resource Programs (+100.4%) have also at least doubled during the same period. The rise of Warehousing and Storage jobs is due to the booming logistics industry in the region, which also likely explains the increase in Transit and Ground Passenger Transportation employment (+88.0%) and Rail Transportation (+33.8%). Administration of Human Resource Programs, which is a

subsector of Public Administration, comprises government establishments primarily engaged in the planning, administration, and coordination of programs for public assistance, social work, and welfare activities.

Table 7: Fastest Growing Subsectors in the Inland Empire by Employment Growth Rate, 2014-2019

	NUMBER OF WORKERS		
	2014	2019	% Change
Nonstore retailers	5,871	21,881	272.7%
Warehousing and storage	24,238	55,950	130.8%
Administration of human resource programs	10,822	21,684	100.4%
Transit and ground passenger transportation	7,885	14,825	88.0%
Couriers and messengers	11,790	21,327	80.9%
Motion picture and sound recording industries	4,046	5,855	44.7%
Chemical manufacturing	11,955	16,542	38.4%
Miscellaneous store retailers	18,766	25,913	38.1%
Membership associations and organizations	18,051	24,803	37.4%
Rail transportation	4,834	6,468	33.8%
Inland Empire Overall	**1,7891,99**	**2,031,743**	**13.6%**

Source: American Community Survey. Analysis by UCR Center for Economic Forecasting and Development

The number of people who work as Home Health and Personal Care Aides; and Nursing Assistants, Orderlies, and Psychiatric Aides have almost quadrupled (+278.3%) from 2014 to 2019, highlighting the Inland Empire's growing needs for basic healthcare services (Table 8). In addition, the number of people working as Counselors, Social Workers, and Other Community and Social Service Specialists (+54.3%) and Religious Workers (+53.0%) also grew substantially, underscoring the region's increasing demand for social services. Although employment in the Arts, Entertainment, and Recreation industry (+9.1%) grew slower than overall employment in the Inland Empire (+13.6%), some of its related occupations are the fastest growing in the region. There are substantially more Media and Communication Equipment Workers (+93.1%) and Entertainers and Performers, Sports and Related Workers (+66.1%) in 2019 than in 2014.

Table 8: Fastest Growing Occupations in the Inland Empire by Employment Growth Rate, 2014-2019

Home Health and Personal Care Aides; and Nursing Assistants, Orderlies, and Psychiatric Aides	14,271	53,987	278.3%
Entertainers and Performers, Sports and Related Workers	6,504	10,802	66.1%
Material Moving Workers	80,196	129,125	61.0%
Religious Workers	5,097	7,796	53.0%
Animal Care and Service Workers	3,732	5,399	44.7%
Inland Empire Overall	**1,7891,99**	**2,031,743**	**13.6%**

Source: American Community Survey. Analysis by UCR Center for Economic Forecasting and Development

Occupational Knowledge, Skills and Abilities

This section highlights the knowledge, skills, and abilities desired by employers across industries for occupations most in demand today as well as for emerging occupations. Tables below list the technical skills as well as workplace success personal attributes or "soft skills" that may be required for a given occupation. See Tables 9 and 10 for the knowledge skills and abilities for the most common occupations in the region and the fastest growing occupations.

Table 9: Desired Knowledge, Skills, and Abilities for Most Common Occupations in the Inland Empire

	Knowledge	Skills	Abilities	Credentials
Material Moving Workers	English Language; Mechanical; Production and Processing; Public Safety and Security; Mathematics	Monitoring; Operation and Control; Monitoring; Critical Thinking; Active Listening;		Usually requires High School Diploma or Higher
Construction Trades Workers	Building and Construction; Mechanical; Mathematics; English Language; Customer and Personal Service	Critical Thinking; Coordination; Active Listening; Monitoring; Speaking	Near Vision; Arm-Hand Steadiness; Manual Dexterity; Multi-limb Coordination; Trunk Strength	Usually requires High School Diploma or Higher
Retail Sales Workers	Customer and Personal Service;	Active Listening; Service Orientation;	Oral Expression; Oral	Usually requires High

	English Language; Sales and Marketing; Mathematics; Clerical	Speaking; Reading Comprehension; Social Perceptiveness	Comprehension; Speech Clarity; Speech Recognition; Problem Sensitivity	School Diploma or Higher
Other Management Occupations	Administration and Management; Customer and Personal Service; English Language; Personnel and Human Resources; Education and Training	Speaking; Active Listening; Reading Comprehension; Critical Thinking; Coordination	Oral Expression; Oral Comprehension; Written Comprehension; Problem Sensitivity; Written Expression	Varies from High School Diploma to Bachelor's Degree or higher
Motor Vehicle Operators	Customer and Personal Service; Transportation; Public Safety and Security; English Language; Law and Government	Operation and Control; Active Listening; Speaking; Critical Thinking; Operation Monitoring	Far Vision; Near Vision; Multi-limb Coordination; Problem Sensitivity; Control Precision	Usually requires High School Diploma or Higher
Information and Record Clerks	Customer and Personal Service; English Language; Clerical; Computers and Electronics; Mathematics	Active Listening; Speaking; Reading Comprehension; Critical Thinking; Service Orientation	Oral Expression; Oral Comprehension; Written Comprehension; Speech Clarity; Speech Recognition	Usually requires High School Diploma or Higher
Healthcare Diagnosing or Treating Practitioners	Medicine and Dentistry; Customer and Personal Service; English Language; Psychology; Biology	Active Listening; Critical Thinking; Speaking; Reading Comprehension; Social Perceptiveness	Problem Sensitivity; Oral Expression; Oral Comprehension; Inductive Reasoning; Deductive Reasoning	Usually requires Associate Degree or Higher
Preschool, Elementary, Middle, Secondary, and Special Education Teachers	Education and Training; English Language; Psychology; Customer and Personal Service; Computers and Electronics	Speaking; Instructing; Active Listening; Learning Strategies; Reading Comprehension	Oral Expression; Oral Comprehension; Written Comprehension; Problem Sensitivity; Written Expression	Varies from High School Diploma to Bachelor's Degree and/or Certification
Supervisors of Sales Workers	Customer and Personal Service; Administration and Management; English Language; Sales and Marketing; Personnel and Human Resources	Active Listening; Speaking; Monitoring Social Perceptiveness; Coordination	Oral Comprehension; Oral Expression; Speech Clarity; Speech Recognition; Problem Sensitivity	Usually requires High School Diploma or Higher

Building Cleaning and Pest Control Workers	Personal Service; English Language; Public Safety and Security; Administration and Management; Chemistry	; Critical Thinking; Time Management; Social; Perceptiveness Speaking	Comprehension; Oral Expression; Speech Clarity; Problem Sensitivity	

Source: O*NET Online. Analysis by UCR Center for Economic Forecasting and Development

Table 10: Desired Knowledge, Skills, and Abilities for Fastest Growing Occupations in the Inland Empire

	Knowledge	Skills	Abilities	Credentials
Material Moving Workers	English Language; Mechanical; Production and Processing; Public Safety and Security; Mathematics	Operation Monitoring; Operation and Control; Monitoring; Critical Thinking; Active Listening;	Multi-limb Coordination; Control Precision; Problem Sensitivity; Near Vision; Manual Dexterity	Usually requires High School Diploma or Higher
Home Health and Personal Care Aides; and Nursing Assistants, Orderlies, and Psychiatric Aides	Customer and Personal Service; English Language; Public Safety and Security; Psychology; Education and Training	Service Orientation; Social Perceptiveness; Active Listening; Speaking; Monitoring	Oral Comprehension; Oral Expression; Problem Sensitivity; Near Vision; Speech Recognition	Usually requires High School Diploma or Higher
Construction Trades Workers	Building and Construction; Mechanical; Mathematics; English Language; Customer and Personal Service	Critical Thinking; Coordination; Active Listening; Monitoring; Speaking	Near Vision; Arm-Hand Steadiness; Manual Dexterity; Multi-limb Coordination; Trunk Strength	Usually requires High School Diploma or Higher
Information and Record Clerks	Customer and Personal Service; English Language; Clerical; Computers and Electronics; Mathematics	Active Listening; Speaking; Reading Comprehension; Critical Thinking; Service Orientation	Oral Expression; Oral Comprehension; Written Comprehension; Speech Clarity; Speech Recognition	Usually requires High School Diploma or Higher
Preschool, Elementary, Middle, Secondary, and Special Education Teachers	Education and Training; English Language; Psychology; Customer and Personal Service; Computers and Electronics	Speaking; Instructing; Active Listening; Learning Strategies; Reading Comprehension	Oral Expression; Oral Comprehension; Written Comprehension; Problem Sensitivity; Written Expression	Varies from High School Diploma to Bachelor's Degree and/or Certification
Business Operations Specialists	English Language; Customer and Personal Service;	Speaking; Active Listening; Reading Comprehension;	Oral Expression; Oral Comprehension;	Varies from High School Diploma to

	Administration and Management; Mathematics; Computers and Electronics	Critical Thinking; Writing	Written Comprehension; Deductive Reasoning; Speech Clarity	Bachelor s Degree or higher
Counselors, Social Workers, and Other Community and Social Service Specialists	Psychology; Therapy and Counseling; Customer and Personal Service; English Language; Education and Training	Active Listening; Social; Perceptiveness; Speaking; Reading Comprehension; Critical Thinking	Oral Expression; Oral Comprehension; Problem Sensitivity; Written Comprehension; Written Expression	Usually requires Associate Degree or Higher
Healthcare Diagnosing or Treating Practitioners	Medicine and Dentistry; Customer and Personal Service; English Language; Psychology; Biology	Active Listening; Critical Thinking; Speaking; Reading Comprehension; Social Perceptiveness	Problem Sensitivity; Oral Expression; Oral Comprehension; Inductive Reasoning; Deductive Reasoning	Usually requires Associate Degree or Higher
Other Management Occupations	Administration and Management; Customer and Personal Service; English Language; Personnel and Human Resources; Education and Training	Speaking; Active Listening; Reading Comprehension; Critical Thinking; Coordination	Oral Expression; Oral Comprehension; Written Comprehension; Problem Sensitivity; Written Expression	Varies from High School Diploma to Bachelor's Degree or higher
Supervisors of Sales Workers	Customer and Personal Service; Administration and Management; English Language; Sales and Marketing; Personnel and Human Resources	Active Listening; Speaking; Monitoring Social Perceptiveness; Coordination	Oral Comprehension; Oral Expression; Speech Clarity; Speech Recognition; Problem Sensitivity	Usually requires High School Diploma or Higher

Source: O*NET Online. Analysis by UCR Center for Economic Forecasting and Development

Current Openings and Most Commonly Desired Certifications

An analysis of current openings and the most commonly desired certifications for the three sectors the region plans to focus on was conducted in late January 2021. At that time, 6,169 jobs were identified in healthcare and these positions most commonly required AHA CPR and First Aid Certification in addition to nursing credentials and certifications and NNCC Certifications. Less common were Social Worker-related credentials and certifications, and National Registry of Emergency Medical Technicians. In Manufacturing, 1,662 current openings were identified, and a Commercial Driver's License was the most commonly desired certification, with a small number requesting CPR, First Aid, PMI and ASQ certifications. A total of 1,552 openings were noted in Transportation and Logistics and similar to Manufacturing, a Commercial Driver's License was the most commonly desired certification. A relatively few number of employers requested CPR and First Aid and the RETA certification in this industry. Please see Table 11.

Table 11: Current Openings and Most Commonly Desired Certifications in the Inland Empire (January 2021)

IERPU Target Sector	Current Openings	Commonly Desired Certifications
Healthcare	6,169	• American Heart Association (AHA) CPR & First Aid • American Red Cross - First Aid Certification • Nursing Credentials and Certifications • Nephrology Nursing Certification Commission (NNCC) Certifications
Manufacturing	1,662	• Commercial Driver's License (CDL) • American Society for Quality (ASQ) Certification • American Heart Association (AHA) CPR & First Aid Certifications • Project Management Institute (PMI) Certifications
Transportation and Logistics	1,552	• Commercial Driver's License (CDL) • Refrigerating Engineers & Technicians Association (RETA) Certification • American Heart Association (AHA) CPR & First Aid Certifications

Source: CalJOBS. UCR Center for Economic Forecasting and Development

Relevant Gaps Between Employer Needs and Workforce Qualifications

The primary characteristic for which we can base this gap analysis is the education level required for current most common and fastest growing occupations and the education level of the Inland Empire workforce. The vast majority of the occupations currently and growing noted above in Tables 9 and 10 only require a High School Diploma or less and 66.9% of the Inland Empire workforce have at least some college, which is above that level of education. However, most of these are also low-wage occupations and higher-wage occupations such as Healthcare Diagnosing or Treating Practitioners require at least an Associate's Degree or higher. Since more than 33% of Inland Empire residents have a High School Diploma or less, and a portion of the 66.9% do not have an Associate's Degree, there is a qualifications gap here. There is also likely an educational mismatch and those with education levels that include at least some college may not have coursework that prepares them for the high-growth occupation.

III. Fostering Demand-Driven Skills Attainment

IERPU Goals and Regional Indicators

In order to meet the needs of the participants, employers and its organizational partners, the IERPU has developed a comprehensive set of goals for this plan. The goals are categorized in five key areas: 1) Regional Sector-Based Career Pathways, 2) High Road Employment System, 3) Access and Inclusion for All, 4) Future of Work and 5) Regional Coordination and Alignment. Please see Table 12 for a summarized list of the regional goals and Appendix B for the goal list, complete with tactics and indicators for each. Goals that intersect with the region's response to COVID-19 (#8, #11 and #14) are highlighted in color in Appendix B.

As noted under tactics for Goal #1, the region will develop four regional indicators:

Regional Indicator 1: Development of a process to communicate industry workforce needs to supply-side partners

Regional Indicator 2: Development of policies supporting equity and defining job quality

Regional Indicator 3: Identification of shared target populations of emphasis

Regional Indicator 4: Deployment of shared/pooled resources to provide services, training, and education to meet target population needs

The IERPU will coordinate with CWDB and ta Technical Assistance Provider Evaluation Team to establish and track outcomes related to the four regional indicators noted above.

Table 12: Inland Empire Regional Goals

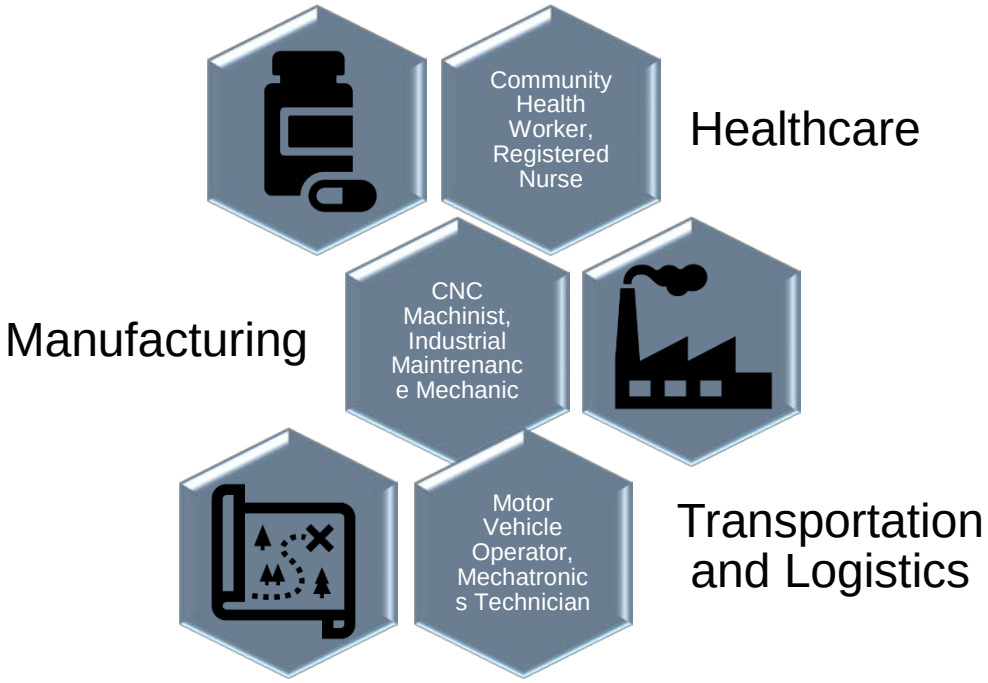
Regional Sector-Based Career Pathways	**#1)** Continue to develop and measure participant success in regional sector-based career pathways for both youth and adults, with a focus on the following sectors: 1) Healthcare, 2) Manufacturing and 3) Transportation and Logistics
	#2) Ensure all pathways are accessible and lead to a living-wage occupation
	#3) Develop pre-apprenticeship and apprenticeship programs in both traditional (e.g. building trades) and non-traditional sectors (e.g. healthcare)
High Road Workforce System	**#4)** Facilitate the necessary partnerships and organizational development among the workforce development boards, America's Job Centers of California, and other key partners to support high road employment
	#5) Develop a small business strategy to support high road entrepreneurship, including the creation and support of high-road jobs
	#6) Work with employers to identify career pathways to high-road employment
Access and Inclusion for All	**#7)** Facilitate community involvement to identify and address issues of race, equity and high road principles for the purpose of promoting improved service delivery, income mobility for individuals with barriers for employment, and growth in the regional economy
	#8) Development of regional, sub-regional and multi-regional strategies in response to COVID-19
	#9) Improve access to technology and build the digital literacy skills of participants in the region
	#10) Improve information and referral system to ensure participants receive the services they need
Future of Work	**#11)** Create a culture of adaptiveness, flexibility and acceptance of change when faced with FOW challenges or major disruptions such as COVID-19
	#12) Respond to the impacts of automation on jobs and career pathways
	#13) Prepare participants to thrive in remote and gig work situations and organizations/employers to ensure these jobs are high road
	#14) Integrate new on-the-job Health and Safety considerations into services (e.g. social distancing, new OSHA or CDC policies likely to come into effect due to COVID-19)
Regional Coordination and Alignment	**#15)** Conduct an organizational analysis/assessment to improve and streamline service delivery efforts
	#16) Increase efficiencies and reduce duplication through regional cooperation
	#17) Professional development, training and capacity building of workforce staff and partners

In-Demand Industry Sectors and Occupations

Based on the Analytical Overview, the IERPU plans to continue developing regional sector pathways in the three sectors with the highest current and emerging demand: 1) Healthcare, 2) Manufacturing and 3) Transportation and Logistics. These three sectors were the region's focus in the prior 2017 – 2020 regional plan and remain the sectors with the most opportunity in the Inland Empire for the next four years.

As noted above in the Analytical Overview, each of these sectors have high road employment opportunities such as Registered Nursing in Healthcare, Industrial Maintenance Mechanic in Manufacturing and Mechatronics Technician in Transportation and Logistics (Figure 13). The education level required for these positions are usually at an associate's degree level primarily, which aligns well with the population of the region as noted in Tables 10 and 11 above. Given the high level of emerging demand in these sectors, there is ample opportunity that facilitates accessibility for participants in the region.

Figure 13: Targeted In-Demand Regional Sectors and Sample Occupations



The approach to developing career pathways in these in-demand industry sectors is captured in the goals the region has collaboratively developed below in Appendix B. Under the first section of the Inland Empire Regional Goals, Regional Sector-Based Career Pathways, the region developed Goals 1-3:

1. **Continue to develop and measure participant success in regional sector-based career pathways for both youth and adults, with a focus on the following sectors:**
    a. **Healthcare**

b. **Manufacturing**
c. **Transportation and Logistics**

2. **Ensure all pathways are accessible and lead to a living-wage occupation**

3. **Develop pre-apprenticeship and apprenticeship programs in both traditional (e.g., building trades) and non-traditional sectors (e.g., healthcare)**

Tactically, the region intends to accomplish the first goal by coordinating with partners; continuing to track labor market information; leveraging a business-to-business approach to employer engagement (such as identifying and using "business champions") to deepen partnerships with employers in the region; ensuring credentials are portable and stackable and promoting lifelong learning. These tactics are all consistent with current activities in the region and will also result in the development of Regional Indicators 1-4 as identified above.

Ensuring that all pathways lead to a living wage occupation requires the development of a definition of living wage at a subregional level because of the variance in cost of living across the region. The CWDB's High Road framework will be used as a guide in determining job quality, including the definition of living wage. In order to make pathways more accessible, the region intends to improve the referral process with technology and integrating virtual services. Additionally, the region will support those who have left the workforce in returning, breaking down silos and reducing competition between workforce agencies working together to build career pathways in the region.

Finally, the region has prioritized the development of pre-apprenticeship and apprenticeship programs, building upon foundational programs at the InTech Center, High Desert Training Center and Riverside Community College District. Through improving program alignment, expanding program capacity and incorporating work-based learning opportunities, the region expects to be able to increase the number of participants in these programs, increase the persistence rate or trainees and develop new pre-apprenticeship or apprenticeship programs.

Responding to the Future of Work

All three of the target sectors identified above will be impacted by changes to the economy brought on by automation, the gig economy and remote work. In order to anticipate emerging demand in these sectors, these concepts are germane to career pathways for both youth and adults. The region took this into account in the planning process, intentionally discussed this with partners during input meetings and developed a specific set of goals related to the "Future of Work" in Appendix B, Goals 11-14:

11. **Create a culture of adaptiveness, flexibility and acceptance of change when faced with FOW challenges or major disruptions such as COVID-19**

12. **Respond to the impacts of automation on jobs and career pathways**

13. **Prepare participants to thrive in remote and gig work situations and organizations/employers to ensure these jobs are high road**

14. **Integrate new on-the-job Health and Safety considerations into services (e.g., social distancing, new OSHA or CDC policies likely to come into effect due to COVID-19)**

Both in response to the changes to the economy that new technology and changing work culture will bring and the long-term impacts of COVID-19, Goal #11 addresses the need to create a culture of adaptiveness in the region. This will include tactics such as creating alignment and trust among stakeholders, improving communication and more specifically, providing support for surge occupations recruitment when needed. An indicator of success is a positive response from employers who are able to recruit from the regional workforce development system to meet changing workforce needs.

Two more goals, Goals #12 and #13, call out responding to and preparing the workforce development system for automation, the gig economy and remote working, ensuring that jobs are high quality. Tactically, it will require reviewing current programs and services to look for opportunities to update them where needed to ensure participants are ready for the changes to existing jobs, or even for new ones that may be created. Building the digital literacy skills of participants will be a keystone of this approach as well as training staff on new technologies in the target sectors. Finally, working with employers to understand how technology, remote work and the gig economy may be changing jobs and how to ensure they are high road jobs will be necessary.

Goal #14 specifically addresses how the pandemic will directly change working conditions on the job, through new health and safety regulations. Workforce development organizations can expect that workspace layouts will change, there may be less individuals in a specific space than before and there may be new standards for cleanliness and sanitization they will need to be aware of. These new regulations will also impact training and in-person services, perhaps impacting the capacity of programs. Demonstrating real-time responsiveness to known and anticipated workplace health and safety changes in addition to policies and procedures for providing services are potential indicators of success.

Implementation of Regional Sector-Based Career Pathways

Assigned Partner Organizations

Implementation of regional sector-based career pathways relies on coordination with key partners. The IERPU consists of the Riverside County Workforce Development Board (RCWDB) and the San Bernardino County Workforce Development Board (SBCWDB), and its primary partners include the agencies listed below in Table 13. In addition, the IERPU works with a number of nonprofit and other support organizations, which participated in the planning process outlined in Appendix A.

Table 13: Assigned Partners

Agency	Regional Partner
California Department of Rehabilitation (DOR)	Inland Empire Regional Office
Community Colleges	Barstow, Chaffey, College of the Desert, Copper Mountain, Crafton Hill, Moreno Valley, Mt. San Jacinto, Norco, Palo Verde,
Adult Education Block Grant (AEBG)	Barstow Area Consortium for Adult Education, Victor Valley Adult Education Regional Consortium, Morongo Basin AEBG Consortium, Desert Regional Consortium, Palo Verde River Students Regional Consortium, S. Riverside AEBG, West End
Economic Development Centers (EDC)	Coachella Valley Economic Partnership, Inland SoCal Link iHub, California Network for Manufacturing Innovation (CNMI) iHub
Small Business Development Centers (SBDC)	Coachella Valley, Inland Empire, Orange County Inland Empire
County Office of Education (COE)	San Bernardino, Riverside
K 12 Career and Technical Education (CTE)	California Department of Education Region 7

Guiding Principles

There are three guiding principles the IERPU and its partners will utilize to foster demand-driven skills attainment in the region:

1. **Equitable Access to Regional Sector-Based Career Pathways for All:** In order to ensure that all participants in the IE region have equitable access to career pathways, strong supports and services need to be in place. Particularly in response to COVID-19, which has exacerbated existing inequities and exposed new ones. The region plans to develop regional, sub-regional and multi-regional responses to the pandemic, facilitating community involvement to identify long-standing as well as emerging issues of racial and ethnic inequities. Specifically, the region has identified access to technology, Wi-Fi, in-person services as a barrier to equity, particularly for remote areas of the region and has strategies to address these issues. They are discussed in detail below and in Appendix B under "Access and Inclusion for All".

   Automation, the gig economy and remote working are a few concepts that will all have an impact on access and inclusion for participants. These "future of work" issues have the potential to dramatically alter jobs tasks, job quality and possibly to eliminate entire job categories. The IERPU plans to address this through creating a culture of adaptiveness, responding to the impacts of automation, gig economy and remote work in the design of career pathways and considering how new health and safety standards will impact jobs. Please see Appendix B under "Future of Work" for more details.

2. **High Road Employment Focus:** The IERPU engages in a number of business engagement activities to regularly receive guidance about industry needs and to guide the development of career pathway programs. The goal is to make each business a true partner in workforce development and not only a customer. Both local workforce boards work with business intermediaries such as Chambers of Commerce to leverage a Business to Business or "B2B" approach. The B2B approach utilizes business champions to recruit their peers to become employer partners with the IERPU and its workforce development partners. This type of partnership provides opportunities for the region to encourage high road business practices such as family-supporting wages (used interchangeably with "living wage" in this document), benefits, safe working conditions, fair scheduling practices, and transparent career advancement opportunities.

   As a partner with the business community, the IERPU regularly looks for opportunities to provide support to regional businesses in new ways. In 2020, the region worked closely with economic development teams in both counties to support businesses impacted by COVID-19. This included outreach related to Rapid Response and other layoff aversion programs. As an example of a new approach, SBC staff made an average of 1,000 business calls per week to offer the assistance of the SBC COVID-Compliant Business Partnership Program. The program included up to $5,000 in emergency funding and access to Personal Protective Equipment (PPE) at cost. Being a valuable service provider to businesses in multiple ways builds a stronger partnership and new opportunities for participants with these employers. The IERPU intends to facilitate organizational development, develop a small business strategy for supporting high road entrepreneurship and to work closely with employers to identify career pathways to high road employment. Please see below and Appendix B under "High Road Employment System" for more details.

3. **A Cohesive Regional Workforce Development System:** The three guiding principles rely on having a cohesive regional workforce development system. Both counties are committed to ensuring that the IERPU is successful in delivering accessible career pathways to the middle class and intend to build upon its successful regional partnership and address outstanding issues as they are identified. This begins with an assessment of the region's strengths and weaknesses in terms of coordinated service delivery, increasing efficiencies while reducing duplication and professional development, training and capacity building of workforce staff and partners. Please see below and Appendix B under "Regional Coordination and Alignment" for more details.

Regional Organizing Mechanisms

On an ongoing basis, the IERPU Regional Goals will be reviewed against progress made on the indicators that are identified for each goal in Appendix B. There are three key mechanisms for establishing regional indicators and tracking progress on these regional goals:

Implementation of the IERPU Regional Plan : As noted above, the region submitted a proposal for funding its regional planning process, which includes the hiring of a consultant to help establish benchmarks, develop Regional Indicators 1-4 and set indicators for measuring progress. The Joint Annual AJCC MOU Partner Meetings will also be a key tactic for operationalizing the regional plan.



Regional Strategic Planning: In addition to regular local WDB meetings for both SBCWDB and RCWDB, the IE region has the IERPU Steering Committee. This body supports specific regional projects such as Prison to Employment (P2E) in addition to broad-scope regional organizing, training coordination and support. Members from both county workforce boards serve on this committee in addition to other partner organizations. As noted above, a Joint AJCC MOU Partner Meeting is held annually.

Local Strategic Planning: On an ongoing basis, both SBCWDB and RCWDB have local planning processes, focused on ensuring the workforce development system is appropriately responsive to business and community needs. The WDBs rely on LMI data and occupational outlooks from the most current data sources. Occupational outlooks are cross-referenced with the O*NET for education, experience and skills requirements as well as entry-level wage information that is used in identifying workforce needs. These analyses are also used to determine the target industries that the WDBs will prioritize as they plan and implement the local workforce development strategies. Strategic planning sessions of the WDBs are usually scheduled annually for each WDB to identify adjustments to be made to plans or developing new goals as needed.

IV. Enabling Upward Mobility for All Californians

High Road Workforce System

In alignment with the CWDB state workforce plan, a high road workforce development agenda will require regional systems that support high road employment. It is the intention of the IERPU and its partners to prioritize working with employers who provide quality, high road jobs with family-sustaining wages and comprehensive benefits. The region also has a plan for developing a policy related to job quality. This is outlined in the set of regional goals titled "High Road Workforce System" in Appendix B, Goals 4-6:

4. **Facilitate the necessary partnerships and organizational development among the workforce development boards, America's Job Centers of California, and other key partners to support high road employment**

5. **Develop a small business strategy to support high road entrepreneurship, including the creation and support of high-road jobs**

6. **Work with employers to identify career pathways to high-road employment**

Employer-Driven Training Model

The employer driven training model is a collaborative effort with employers, education partners and the Workforce Development Boards (WDBs). It emerged as a strategy to better support regional businesses as they recover from the COVID 19 pandemic. This model allows the employers to select employees prior to the start of their training, ensuring that participants will be hired upon completion of the training. So far, it has proven to be a successful approach to both a CNA and a Truck Driving training cohort. The region is considering expansion of the model to the manufacturing sector in response to employer needs.

With relation to employers offering high road jobs, the IERPU intends to leverage its industry consultants to work with employer on identifying high-road employment opportunities. Industry consultants for healthcare and manufacturing have been active since 2016 (with a several month interruption in activity for manufacturing in 2020). An industry consultant for transportation and logistics was added in 2019. A new consultant for manufacturing was recently identified in late 2020 and is coming on board at the writing of this plan.

An example of the industry consultants' responsibilities that will prioritize high road employment is in healthcare where the consultant will assist the region to partner with the LAUNCH Initiative to continue to promote the Community Health Worker (CHW) training program for high road healthcare jobs.

In response to the needs that small businesses in the region express, the IERPU and its partners will identify solutions that include high road jobs. A strong, high-functioning workforce leads to a strong business, creating jobs that pay a living wage, include benefits, and are flexible and supportive to the needs of workers. This goal will also include developing and augmenting entrepreneurship training with education about high road jobs and why they should be part of a business plan. Finally, training will be provided to small business employees to help them with meeting the demands of a high road job and helping make a small business successful.

As described in Goal #4, the region will convene an annual Joint AJCC Partnership Meeting with MOU partners from both counties. An outcome of this meeting will be a formal policy for job quality. The partners will make use of regional LMI data, a cost-of-living assessment for the region, discussion with employers as noted in Goal #1, and feedback from other partners and participants to develop the policy. Aligned with the CWDB Unified Strategic Workforce Development Plan, the region will explore elements of job quality related to family-supporting wages, benefits, safe working conditions, fair scheduling practices, and career advancement opportunities that are transparent.

Finally, the region will develop a formal policy related to job quality as part of the regional plan implementation. This is accomplished through coordination with a consultant to establish benchmarks, develop and measuring progress towards Regional Indicators 1-4. Regional Indicator 2 includes the development of a formal policy related to job quality. The CWDB's High Road Framework will be a key tool in developing this policy and it will include elements of equity, climate and what makes high-quality jobs such as paying a living wage. The annual Joint AJCC Partnership meeting, noted under tactics in Goal #4, will also be leveraged to determine what will be included in this policy.

Equity and Economic Justice

As noted in the Analytical Overview, the IE region is both a culturally diverse and a geographically vast area. There is a prevailing interest to ensure all participants have equitable access to career pathways, no matter where they live or the services they need to be successful. The IERPU has developed a set of goals, with associated tactics and indicators for success under the category of "Access and Inclusion for All" in Appendix B, Goals 7-10:

7. **Facilitate community involvement to identify and address issues of race, equity and high road principles for the purpose of promoting improved service delivery, income mobility for individuals with barriers for employment, and growth in the regional economy**

8. **Development of regional, sub-regional and multi-regional strategies in response to COVID-19**

9. **Improve access to technology and build the digital literacy skills of participants in the region**

10. Improve information and referral system to ensure participants receive the services they need

Goal #7 includes hiring a consultant to establish benchmarks and new strategies, including for access and inclusion. It will include an organizational analysis to determine barriers for specific populations in the system and opportunities to reduce these barriers to entry. It will also include regular community conversations, engagement and feedback to ensure that the IERPU is aware of and addressing any outstanding needs for access and inclusion in regional career pathway programs.

In response to the COVID-19 pandemic as well as in relation to access and inclusion, a response at multiple levels – regional, sub-regional and multi-regional – is necessary. It will take regular engagement with partners, participants and employers to develop new strategies, both short- and long-term to help the region's economy recover from the pandemic. Providing more accessible and safer in-person services through co-location of staff in partner agencies is an important tactic to achieve this. Finally, the pandemic also highlighted an ongoing need to improve the access to technology and build digital literacy in the region. The region intends to support efforts to identify and connect communities who need better access and disseminate information at AJCCs and partner organizations as well.

Other indicators of success for this group of goals include new policies to support equity, access and inclusion that are co-developed by regional partners, benchmarks on current performance and measurements to identify success in this area. In order to address the need for digital literacy, AJCCs and partner organizations will add training to workshops and programs. Finally, new tools and resources will be identified or created to assist workforce staff with ensuring access and inclusion for all.

Across WIOA core partners, Community Colleges, Adult Education Programs and community-based organizations the IERPU will also identify shared target populations of emphasis as part of the development of Regional Indicator 3.

Access to Programs for Special Populations

The IERPU partners, with other agencies and community-based organizations (CBOs), continue to serve multiple other special populations and subpopulations including low-income individuals, foster youth, disconnected youth, English Language Learners (ELL), and Persons with Disabilities (PWD). Both WDBs have leveraged these partnerships as part of a regional strategy as well as program development and co-enrollment of shared customers.

Partnerships will continue to be developed to reach and serve special populations throughout the region. IERPU partners rely on the Inland Regional Center (IRC) and the Department of Rehabilitation (DOR) for connections and referrals to PWD living in Independent Living Centers (ILC). IRC and DOR case manage and provide services to PWD including those residing in ILCs and other independent living facilities in the Inland Empire. Co-enrollment of special populations with CBOs allows for additional services to be provided including supportive services, mental health services, Healthcare, training, counseling, childcare, among others as needed to ensure customer success.

During the annual Joint AJCC Partnership Meeting with both counties that is outlined in Goal #4, a regional planning process will be developed to review target populations to look for any necessary service strategy adjustments or additions. This will be based on the partners' observations about the needs of the community, specific population needs and relevant regional demographic data.

Working with Employers and Training Providers to Ensure Equal Access

As noted under "Access and Inclusion for All" above, the region is committed to working with employers, training providers and all partners to ensure that historically unserved and underserved have equal access to regional sector pathways, earn and learn opportunities and supportive services.

Due to the COVID-19 pandemic, the region has set a goal to develop regional, sub-regional and multi-regional strategies to address access and inclusion issues that were either created or exacerbated by the pandemic (see Goal #8). The strategies will address ways to ensure regular engagement of community partners in relation to health and safety issues, addressing both short- and long-term needs of participants (e.g., the availability of virtual services while the pandemic is still a significant concern vs. returning to more in-person services when it is safe to do so).

As described earlier, the region is very geographically large and access to services in remote parts of either county is an issue. Goal #9 addresses this issue by working with regional agencies to advocate for improved broadband access infrastructure, offering access to Wi-Fi in all regional partner locations and building the digital literacy of participants. Indicators of success here include access to affordable and accessible Wi-Fi in the majority of residential locations in the region and increased access to digital literacy training through AJCC workshops and programs or through partner collaboration.

Finally, the region will develop a formal policy related to equity as part of the regional planning process. Both counties have already formally recognized racism as a public health crisis, which provides a strong foundation for developing the policy. This will be accomplished through coordination with a consultant (Goal #7) to establish benchmarks, develop and measuring progress towards Regional Indicators 1-4. Regional Indicator 2 includes the development of a formal policy related to equity. The annual Joint AJCC Partnership meeting, noted under tactics in Goal #4, will also be leveraged to determine what will be included in this policy.

Providing Access to Jobs for Justice Involved Individuals: The Inland Empire Prison to Employment Initiative (P2E)

The Inland Empire Prison to Employment Initiative connects individuals who were formerly incarcerated and other justice involved individuals with high demand jobs in the labor market with the goal of reducing recidivism. Both Riverside and San Bernardino Counties have partnered with several community based organizations to provide the services including Operation New Hope, Center for Employment Opportunities, Inland SoCal United Way, San Bernardino Community College District, Goodwill, Reintegration Academy and Starting Over, Inc.

These organizations assist individuals with training and employment opportunities including unsubsidized and transitional (subsidized) employment opportunities. In addition, participants are able to access case management and supportive services to pave the way to a successful job.



V. Aligning, Coordinating, and Integrating Programs and Services

System Alignment

Having all workforce system partners moving together toward a shared purpose requires continuous assessment of efficiencies and gaps, followed by changes to improve efficiency. Agreeing on good communication and written agreements are important, but do not tell the whole story of proper system alignment. Keeping this in mind, the IERPU has developed a robust set of goals for system alignment, categorized under "Regional Coordination and Alignment" in Appendix B, Goals 15-17:

15. **Conduct an organizational analysis/assessment to improve and streamline service delivery efforts**

16. **Increase efficiencies and reduce duplication through regional cooperation**

17. **Professional development, training and capacity building of workforce staff and partners**

The next steps for system alignment will be identified through an organizational assessment conducted by a committee comprised of county workforce staff and regional partners. The committee will identify strengths, weaknesses, opportunities and threats that can be used to develop strategies to close gaps, increase efficiencies, reduce duplication and ensure workforce services are as efficient and effective as possible. Tactics for implementing these new strategies will likely include working with various regional coalitions, business organizations and AJCC system partners in both counties.

Other key tactics that will increase system alignment goals include generating, sharing and utilizing quarterly reporting to track progress. It is important for WDB directors, project leads and service delivery partners to be on the same page with current progress as they make decisions about service delivery strategy. In addition, the region will ensure WDB members from both boards participate in AJCC MOU partner meetings at regular intervals. This gives them a better understanding of the tactical challenges and needs of the day-to-day operations as they help shape regional strategies.

Finally, professional development, training and capacity building of workforce staff and partners will be conducted as part of system alignment. Collaborating as a region, the number of workforce staff trained will be tracked and a method to determine impact of the training will be implemented. The local plans for both San Bernardino County and Riverside County contain additional details about the content of workforce staff training.

Joint Annual AJCC MOU Partner Meeting

On an annual basis, the two AJCC MOU Partner groups from both SBCWDB and RCWDB will co-develop an agenda and meet to discuss region-wide workforce activities in order to align and coordinate efforts. Generally, the group will identify needs for coordination among participant services, employer engagement and support services for the shared populations. This body will be a core part of developing Regional Indicators 1-4, benchmarking current activities and setting metrics to determine success against the four indicators. Another priority for this group during the term of this plan is to assist in coordinating capacity building for MOU partners and training for staff.

IERPU MOU and Administrative Cost Arrangements

The RCWDB and SBCWDB entered into a MOU in April of 2018 to formalize their partnership as the IERPU, agree to coordinate on regional planning and implementation, staff and workforce board training and to jointly carry out tasks that are outlined in grant funding from the CWDB. It also established a framework for service agreements between the two counties for subgrants received by either county related to regional workforce development. As one of the first agreements of its kind in the state, it has served as a model for other regions. Please see Appendix C for the complete agreement (to be added in final draft).

As Local Workforce Development Areas (LWDAs), workforce funds are awarded separately from CWDB with either county serving as the administrative and fiscal lead. The MOU created as an "umbrella" agreement for the use of regional funds per IERPU regional WIOA plans, allows for sharing of funds between the two counties, regardless of the designated administrative lead.

<u>Scope of Services in the MOU:</u>

i. Work with county staff and the CWDB staff to deepen regional collaborations
ii. Develop and build workforce/education/economic development partnerships
iii. Engage employers as full partners in the workforce system
iv. Support the implementation of regional activities

A primary subgrant the two workforce boards officially coordinate together on under the terms of this MOU is the state Regional Plan Implementation (RPI) grant, currently the 4.0 iteration. A few activities the counties will coordinate in the current cycle include:

- Stakeholder engagement, and inclusion, strategic partnership development within and across the region (supporting strategic partnership development in singular communities and counties, sub-regional partnership initiatives, and/or expanding or building partnerships across multiple jurisdictions).
- Facilitating community conversations, engagement, and/or training on issues of race, equity and high road principles for the purpose of promoting improved service delivery, income mobility for individuals with barriers for employment, and growth in the regional economy.
- Convene annual Joint AJCC Partnership meeting with Riverside, San Bernardino County and AJCC partners to share best practices, review labor market data and regional plan activities.

In the last planning period, RPI 3.0, the region developed a workplan and collaborated on included activities such as the IERPU Steering Committee (see above under "Regional Organizing Mechanisms"), developing contracts for manufacturing and healthcare consultants, Next Gen Logistics/Transportation Partnership meetings, regular bi-weekly staff meetings including Business Services Solutions and training for participants in the targeted industry sectors.

VI. Conclusion

The IERPU looks forward to implementing this regional workforce development plan with its partners over the next four years. While the data has pointed the region toward specific industries for focusing its sector-based career pathway development efforts - namely in Healthcare, Manufacturing and Transportation and Logistics - there are other important considerations for the regional workforce development system. This plan seeks to balance the employment demand observed in the data with the future of work, access and inclusion, building a high road employment system and ensuring regional system coordination - all while continuing to manage the economic recovery from COVID-19.

With the guiding principles of creating equitable access to regional, sector-based career pathways for all, a high road employment focus and maintaining a cohesive regional workforce development system, the IERPU will continue to realize its vision of a reinvented regional system that engages business and industry in identifying high quality jobs and designing training programs to prepare a competitive workforce.

Appendix A: Stakeholder and Community Engagement Summary

As part of the plan development process, the IERPU held a series of interactive input sessions to engage its stakeholders and gain valuable insight for community needs and resources to develop proposed goals.

Process

Sessions and Attendance

Mode of Outreach	Target of Outreach	Summary of Attendance	Comments
Virtual Conference	Assigned Partners, AJCC MOU Partners, Service Providers and other Stakeholders	126* and 41	Sessions held 12/17/20 and 1/13/21
Workforce Development Board Meeting Workshop (Virtual)	San Bernardino County Workforce Development Board (Planning Workshop)	Approx. 15	Workshop held at regular board meeting 12/16/20
Virtual Conference	Small Working Groups of San Bernardino County Workforce Development Board	2- 4 board members per session	Small group discussions held with board members 1/4/21, 1/6/21, 1/12/21, 1/21/21
Workforce Development Board Meeting Workshop (Virtual)	Riverside County Workforce Development Board (Planning Workshop)	83	Board meeting called specifically to discuss proposed plan goals on 1/11/21
Virtual Conference	Regional Employer Partners	65	Session held 1/20/21

* 126 were registered but technical difficulties with Zoom kept attendance to 100 during the session. Participants who were not able to attend on 12/17/20 were invited to attend on 1/13/21

Format

All sessions were held via Zoom and leveraged a collaborative whiteboard tool, Miro. The sessions included a mix of presenting information and then collecting input in small breakout rooms (max of 20 people) per breakout.

In larger sessions, information was added to the shared board space by a facilitator; in smaller sessions, individuals were given a brief training and added content to the board themselves for a virtual "gallery walk" to provide input.

After small group breakouts, we would debrief as a group.

Analysis

Review of the input sessions including levering the "top 3" presented by each breakout area (if the meeting had such a report back) as well as looking for repeated ideas/phrases, and the main facilitator's observation of ideas that were well received during the course of each discussion.

Feedback

The workforce development boards received overall positive feedback that the meetings were highly engaging and inclusive, seeking input from both vocal participants, as well as leveraging chat feature to also incorporate feedback provided by less vocal participants – this allowed for a more inclusive participation format.

Breakout room facilitators reported that they were able to engage all participants effectively and keep participation high.

Nearly all participants in sessions stayed online and engaged for the full meeting time.

Synthesis of Input

Overarching themes:

- Work collaboratively to avoid competitive duplication of services, including referral system and stronger communication; "warm hand-offs." Partner with stakeholders to identify and break down silos.
- Better shared data – both service provider, as well as labor market and state level data (e.g., ETPL).
- Leveraging virtual services – the surge forward in using Zoom during COVID-19 broke down seeming barriers to working virtually with clients, and also identified barriers to access for some members of the community.
- All groups clearly identified alignment with various partners in the education system, not just K-12, but also adult education, community colleges
- Partnering with employers both to review and understand data, and also take time to educate and engage them on crucial topics. Employers can be informed of the new terms/thinking of the workforce system.
- Leveraging and engaging workforce partners in labor market data so everyone is on the same page about trends and projections.
- Protect small businesses. "Mom and pop" business are a staple of our economy, and can get quickly left behind as things change.
- Asset mapping surfaced in several conversations as a possible next step to identifying resources, looking for duplication of services/possible partnerships, and lifting up the assets of the community overall. They also specified some best practices to inform the region that will help spur things ahead.
- All groups discussed the disparate impact on vulnerable populations, and that serving these communities will be as much about workforce services as mental health, housing and other supports that take into consideration the social and economic impacts of the pandemic as it exacerbated individual/family challenges.
- Discussed ensuring the different needs of rural vs. urban areas, and keeping in mind the variation in industries across the region.

Major Discussion Topics by Theme

Access & Inclusion 	• Virtual services: leverage engagement that is possible when you can use tools like zoom well, and the flexibility of virtual service offerings. • Digital divide: ensure all have high speed internet, and give special attention to reaching and understanding customers without internet • Build platforms to improve digital literacy. • Focus on education by building a stronger connection to the K-12 system, and focus CTE as well as adult education. Ensure that these programs target under-represented communities. • Employer engagement will be crucial in understanding how to improve access. • Build capacity by getting information out, maybe rebranding • Focus on increasing warm hand-offs, and seamless interagency communication. • Create transparency with organization charts, communication and increasing representation from under-represented groups in decision-making.
High Road Employment System 	• Remember small business – especially “mom and pop” in thinking of solutions. • Create a central convener, and bring together the employers. Make sure they see value when they come to the table – employers that need high skill workers will want to participate. Engagement of businesses around high-road employment will be crucial, and language to frame it. • Leverage human centered design to build the mode, using new methods and ideas that will help identify innovations like industry-specific incubators. • Look at new training opportunities – either by focusing on a new audience, such as upskilling adults and/or leveraging adult schools; OJT, incumbent worker training, and low-cost training and certifications. • Identify and increase access to scholarships, as well as consider deeper apprenticeship programs.

Career Pathways to the Middle Class 	• Apprenticeship Programs - building trades and non-traditional Industries. Some industries are established, but need to focus on industry where there is more opportunity. • Engaging with businesses and the education systems, largely to increase partnership and specifically to raise up awareness for students <u>and</u> parents to jobs which do not require a 4-year degree • Begin with the end in mind – leverage labor market data to forecast demand, and work with employers to clearly mine the data and clarify needs. • Improve the eligibility process for pathway opportunities, and ensure the pathways focus on living-wage jobs and that have a progression to better paying. • Make sure it is clear that career pathways are both for youth and adults
COVID-19 	• Consistent collaboration and communication emerged as both a strength of what emerged during the crisis, and also something to focus on moving ahead. • Engaging with the community and employers will be essential in addressing what "normal" will be moving ahead. The pandemic forced partners to embrace some automation, and adapt quickly. All sessions discussed how to continue the flexibility, creativity and quick pivoting that partners did during the most restrictive of pandemic restrictions. • The input strongly reflected that we are not getting back to "normal" but rather the pandemic revealed capacity to gear-up quickly and address online-learning. • The pandemic also highlighted disparities for vulnerable populations, in terms of (and not limited to) underlying health and mental health issues, and digital divide challenges. • Ensuring safety of all workforce partners will be an ongoing concern – partners had to double their "footprint" to ensure safety, and navigate the logistics of accessing PPE/safety equipment. *NOTE: this began as a separate discussion group during input sessions, but the impact of COVID-19 was discussed in every group.*

Future of Work	
	• Culture shift is crucial: be flexible, adaptive and build in contingency plans so that pivoting because a workforce-wide skill. • COVID-19 presented a moment of opportunity to push ahead virtual work, as well as conversations about business efficiency and profitability – but there are still challenges with understanding productivity, trust and digital security. Trust, in particular, repeatedly surfaced as an issue. Also, impacts of COVID-19 will have a lasting impact on how we do business, so we need to embrace that. • Build a strong connection between education system – and its curriculum – to employers so that change is coordinated with all the stakeholders in the system. Impact of robotics, augmented reality and innovation in general will be important – <u>and</u> how to use these innovations to support education/21st Century curriculum. • The question surfaced, and an opportunity to continue the conversation, around "what does competitive look like?" • Helping employers "skill up" around issues like security/privacy, artificial intelligence, AND addressing racial equity. • Leverage partners like the AJCC. • Empowerment was another key theme – both for individuals (vulnerable populations, those with disabilities), as well as small businesses. Addressing underlying issues like the digital divide, housing and health need to be part of the plans going ahead. • Driving less will cause changes, and we do not understand this yet.

Appendix B: Inland Empire Regional Workforce Goals

Below are the IERPU Workforce Goals for 2021-2024, along with associated tactics (how goals will be accomplished) and indicators (how success will be achieved). Goals highlighted in color are part of the region's response to COVID-19.

Regional Sector-Based Career Pathways		
Goal	**Tactics**	**Indicators**
1. Continue to develop and measure participant success in regional sector-based career pathways for both youth and adults, with a focus on the following sectors: • **Healthcare** • **Manufacturing** • **Transportation and Logistics** *Note: the region will also continue to pursue other emerging sectors and occupations as they are identified.*	• Coordinate with partners to implement IERPU's RPI 4.0 proposal • Utilize labor market information, workforce board guidance and feedback from employers to ensure strategies are relevant and effective • Leverage a business-to-business (B2B) approach and deepen partnerships with employers in the region • Ensure credentials are portable and stackable through coordination among regional partners • Promote lifelong learning as part of career pathway development	• **Regional Indicator 1:** Development of a process to communicate industry workforce needs to supply-side partners • **Regional Indicator 2:** Development of policies supporting equity and defining job quality • **Regional Indicator 3:** Identification of shared target populations of emphasis • **Regional Indicator 4:** Deployment of shared/pooled resources to provide services, training, and education to meet target population needs
2. Ensure all pathways are accessible and lead to a living-wage occupation	• Develop an agreed-upon definition of living wage that is based on consistently and readily accessible	• **Regional Indicator 2** (above) • System in place to track co-enrolled participants to engaged

	metrics and able to be regularly (e.g., annually) updated • Improve the referral process by utilizing technology, integrating virtual and in-person services • Support people who have left the workforce in retraining and returning to jobs in target sectors, particularly those impacted by job loss in retail and hospitality sectors • Improve efficiency through breaking down silos and reducing competition between agencies • Leverage the CWDB High Road Framework to guide the definition of job quality and high road employment	them more holistically throughout their career path • Definition of high road occupations for the Inland Empire (**Regional Indicator 2**) • Definition of living wage at a subregional level
3. Develop pre-apprenticeship and apprenticeship programs in both traditional (e.g., building trades) and non-traditional sectors (e.g., healthcare)	• Improve program alignment and expand pre-apprenticeship and apprenticeship opportunities in the region • Leverage existing apprenticeship programs at InTech, High Desert Training Center, and Riverside Community College District • Incorporate work-based learning opportunities to gain hands-on experience where possible	• Increase in the # of participants in existing apprenticeship programs • Increased persistence rate in training programs and # of job placements • Development of new pre- and/or standard apprenticeship programs in target sectors
High Road Workforce System		
Goal	**Tactics**	**Indicators**
4. Facilitate the necessary partnerships and organizational development among the	• Convene annual Joint AJCC Partnership meeting with Riverside, San Bernardino County	• **Regional Indicators 1-4 (above)**

workforce development boards, America's Job Centers of California, and other key partners to support high road employment	and AJCC partners to share best practices, review labor market data and regional plan activities, and determine the four regional indicators • Coordinate with RPI 4.0 Technical Assistance Provider Evaluation Team to establish and track outcomes • Assessment of critical infrastructure; management and facilitation of organizational change where needed • Staff professional development and organizational capacity building • Regional planning process to develop additional identified target populations. • Continuing to assess how COVID-19 has impacted employers and customers	• New and/or enhanced services and practices that support high-road employment
5. Develop a small business strategy to support high road entrepreneurship, including the creation and support of high-road jobs	• Listen to the needs of small businesses • Offer more options for entrepreneurship training • Training targeted to small business employees to meet higher performance standards	• Development of 3-4 digital tools to support high-road entrepreneurship and high-road jobs • Provide access to high-quality entrepreneurship training for small business owners and youth
6. Work with employers to identify career pathways to high-road employment	• Leverage industry consultants to work with employers to identify high-road employment opportunities and necessary skills and qualifications	• Identification of required skills and qualifications for high-road employment in target industries • **Regional Indicator 1** (above) • **Regional Indicator 2** (above)

	• Empower business engagement staff at County and AJCCs to identify and engage high-road employers	
Access and Inclusion for All		
Goal	**Tactics**	**Indicators**
7. Facilitate community involvement to identify and address issues of race, equity and high road principles for the purpose of promoting improved service delivery, income mobility for individuals with barriers for employment, and growth in the regional economy	• Follow County procurement procedures to contract with a consultant to assist with establishing benchmarks, developing and measuring progress towards Regional Indicators 1-4 • Organizational analysis/assessment to improve/streamline service delivery efforts. • Leverage regular community conversations, engagement, and/or training to surface issues and potential solutions • Deployment of shared/pooled resources to provide services, training, and education to ensure equity, access and inclusion	• **Regional Indicator 2:** policy for equity (above) • **Regional Indicator 3:** shared target populations (above) • Established benchmarks and measurements to track progress towards ensuring equity, access and inclusion • The development and/or obtainment of tools to assist workforce staff with ensuring access and inclusion • Development of **Regional Indicators 1-4** (above)
8. Development of regional, sub-regional and multi-regional strategies in response to COVID-19	• Regular engagement with partners, participants and employers to understand health and safety issues • Development of new strategies to address issues, both short- and long-term • Provide more accessible and safer in-person services through co-location of staff in partner agencies	• Coordinated regional, sub- and multi-regional strategies to address layoffs through Rapid Response and other services • Adjusted participant service delivery strategies • Co-locating staff in remote areas of the region for in-person services in county offices, libraries, community colleges and nonprofit agencies

9. Improve access to technology and build the digital literacy skills of participants in the region	• Support efforts to identify communities with limited Wi-Fi / internet access and a plan to improve access, working with appropriate local agencies • Disseminate information about Wi-Fi access for participants in all regional AJCCs and/or through partner collaboration • Building digital literacy modules into existing training and services	• Access to affordable and accessible Wi-Fi in the majority of residential locations in the region • Increased access to digital literacy training through AJCC workshops and programs or through partner collaboration
10. Improve information and referral system to ensure participants receive the services they need	• Explore 1-2 potential technology solutions for information and referral management • Develop standard procedures for referrals between agencies that improve the uptake of new services by participants	• The selection and implementation of an information and referral system • Final standard procedures for referrals between agencies
Future of Work		
Goal	**Tactics**	**Indicators**
11. Create a culture of adaptiveness, flexibility and acceptance of change when faced with FOW challenges or major disruptions such as COVID-19	• Create alignment and trust among employers, training providers, education and public agencies in responding to a changing environment • Improve communication and alignment among regional partners (see Regional Coordination and Alignment) • Support for surge occupation recruitment efforts from Business Services staff	• Development of metrics for measuring and determining effectiveness of communication and culture change • Positive response from employers in response to a changing economic environment

12. Respond to the impacts of automation on jobs and career pathways	• Review programs and services to participants for potential impacts due to automation and update as necessary • Provide professional development to organizational staff to better understand automation and specific technologies relevant to target sectors • Gather feedback from employers on how technology is changing in the workplace and what skills and qualifications are needed	• Identification of 3-4 new programs or augmentation of existing programs to address automation in a target sector • Offering at least one new professional development opportunity to staff related to automation and new technologies
13. Prepare participants to thrive in remote and gig work situations and organizations/employers to ensure these jobs are high road	• Building digital literacy skills for participants (see Access and Inclusion) • Preparing participants for how to identify and perform in high-quality gig and remote work opportunities, including learning employability skills • Working with employers to identify remote work opportunities and skills/qualifications, etc. • Working with employers to ensure gig and other contingent working arrangement create high road jobs	• Increased access to digital literacy training through AJCC workshops and programs or through partner collaboration • Employers, participants and workforce partners are coordinating to ensure job opportunities that are remote or gig/contingent by nature are considered high road, as defined by job quality standards developed in **Regional Indicator 2** (above)
14. Integrate new on-the-job Health and Safety considerations into services (e.g., social distancing, new OSHA or CDC policies likely to come into effect due to COVID-19)	• Monitor local, state and federal guidelines related to public health and employment • Prepare partners and participants for anticipated working environments with more social distancing, more remote working	• Real-time responsiveness to known and anticipated health and safety considerations for services and employment • Include awareness of new working conditions in participant services and training

	arrangements and stricter health and safety standards • Business Services teams share best practices and resources with businesses	• Policies and procedures for providing services that are responsive to new guidelines and anticipated on-the-job working conditions
Regional Coordination and Alignment		
Goal	**Tactics**	**Indicators**
15. Conduct an organizational analysis/assessment to improve and streamline service delivery efforts	• Assemble a committee to conduct a strategic planning session for regional workforce development staff	• Identification of Strengths, Weaknesses, Opportunities and Threats (SWOT analysis) • Set of strategies that leverage strengths, take advantage of opportunities, address weaknesses, and plans for potential threats • Documented clarification of roles between WDBs, AJCCs MOU Partners, County workforce staff and other partners
16. Increase efficiencies and reduce duplication through regional cooperation	• Coordinate with regional coalitions, business organizations, AJCC System partners, community colleges, etc. • Identify and share related and relevant state and federal grant projects that should be aligned/coordinated with the regional effort • Work with Regional Training Coordinators, regional coalitions, professional development partners, and the CWDB to build capacity of LWDB staff and partners.	• Increased capacity and local technical assistance planning and local board development to incorporate strategies for system alignment and upward mobility for residents • Participation in a minimum of two statewide meetings per year • Participation in meetings with LWDBs and partners to keep them informed about current regional initiatives

	• Receive and review regional initiative quarterly reports, ensure report(s) are shared with LWDB directors and project leads • Have members from both WDBs participate in MOU partner meetings	
17. Professional development, training and capacity building of workforce staff and partners	• IERPU will promote quality services by collaborating on professional development and staff training leveraging regional training coordination funds and other regional funding	• **Regional Indicator 4** (above) • Track number of workforce staff trained and evaluate impact of professional development

Appendix C: Public Comments Received that Disagree with the Regional Plan

During the public comment period, only one response was received in relation to the draft Inland Empire Regional 2021-2024 Workforce Development Plan. The response primarily provided a number of copy edits and some suggestions for content but did not indicate disagreements with the plan.

PROGRAM ADMINISTRATION DESIGNEE AND PLAN SIGNATURES

This Regional Plan represents the Riverside County and San Bernardino County Workforce Development Board's efforts to maximize and coordinate resources available under Title I of the *Workforce Innovation and Opportunity Act (WIOA).*

The WIOA 4 Year Inland Empire Regional Planning Unit Plan is submitted for the period of July 1, 2021 through June 30, 2025 in accordance with the provisions of WIOA.

Riverside County Workforce Development Board

Local Workforce Development Board Chair	**Chief Elected Official**
	
Signature	Signature
Patrick Ellis	Karen Spiegel
Name	Name
Chairperson	Chairperson of Board of Supervisors
Title	Title
4/21/2021	
Date	Date

PROGRAM ADMINISTRATION DESIGNEE AND PLAN SIGNATURES

This Regional Plan represents the Riverside County and San Bernardino County Workforce Development Board's efforts to maximize and coordinate resources available under Title I of the *Workforce Innovation and Opportunity Act (WIOA).*

The WIOA 4 Year Inland Empire Regional Planning Unit Plan is submitted for the period of July 1, 2021 through June 30, 2025 in accordance with the provisions of WIOA.

Riverside County Workforce Development Board

Local Workforce Development Board Chair	**Chief Elected Official**
	Karen S. Spiegel
Signature	Signature
Patrick Ellis	Karen Spiegel
Name	Name
Chairperson	Chair of Board of Supervisors
Title	Title
	04.27.2021
Date	Date

ATTEST:
KECIA R. HARPER, Clerk
By _____ DEPUTY

FORM APPROVED COUNTY COUNSEL
BY: _____ 4/27/2021
LISA SANCHEZ DATE

PROGRAM ADMINISTRATION DESIGNEE AND PLAN SIGNATURES

This Regional Plan represents the Riverside County and San Bernardino County Workforce Development Board's efforts to maximize and coordinate resources available under Title I of the *Workforce Innovation and Opportunity Act (WIOA).*

The WIOA 4 Year Inland Empire Regional Planning Unit Plan is submitted for the period of July 1, 2021 through June 30, 2025 in accordance with the provisions of WIOA.

San Bernardino County Workforce Development Board

Local Workforce Development Board Chair	**Chief Elected Official**
Signature	Signature
Phillip Cothran	Curt Hagman
Name	Name
Chairperson	Chairperson of Board of Supervisors
Title	Title
4/12/2021	APR 20 2021
Date	Date

Write A Review
(/write-a-review)

Live Operator
(sms:215-234-
1721)

ESPAÑOL (/SPANISH/)

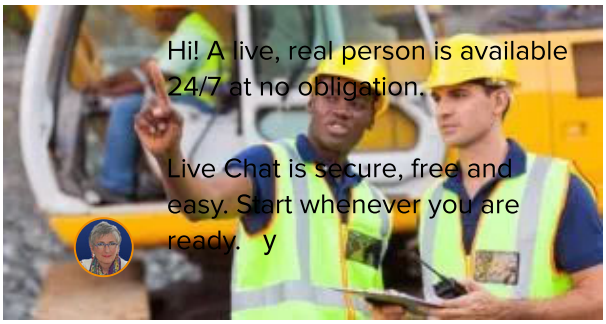


Contact Us Today

How Serious is the Labor Shortage in the Construction Industry?

August 3, 2021

ONLINE NOW



Construction workers risk injury whenever they are on a jobsite. However, during a labor shortage, the risk of injury rises. The post-pandemic economy of 2021 has resulted in labor shortages in various sectors of the economy, including in the construction industry. Employers are still responsible for maintaining a safe workplace, even during labor shortages.

Employees who have suffered a work-related injury should contact a qualified lawyer to get the information they need to protect their rights to ***Workers' Compensation*** (/app/workers-compensation/) benefits. Injured workers may also be eligible to claim additional damages from negligent third parties.

Start Chat y

·onstruction industry labor shortage is quite serious. In the next two years, the Ur
will need approximately one million new construction workers to meet the grow
.and, according to the Associated Builders and Contractors organization. California

Privacy - Terms

other areas of the country have labeled the shortage of workers in residential construction as a crisis.

For the past decade, the U.S. construction industry has experienced a slow decline in skilled labor as much of the workforce has gradually aged out, and fewer younger workers are pursuing careers in skilled trades. This has created a skills gap, which the Coronavirus (COVID-19) (https://www.cdc.gov/coronavirus/2019-ncov/index.html) pandemic has exacerbated. When the pandemic forced millions of employees to work from home, the demand for housing skyrocketed. This put even more pressure on residential homebuilders in particular to find skilled labor.

What is the Impact of the Skills Gap in Construction?

The impact of the skills gap in the construction industry includes the following:

- The lack of experienced construction employees affects the quality of work.
- There are fewer experienced workers available to pass along their knowledge to new workers.
- New hires are most susceptible to getting hurt on the job during a labor shortage.

Employers should be spending more money training new workers in safety procedures and trade skills at a time when they are pressured to meet higher demand. Previously, employers would partner experienced employees with new hires to pass along specific skills and best practices on a jobsite. A lack of skilled employees makes this type of mentoring more difficult.

Another impact of the skills gap is that in some cases, commercial contractors are moving into residential construction, which can create problems. Commercial and residential are two very different types of construction with a different subcontractor base and skill set. Experts have expressed concern about commercial contractors accepting bids for types of jobs in which they lack competency. For these and other reasons, the economic pressure to meet the urgent demand for housing during this labor shortage has increased the safety risks for many construction workers.

ONLINE NOW
Hi! A live, real person is available 24/7 at no obligation.
Live Chat is secure, free and easy. Start whenever you are ready.
Start Chat
Privacy - Terms

What Specific Factors Increase the Risk of Injury to Construction Workers?

Construction projects can only be completed safely when workers are properly trained and equipped and employers follow standard safety practices. Specific factors that increase the risk of injury to construction workers during a labor shortage include the following:

- loyers and contractors may try to overwork the skilled employees they have wh ey are short-staffed.

- Longer work hours can lead to fatigue, increasing the risk of injury.
- Employers and contractors cut corners and hire unqualified workers to complete projects without proper supervision.
- The less skilled the workforce, the less safe the jobsite.

New workers need safety training; however, employers make opt to skip safety training or fail to provide fall protection in order to stay under budget or meet deadlines. Furthermore, employers may use contractors that are less competent or do not provide safety training to their workers.

Workers are responsible for following safety procedures and remaining aware of hazards. However, at the end of the day, employers, developers, and contractors are responsible for the overall safety of the jobsite. The Occupational Safety and Health Administration (OSHA) (https://www.osha.gov/node/999880441) has established regulations for ways to keep construction workers safe. Construction workers who are injured on the job may be eligible for Workers' Compensation benefits.

What Do Injured Workers Need to Know About Workers' Compensation?

The Workers' Compensation Act of Pennsylvania is designed to provide financial benefits to injured workers and protect employers from liability. Employees receive medical treatment and are compensated for lost wages, and employers provide for the cost of such coverage while being protected from direct lawsuits by employees.

There are several facts that injured employees should know about Workers' Compensation, including the following:

- Workers' Compensation benefits are not subject to income tax.
- Total disability benefits under Workers' Compensation can be paid as long as the disability continues. Total disability benefits pay a portion of a worker's average weekly wages (AWW) up to the state maximum.
- Workers' Compensation covers medical bills but does not pay damages for pain and suffering.

If someone other than the employer is responsible for an accident on the job, an injured worker may be able to file a claim against that third party in addition to collecting Workers' Compensation benefits.

Filing a third-party claim can help injured workers obtain damages for pain and suffering as s compensation for financial losses provided by Workers' Compensation. Exampl parties include general contractors, property owners, developers or equipment

ONLINE NOW
Hi! A live, real person is available 24/7 at no obligation.
Live Chat is secure, free and easy. Start whenever you are ready. y
Start Chat
Privacy - Terms

renters, sellers, and manufacturers. Filing a lawsuit against a third party does not affect an employee's Workers' Compensation claim.

Do Injured Workers Need a Lawyer?

Construction workers face a high risk of injury. Most injured workers need a lawyer because many are unaware of their rights under the law. Pennsylvania has very specific rules governing eligibility for Workers' Compensation benefits. Many times, employers, insurance companies, and their representatives who want to deny or minimize claims are much better prepared than injured workers who need money to pay for medical bills and lost wages. Workers may also be unaware that they may have a valid third-party ***personal injury*** (/philadelphia-personal-injury-lawyer/) claim as well.

The legal team at Galfand Berger LLP empowers injured workers by giving them guidance. When warranted, the firm helps injured workers file suit against negligent third parties. Examples of how Galfand Berger LLP has helped construction workers in the past include:

- $8 million recovery for residential construction site accident. (/verdicts/Construction-Accidents/62-2/) The worker was installing lateral bracing on a house under construction when he fell 18 feet. As a result of the fall, he suffered a traumatic brain injury, spinal compression, and was partially paralyzed among other injuries. The injured worker was employed by a subcontractor. A claim was filed against the property owner, who was also the developer and general contractor for the site, because they failed to provide proper fall protection. The property owner also did not report the incident to the OSHA as required.
- $1.055 million settlement for construction worker. (/verdicts/construction-accidents/1055000-settlement-for-construction-worker/) The worker fractured his femur, four ribs, and several vertebrae after falling on a jobsite. The legal team at Galfand Berger LLP filed suit against the general contractor and the equipment rental company, successfully demonstrating that the general contractor's poor excavation created the condition that caused the worker to fall. Furthermore, the equipment rental company failed to properly train the worker.

ONLINE NOW
equipment rental company,
24/7 at no obligation.
Live Chat is secure, free and easy. Start whenever you are ready. y
Start Chat y

Labor shortages may tempt employers and other responsible parties to forgo safety training and ignore OSHA requirements to implement fall protection and other safety measures for construction workers.

Philadelphia Workers' Compensation Lawyers at Galfand Berger LLP Give Injured Construction Workers the Information They Need to Protect T'eir

`s

Privacy - Terms

Labor shortages and other factors may prompt employers and third parties to cut corners, jeopardizing worker safety. If you were injured in a workplace construction accident, a ***Philadelphia Workers' Compensation lawyer*** (/attorneys/) at ***Galfand Berger LLP*** (/) can help. Call us today at ***800-222-USWA (8792)*** (tel:800-222-8792)or ***contact us online*** (/contact/) for a free consultation. We are located in Philadelphia, Bethlehem, Lancaster, and Reading, Pennsylvania, and we serve clients throughout New Jersey and Pennsylvania, including Allentown and Harrisburg.

PHILADELPHIA
1-800-222-USWA (8792) (tel:1-800-222-8792)
215-665-1600 (tel:215-665-1600)

ALLENTOWN/BETHLEHEM
610-865-4212 (tel:610-865-4212)

LANCASTER
717-824-3376 (tel:717-824-3376)

READING
610-376-1696 (tel:610-376-1696)

ONLINE NOW

(https://www.facebook.com/GalfandBerger) (https://twitter.com/GalfandBerger)

Hi! A live, real person is available 24/7 at no obligation.

(https://www.linkedin.com/company/galfand-berger-llp/)

Live Chat is secure, free and easy. Start whenever you are ready.

(https://www.google.com/maps/place/Galfand+Berger,+LLP/@39.953[illegible]17,-75.1733332,17z/data=!3m1!4b1!4m5!3
75.1711392)

(https://www.youtube.com/channel/UCrReNVRpDSHsVzCIXC2nUFQ)

(https://www.instagram.com/galfandberger/) (https://www.tiktok.com/@galfandbergerllp?lang=en)

Start Chat

© 2022. Galfand Berger LLP, All rights reserved. Attorney Advertising Materials. This website is designed for
nformation only. The information presented at this site should not be construed to be forma
r the formation of a lawyer/client relationship. Privacy Policy (/privacy-policy/)

Privacy - Terms

Website Accessibility: Galfand Berger LLP is committed to ensuring digital accessibility for people with disabilities. We are continually working to improve the accessibility of all content on our website and applying the relevant accessibility standards.

ONLINE NOW

Hi! A live, real person is available 24/7 at no obligation.

Live Chat is secure, free and easy. Start whenever you are ready. y



Start Chat y

Appendix K-6

OIAA Funding and Financial Resources

Constructing Runway 8R-26L in Two Calendar Years

Implementing the Runway 8R-26L construction work in two calendar years versus three years would have the following disadvantages and adverse impacts.

1. **FAA funding allocation** - Since FAA funds/grants are the major funding source for the Runway 8R-26L program, attempting to complete the Project construction in two calendar years will decrease the overall amount of grant funding availability from the FAA that could be used on the program. The availability of limited funding from the FAA is determined on an annual basis and those funds are dispersed amongst all the airports within the region. With that limited availability of funding from the FAA airports typically separate projects into phases to increase funding probability.

2. **Labor shortage –** The current labor market in the Inland Empire and throughout Southern California suffers from a steep shortage of talent and labor availability in the post COVID environment. The longer (three year) Project construction program enables the contractor to properly allocate workforce resources and schedules, and secure personnel with appropriate experience and capabilities. An accelerated two-year construction program, on the other hand, would require the contractor to bring in multiple crews to work multiple shifts which will incur overtime and differential costs and compensation to meet the construction schedule. This puts undue burden and costs on the contractor to secure additional workforce, which in turn will be a greater cost on the Airport and program. Further, given the pronounced labor shortage in the area, it is very unlikely that a sufficient labor force could be obtained and sustained to meet the requirements to deploy multiple work shifts on a continual daily basis to possibly complete the Project construction program within a two-year timeframe.

3. **Contractor Bonding capability** - If the Project is to be completed in a shorter two-year timeframe, Project bidders would be required to provide bonding for a larger contract price. For instance, the rough order magnitude construction cost estimate for the runway portion of work is approximately 80 million dollars. The higher bonding requirements for a two-year construction program would limit the number of contractors who can potentially bid on the Project. If the Project is bid in three separate years as three separate packages, the Project costs per package per year will be less and will increase the number of bidders who can possibly bid on the Project. Smaller bonding requirements will increase the bidder participation and thereby will increase competitive bidding and result in better unit prices for the Project.

4. **SBE/DBE** - On a similar note, separating the Project into smaller packages over three years will help a contractor to find available Small Businesses and Disadvantaged Businesses with competitive bids to work on the Project. Multiple bid packages will also enable more SBE/DBE firms to participate each year.

5. **Supply chain management issues and cost impacts** – We are aware that, currently, most of the airfield lighting and signage parts and equipment have a lead time of 20+ weeks. Multiple bid packages over a three-year construction program allows for the Airport

to bid the program earlier giving more time for contractors to order and obtain long lead items related to the Project. With the multiple year bid package supply chain issues are expected to be mitigated and would also result in better pricing. Smaller projects phases or construction increments with limited quantities will be easier to procure and less likely to result in contractor delays that increase costs.

Burns and McDonnell Engineering Company Inc. has worked on aviation projects at more than 350+ airports in the last 70+ years across the country and several of those projects are AIP funded projects. The above recommendations are based on our vast experience and current industry knowledge on construction projects across the country. We are currently providing Construction Administration support services at multiple airports in the West Coast and especially in Southern California and the labor shortage, supply chain management issues etc. listed above are based on firsthand knowledge at airports in the region. In addition, we are also a construction company and performs construction projects in the range of 3.5 Billion dollars a year and we are well aware of capacity and availability issues with SBE/DBE firms in this construction climate.

Appendix L

Contra Flow Decisions and Federal Guidance

APPENDIX L:
Contra Flow Decisions and Federal Guidance

The following reports are included as part of this appendix to support the noise analysis:

- Appendix L-1: "Section 5 – Aircraft Noise Mitigation Operating Procedures and Restrictions," *Ontario International Airport Rules and Regulations*, August 16, 2019.
- Appendix L-2: ONT Runway 26R Touchdown Zone Light System Installation Safety Risk Management Panel Notes (ONT ATCT and FAA), 8/28/2020. 8/28/2020.
- Appendix L-3: Email from ONT Tower Manager (Sylvia Dee [FAA]) to Director of Planning (Michelle Brantley [OIAA]), 11/5/2020.
- Appendix L-4: *Title 49 U.S. Code § 40103 - Sovereignty and use of airspace*

Appendix L-1

"Section 5 – Aircraft Noise Mitigation Operating Procedures and Restrictions," *Ontario International Airport Rules and Regulations*, August 16, 2019.

SECTION 5 - AIRCRAFT NOISE MITIGATION OPERATING PROCEDURES AND RESTRICTIONS

This section identifies the OIAA Aircraft Noise Mitigation Program (ANMP), and noise Mitigation procedures, in use at Ontario International Airport (ONT).

All aircraft operators shall comply with Federal Aviation Administration (FAA) regulations and procedures for noise abatement and noise emission standards and with all rules, policies, procedures, resolutions and ordinances established by the OIAA relative to noise mitigation. Air Traffic Control (ATC) is used in this section as a common term for all pertinent U.S. DOT FAA Air Traffic Control, including but not limited to, at the ONT Air Traffic Control Tower (ATCT) and Southern California Approach Control Facility (TRACON).

It is not intended nor should it be implied, that any air traffic flight regulation or ANMP procedure contained herein, shall, in any manner, abrogate the authority and responsibility of the pilot in command to assure the safe operation of their aircraft.

5.1 Operational Responsibilities:

By FAA Letter of Agreement (LOA), ATC shall employ the noise abatement preferential runway use procedures specified herein and recognizing that under certain conditions it may be necessary to prescribe deviations because of aircraft emergencies, adverse weather, or field construction and maintenance work. Nothing in these procedures shall limit the discretion of either ATC or the pilot with respect to the full utilization of the airport facilities in an unusual situation.

a. Pilots of all turbo-jet and turbo-fan powered aircraft who are given a preferential runway assignment by ATC shall use that runway unless the pilot determines that in the interest of safety another runway shall be used, except as provided in paragraph 4 this section, Traffic and Flight Procedures (Contra-Flow Operations).

b. Airline maintenance managers are to ensure that their personnel observe the maintenance restrictions set forth in Sub-Section 5.06, Maintenance Restrictions, herein this Section.

c. ONT Airport Operations (909) 544-5344 or (909) 821-7433 monitor all aircraft engine maintenance and Auxiliary Power Unit (APU) operations; and, as necessary, shall stop maintenance operations that are not in compliance with the maintenance restrictions set forth in Sub-Section's 5.04 and 5.05 herein.

5.2 Reporting and Implementation Responsibilities:

a. OIAA will track aircraft operations deviating from Sub-section 5.03 herein. OIAA will contact, as appropriate, ONT Airside Operations, the FAA, aircraft owners, pilots, airline officials, community complainants or others concerning such deviations. ONT Airside Operations will record all reported and observed operational deviations identified in Sub-section 5.03, 5.04 and 5.05 of this Section.

b. Information regarding the ONT Airport Noise Operations and Management System (ANOMS), the monitoring of airport noise, and noise complaints can be found online at: www.flyontario.com or noise complaints can be filed by telephone, (909) 395-2400.

c. The OIAA will, in cooperation with the FAA, airline and pilot user groups, prepare and, as necessary, revise the Aircraft Noise Mitigation Operating Procedures and Restrictions set forth herein.

5.3 Runway Use Procedures:

a. Normal prevailing winds at ONT are from the west; in westerly operations, aircraft arrive and depart to the west on runways 26L and 26R. When weather conditions require (prevailing tailwind component velocities of 7 knots or more, in dry runway conditions; or, more than 3 knots in wet runway conditions, aircraft operations are reversed, and aircraft arrive and depart to the east; in easterly operations, aircraft arrive and depart on runways 08L and 08R.

b. Between the hours of 2200 and 0700, aircraft operate in accordance with preferential runway use procedures known as "Contra-flow."

During Contra-flow operations, aircraft arrive on runways 26L and 26R and depart on runways 08L and 08R. Contra-flow procedures shall be discontinued when atmospheric conditions (wind and low cloud ceilings), or when aircraft operations and construction activities require.

c. Turbo-jet and turbo-fan aircraft are prohibited from runway intersection departures, except from runway 08L at taxiway intersection 'D' and from runway 26R at taxiway 'V'.

5.4 Starting, Running, and High Power Run of Aircraft Engines:

See **Section 3, Aircraft Operations.**

5.5 Engine Run of Aircraft Engines in Test Cells:

a. Maintenance or test running of jet engines not mounted on an aircraft is prohibited.

5.6 Helicopter Operating Procedures:

a. Helicopter operators arriving or departing ONT shall utilize the flight routes designated by the FAA for Visual Flight Rules (VFR) and Special Visual Flight Rules (SVFR) operations.

b. When possible, helicopter operators shall use noise abatement approach and departure flight techniques.

c. ONT does not have a marked heliport or helipad. Additionally, taxilane F south of Twy S is not visible to ONT ATCT controllers, as such, is a non- movement area. Helicopters landing or departing on taxilane F south of Twy S do so at their own risk.

Appendix L-2

ONT Runway 26R Touchdown Zone Light System Installation Safety Risk Management Panel Notes (ONT ATCT and FAA), 8/28/2020. 8/28/2020.

EXECUTIVE SUMMARY

Title: Ontario International Airport Runway 26R Touchdown Zone Light System Installation

Initiating Organization: ONT ATCT

Safety Analysis Type: OPS

PRJECT OVERVIEW

Ontario International Airport (ONT) is a public airport owned and operated by the Ontario International Airport Authority (OIAA). ONT is near downtown Ontario, CA in San Bernardino County. ONT handles scheduled commercial, cargo, air taxi, and General Aviation (GA) flights. The airport has two parallel runways, 26R/8L and 26L/8R, and two parallel taxiways, W and S, and multiple connector taxiways. The ONT ATCT, which operates daily 24/7, had 93,832 operations from 1/01/2019 through 12/31/2019, and 37,024 operations from 1/01/2020 through 06/21/2020. Southern California TRACON (SCT) handles approach control.

ONT proposes to install Runway 26R touchdown zone lights and runway centerline lights during a three-phase construction project to enhance the safety of landing aircraft. The construction project is scheduled be completed in three phases during 90 calendar days and begin on TBD date. During all phases, Runway 26R/8L will be closed for aircraft arrivals/departures with isolated runway locations open periodically. Concurrently, Taxiway W will be closed during Phase 1; Taxiways D, E, F, K, L, P, Q, and R may close periodically during Phase 2; and Taxiway U will be closed during Phase 3. During the construction project, Contra-flow operations associated with Runway 26L/26R arrivals and Runway 08L/8R departures will be discontinued.

A Safety Risk Management (SRM) Panel met virtually on 08/05/2020 to assess the change to the NAS and associated hazards. The SRM Panel was organized by the ONT ATCT with support from the Western Service Center (ESC) Quality Control Group (QCG). The SRM Panel included attendees representing ONT ATCT management and controllers, ONT airport management, Southern California TRACON (SCT), Runway Safety, Technical Operations, the Flight Standards District Office, the Operations Support Group (OSG), the WSC, Airports, the National Air Traffic Controllers Association (NATCA), United Parcel Service pilots, Los Angeles International Airport, Los Angeles World Airports (LAWA), and Southwest Airlines pilots.

The SRM Panel identified four hazards associated with controller, pilot, and vehicle driver loss of situational awareness. The SRM Panel found the hazards to have medium risk. Based on the safety analysis, the SRM Panel determined that the change can be introduced into the NAS with an acceptable level of risk as defined in the FAA Air Traffic Organization Safety Management System Manual, April 2019 Version.

Risk Summary

The SRM Panel conducted a safety analysis on the impact of Runway 26R touchdown zone light system installation construction on the ONT ATCT, SCT, and ONT airport operations. The SRM Panel applied the ATO SRM process, beginning with a Preliminary Hazard List (PHL). Using the PHL as a foundation for completing the Preliminary Hazard Analysis (HAW), SRM Panel attendees analyzed each hazard to determine cause, system state, controls, and effects. SRM Panel members determined severity, likelihood, and initial/predicted residual risk; and attendees identified Safety Requirements and determined Safety Performance Targets.

SRM Panel attendees viewed the ONT airport diagram and reviewed current operations including runway and taxiway use, traffic flows, Contra/ODO operations, and the location of Hotspots 1 and 2. Attendees reviewed and discussed the CSPP, which features phasing diagrams depicting areas of construction by phase, including taxi routes, haul routes, and the operational impact of runway and taxiway closures.

ONT Runway 26R Touchdown Zone Light System Installation SRMDH

Construction work will occur in phased areas of construction that segregate construction from aircraft operations. Attendees discussed work to be accomplished along with haul routes, closed surfaces duration, and controls including low profile safety barricades and covered lights. The closed runway will have lighted Xs on each end and runway lighting will be off. The runway will be closed 24/7 during the construction project, which is safer that periodic opening/closing. Taxiway P will be open and taxiways between U and D may be open to ensure taxi route flexibility. At least one taxiway will be open on west and east sides of airfield; Taxiway F or D on the west, Taxiway V or W on the east. Per NOTAM, Category 6 aircraft cannot divert to ONT during the construction project.

Haul routes will be clear of the Runway 26L RSA and avoid movement areas except for crossing Taxiway W. Flaggers with radios will be on each side of the intersection and a minimal number of trucks will need to cross. FOD will be managed according to the CSPP FOD management plan with sweepers available. Minimal FOD is expected per areas of construction work design and haul route path.

Attendees discussed controllers providing aircraft taxiing to/from the active runway with directions that reflect tailored taxi routes based on construction phases. During noise abatement hours, ATCT controllers will apply TMIs that provide adequate spacing of arrival aircraft according to single runway operations procedures. Aircraft exiting the active runway may be impacted by taxiway intersection closures that could increase runway occupancy time.

SRM Panel attendees mentioned the possibility of SMGCS low-visibility operations during construction with Runway 26R closed, but SCT will handle as they would today. Increased communications may be needed for routine runway maintenance (e.g., rubber removal) or an outage (e.g., NAVAID or lights) during single runway operations, but controllers will apply single runway operations procedures.

Attendees reviewed historical data for ONT per the standard Runway Safety airport spreadsheet. During the last two years, several RIs occurred including one Category D, two Category Cs, and one Category B. The RSAT report shows 13 Category C and D RIs during 2018, 2019, and 2020. RSA events include an aircraft wandering into a closed area during a Taxiway W and U closure. Attendees reviewed the monthly decline by percentage in normal ONT traffic operations per COVID impact by comparing traffic levels from April, May, June, and July 2019 to those months in 2020.

SRM Panel attendees identified four hazards with medium risk associated with loss of controller, pilot, and vehicle driver situational awareness with Runway Incursion (RI) and increased go-arounds effects.

Hazard Summary

Hazard ID	Hazard	Initial Risk	Predicted Residual Risk
ONT Runway 26R TZL-01	Loss of controller situational awareness	4C: Medium	4C: Medium
ONT Runway 26R TZL-02	Loss of pilot situational awareness (Effect: Category C RI)	4C: Medium	4C: Medium
ONT Runway 26R TZL-03	Loss of pilot situational awareness (Effect: Increased go-arounds)	4A: Medium	4A: Medium
ONT Runway 26R TZL-04	Loss of vehicle driver situational awareness	4C: Medium	4C: Medium

ONT Runway 26R Touchdown Zone Light System Installation SRMDH

Hazard 01 Loss of Controller Situational Awareness. SRM Panel attendees talked about single runway operations, changing taxiway routes, and closed surfaces associated with aloss of controller situational awareness. Severity is based on based on the Category C RI description, historical data, and a worst-case scenario that results in an RI. Likelihood is based on historical data with few recent RIs occurring, and controls including training and applying airside operations lessons learned, and planned airport outreach to tenants about the construction project.

Hazard 2 Loss of Pilot Situational Awareness (RI Effect). SRM Panel attendees talked about the increased potential for an RI during single runway operations and changing taxiway routes associated with a pilot loss of situational awareness. Severity is based on historical data, with few Category RIs in the NAS during 2020, which was gathered during normal operations and not during construction. Likelihood is based on historical data and available pilot information/input.

Hazard 3 Loss of Pilot Situational Awareness (Go-Around Effect). SRM Panel attendees talked about the increased potential for go-arounds during single runway operations and a possible rejected landing associated with a loss of situational awareness. An attendee commented that a pilot has more warning with a go-around compared to an RI. Severity is based on experience and historical data. Likelihood is based on historical data, with go-arounds frequently occurring at ONT (about 1 every 3 days), single runway operations, increased runway/taxiway occupancy time, and a go-around is more likely to occur during construction.

Hazard 04 Loss of Vehicle Driver Situational Awareness. SRM Panel attendees talked about the controls in place including training to help drivers maintain their situational awareness. Mechanics are escorted when driving on the airfield and daily morning safety briefings will keep drivers aware and informed about safety during construction. Severity is based on controls and historical data. Likelihood is based on historical data and experience. Attendees said that drivers touring the ATCT cab to become more familiar with the ATC view of the airfield and operations would heighten their understanding of construction on airfield; however, cab tours are not currently available and only authorized personnel can be in ATCT at this time.

SECTION 1: CURRENT SYSTEM

ONT is a public airport owned and operated by the OIAA. The airport is two miles east of downtown Ontario, CA in San Bernardino County. ONT provides scheduled commercial service and handles air cargo, air taxi, and GA flights along with occasional law enforcement and GA helicopter traffic. Air cargo carriers include United Parcel Service (UPS), Amazon, and Federal Express.

The airport has two parallel runways, 26R/8L and 26L/8R, and multiple parallel and connector taxiways. Runway 26R/8L is 12,197 feet by 150 feet and Runway 26L/8R is 10,200 feet by 150 feet. Instrument Landing Systems (ILS) support Runways 26L, 26R, and 08L; Runway 08R is a visual approach runway. Taxiways W and S are the parallel taxiways and primary for aircraft that park on the south side of the airport and taxi to Runway 26L. Taxiway W is the only taxiway to/from the UPS ramp. The airfield has no visual blind spots for controllers, but a radio blind spot occurs on the west end of Runway 8R.

The ONT ATCT, which operates daily 24/7, had 93,832 operations from 1/01/2019 through 12/31/2019, and 37,024 operations from 1/01/2020 through 06/21/2020. During the 12-month period ending 12/31/2018, ONT averaged 275 aircraft operations per day. About 70 percent were commercial, 13 percent air taxi, 11 percent transient GA, 5 percent local GA, and less than 1 percent military aircraft. SCT handles approach control.

Communities surrounding ONT are noise sensitive. To promote, encourage, and cooperate with OIAA, ONT has a preferred runway use program for noise abatement known as Contra. From 2200L to 0700L, Runway 08L/R is

the preferred departure runway and Runway 26L/R is the preferred arrival runway. Under certain circumstances in the interest of safety, airport efficiency, or aircraft operational necessity, ONT may deviate from noise abatement procedures.

ONT serves as a divert airfield for Los Angeles International Airport, Bob Hope Airport (Burbank, CA), John Wayne-Orange County Airport (Santa Ana, CA), and San Diego International Airport.

Ontario has a semi-arid climate and averages about 12 inches of rain annually. High terrain lies nine miles north, with five 10,000-foot peaks. Although Ontario has long stretches of good weather, it does experience low IFR conditions, occasional thunderstorms, and Santa Ana winds.

5M Model

Mission (purpose of NAS change/operation)	Safely conduct ONT ATCT and SCT air traffic operations during the ONT Runway 26 touchdown zone light system installation construction project
(hu)Man (operators, stakeholders)	ONT and SCT controllers, pilots, vehicle operators, and construction workers
Machine (equipment used in system)	Radar, aircraft, and construction vehicles/equipment
Management (procedures, policies governing/managing system)	JO 7110.65, JO 7210.3, AC 150/5210-20, AC 150/5210-24, AC 150/5340-1, AC 150/5340-18, AC 150/5370-2, SOP, LOA, Part 139, CSPP, NOTAM, CRM, TMI
Media (environment system is operated)	ONT ATCT, SCT

SECTION 2: DESCRITION OF CHANGE/EXISTING SAFETY ISSUE

ONT proposes to install Runway 26R touchdown zone lights and runway centerline lights during a three-phase construction project to enhance the safety of landing aircraft. Upgrading the lighting systems will minimize economic loss to the aviation community during a planned future Runway 26L/8R reconstruction project/closure. Construction work includes installing touchdown zone lighting and conduit, replacing runway centerline light fixtures and base cans/lights, and reconfiguring the Airfield Lighting Control and Monitoring System (ALCMS). Construction work hours are Monday through Friday, 0700L - 1600L.

The construction project is scheduled be completed in three phases during 90 calendar days and begin on TBD date. During all phases, Runway 26R/8L will be closed for aircraft arrivals/departures with isolated runway locations open periodically. Concurrently, Taxiway W will be closed during Phase 1 (10 days); Taxiways D, E, F, K, L, P, Q, and R may close periodically during Phase 2 (70 days); and Taxiway U will be closed during Phase 3 (10 days).

SRM Panel attendees agreed to the following Assumptions:

1. Contra-flow operations associated with Runway 26L/26R arrivals and Runway 08L/8R departures will be discontinued during the ONT Runway 26R Touchdown Zone Lights installation construction project.
2. NOTAMs will be issued 72 hours in advance of the Runway 26R/8L closure.

The following instrument approach procedures will be available during the construction project:

- Runway 26L: ILS OR LOC RWY 26L, RNAV (RNP) Z RWY 26L, RNAV (GPS) Y RWY 26L; approach lights: ALSF2 standard 2,400 foot high intensity approach lighting system with centerline sequenced flashers (Category II or III); visual slope indicator: 4-light PAPI on right (3.00-degree glide path).

- Runway 8R: no instrument approaches, visual slope indicator: 4-light PAPI on left (3.00-degree glide path).
- SIDs: Published for both runways.

SECTION: 3 HAZARD AND RISK ANALYSIS

Hazard ID	Hazard Description	Cause	System State	Controls	Control Justification
ONT Runway 26R TZL-01	Loss of controller situational awareness	Single runway operations (increased traffic demand) Increased mid-field runway crossings Increased coordination between operating positions in tower cab ATC training during construction project Increased runway occupancy Increased complexity and coordination between ONT ATCT and SCT Minimal ONT ATCT and SCT staffing Increased Airport-ONT ATC communication/ coordination for NAVAIDs/runway maintenance Changing taxi routes (maintenance runs)	All flows Construction project 24/7 All weather conditions	JO 7110.65, JO 7210.3, SOP, LOA, STARS, Fusion, ARSR, ASR, ATIS, ASOS, surface memory aid, AC 150/5210-20, AC 150/5210-24, AC 150/5340-1, AC 150/5340-18, AC 150/5370-2, Part 139, CSPP, controller/pilot/driver training, controller/pilot intervention, ATC scanning, frequency monitoring, operational supervision, NOTAM, charts, chart supplemental, AIM, outreach, CRM, daily briefings/notes, TMI	JO 7110.65: 3-7-1, Ground Control Traffic Movement; 3-7-2 ,Taxi and Ground Movement Operations; 3-7-3, Ground Operations; 3-7-4, Runway Proximity; 3-7-5, Precision Approach Critical Area JO 7210.3: 2-1-8, Operations During Staffing Constraints; 2-6-1, Watch Supervision; 6-3-2, NOTAM Data; 10-1-2, Tower Team Concept; 10-3-12, Airport Construction Bulletin

Effect	Severity	Severity Rationale	Likelihood	Likelihood Rational	Initial Risk
Category C RI	4: Minor	Historical data	C: Remote	Historical data Subject matter expertise Controls	4C Medium

Safety Requirements	Organization Responsible for Implementing Safety Requirements	Predicted Residual Risk	Safety Performance Target
Conduct enhanced simulation training	ONT ATCT	4C Medium	Less than two Category C RIs associated with loss of controller situational awareness during construction project

Safety Performance Target Monitoring		
Monitoring Activity	**Reporting Frequency**	**Reporting Duration**
Review MORs	Bi-weekly	Three months

DRAFT

ONT Runway 26R Touchdown Zone Light System Installation SRMDH

Hazard ID	Hazard Description	Cause	System State	Controls	Control Justification
ONT Runway 26R TZL-02	Loss of pilot situational awareness	Single runway operations (increased traffic demand) Increased mid-field runway crossings Increased coordination between operating positions in tower cab ATC training during construction project Increased runway occupancy Increased complexity and coordination between ONT ATCT and SCT Minimal ONT ATCT and SCT staffing Increased Airport-ONT ATC communication/ coordination for NAVAIDs/runway maintenance Changing taxi routes (maintenance runs)	All flows Construction project 24/7 All weather conditions	JO 7110.65, JO 7210.3, SOP, LOA, STARS, Fusion, ARSR, ASR, ATIS, ASOS, surface memory aid, AC 150/5210-20, AC 150/5210-24, AC 150/5340-1, AC 150/5340-18, AC 150/5370-2, Part 139, CSPP, controller/pilot/driver training, controller/pilot intervention, ATC scanning, frequency monitoring, operational supervision, NOTAM, charts, chart supplemental, AIM, outreach, CRM, daily briefings/notes, TMI	JO 7110.65: 3-7-1, Ground Control Traffic Movement; 3-7-2 ,Taxi and Ground Movement Operations; 3-7-3, Ground Operations; 3-7-4, Runway Proximity; 3-7-5, Precision Approach Critical Area JO 7210.3: 2-1-8, Operations During Staffing Constraints; 2-6-1, Watch Supervision; 6-3-2, NOTAM Data; 10-1-2, Tower Team Concept; 10-3-12, Airport Construction Bulletin

Effect	Severity	Severity Rationale	Likelihood	Likelihood Rational	Initial Risk
Category C RI	4: Minor	Historical data	C: Remote	Historical data	4C: Medium

Safety Requirements	Organization Responsible for Implementing Safety Requirements	Predicted Residual Risk	Safety Performance Target
Develop FAAST Blast ATIS broadcast RNAV approach Runway 8R and ILS 26L	ONT ATCT/Dr. Paul Foster ONT ATCT	4C: Medium	Less than two Category C RIs associated with loss of pilot situational awareness during construction project

Safety Performance Target Monitoring		
Monitoring Activity	**Reporting Frequency**	**Reporting Duration**
Review MORs	Bi-weekly	Three months

DRAFT

ONT Runway 26R Touchdown Zone Light System Installation SRMDH

Hazard ID	Hazard Description	Cause	System State	Controls	Control Justification
ONT Runway 26R TZL-03	Loss of pilot situational awareness	Single runway operations (increased traffic demand) Increased mid-field runway crossings Increased coordination between operating positions in tower cab ATC training during construction project Increased runway occupancy Increased complexity and coordination between ONT ATCT and SCT Minimal ONT ATCT and SCT staffing Increased Airport-ONT ATC communication/ coordination for NAVAIDs/runway maintenance Changing taxi routes (maintenance runs)	All flows Construction project 24/7 All weather conditions	JO 7110.65, JO 7210.3, SOP, LOA, STARS, Fusion, ARSR, ASR, ATIS, ASOS, surface memory aid, AC 150/5210-20, AC 150/5210-24, AC 150/5340-1, AC 150/5340-18, AC 150/5370-2, Part 139, CSPP, controller/ pilot/driver training, controller/pilot intervention, ATC scanning, frequency monitoring, operational supervision, NOTAM, charts, chart supplemental, AIM, outreach, CRM, daily briefings/notes, TMI	JO 7110.65: 3-7-1, Ground Control Traffic Movement; 3-7-2 ,Taxi and Ground Movement Operations; 3-7-3, Ground Operations; 3-7-4, Runway Proximity; 3-7-5, Precision Approach Critical Area JO 7210.3: 2-1-8, Operations During Staffing Constraints; 2-6-1, Watch Supervision; 6-3-2, NOTAM Data; 10-1-2, Tower Team Concept; 10-3-12, Airport Construction Bulletin

Effect	Severity	Severity Rationale	Likelihood	Likelihood Rational	Initial Risk
Increased go-arounds	4: Minor	National data Experience	A: Frequent	Experience	4A: Medium

Safety Requirements	Organization Responsible for Implementing Safety Requirements	Predicted Residual Risk	Safety Performance Target
Develop FAAST Blast ATIS broadcast RNAV approach Runway 8R and ILS 26L	ONT ATCT/Dr. Paul Foster ONT ATCT	4A: Medium	Less than 15 go-arounds associated with loss of pilot situational awareness during construction project

Safety Performance Target Monitoring		
Monitoring Activity	**Reporting Frequency**	**Reporting Duration**
Review MORs	Bi-weekly	Three months

DRAFT

ONT Runway 26R Touchdown Zone Light System Installation SRMDH

Hazard ID	Hazard Description	Cause	System State	Controls	Control Justification
ONT Runway 26R TZL-04	Loss of vehicle driver situational awareness	Single runway operations (increased traffic demand) Increased coordination between operating positions in tower cab ATC training during construction project Increased complexity and coordination between ONT ATCT and SCT Minimal ONT ATCT and SCT staffing Increased Airport-ONT ATC communication/coordination for NAVAIDs/runway maintenance Changing taxi routes (maintenance runs)	All flows Construction project 24/7 All weather conditions	JO 7110.65, JO 7210.3, SOP, LOA, surface memory aid, AC 150/5210-20, AC 150/5210-24, AC 150/5340-1, AC 150/5340-18, AC 150/5370-2, Part 139, CSPP, controller /driver training, controller/pilot intervention, ATC scanning, frequency monitoring, operational supervision, outreach, CRM, daily briefings/ notes	JO 7110.65: 3-7-1, Ground Control Traffic Movement; 3-7-2 ,Taxi and Ground Movement Operations; 3-7-3, Ground Operations; 3-7-4, Runway Proximity; 3-7-5, Precision Approach Critical Area JO 7210.3: 2-1-8, Operations During Staffing Constraints; 2-6-1, Watch Supervision; 6-3-2, NOTAM Data; 10-1-2, Tower Team Concept; 10-3-12, Airport Construction Bulletin

Effect	Severity	Severity Rationale	Likelihood	Likelihood Rational	Initial Risk
Category C RI	4: Minor	Historical data	C: Remote	Experience Historical data	4C: Medium

Safety Requirements	Organization Responsible for Implementing Safety Requirements	Predicted Residual Risk	Safety Performance Target
None	--	4C: Medium	Less than two Category C RIs associated with loss of vehicle driver situational awareness during construction project

Safety Performance Target Monitoring		
Monitoring Activity	**Reporting Frequency**	**Reporting Duration**
Review MORs	Bi-weekly	Three months

SECTION 5: DISSENTION

Not applicable.

SECTION 6: PANEL ATTENDEES

The SRM Panel convened on 08/05/2020 to perform a thorough safety analysis of the proposed NAS change. SMEs from across the agency were invited to leverage their operational experience, and experts in the SRM process were present to maintain its integrity. The following table lists panel participants by their organizations.

Change Proponent

Name	Title, Organization	Email	Phone
Sylvia Dee	ATM, ONT ATCT	sylvia.l.dee@faa.gov	909 605-0057

ONT Runway 26R Touchdown Zone Light System Installation SRMDH

Panel Members

Name	Title, Organization	Email	Phone
William Bowman	Operations Supervisor, ONT ATCT	william.b.bowman@faa.gov	909-937-0158
Mike Huizar	NATCA, ATCS, ONT ACTC	huizarmike@yahoo.com	909-937-0158
Joshua Martin	ATCS, SCT	joshua.martin@faa.gov	858-537-5914
Stephen Loeffle	NATCA, ATCS, SCT	stephen.d.loeffler@faa.gov	808-840-6201
David Pesko	Airway Transportation System Specialist, SSC ATSS, ONT	david.pesko@faa.gov	909-917-4254
Fernando Morales	Program Manager, Runway Safety	fernando.morales@faa.gov	424-405-7798
Sam Samad	Civil Engineer, Program Manager, Airports	sam.samad@faa.gov	424-405-7281

Subject Matter Experts

Name	Title, Organization	Email	Phone
Dennis Anderson	TBI APT Manager, ONT Airport	dennis.anderson@TBIAM.aero	909-215-5612
Art Andres	Senior Deputy Chief, ONT Airport	aandres@ontarioca.gov	909-395-2551
Michael Bishara	Airside Manager, ONT Airport	mbishara@flyontario.com	909-524-5719
Don Campbell	747 Pilot, Assistant Chief Pilot, UPS	donaldcampbell@ups.com	909-974-7649
Jeff Cunnyngham	TMU Officer, LAX	jeff.cunnyngham@faa.gov	310-351-2631
Sylvia Dee	ATM, ONT ATCT	sylvia.l.dee@faa.gov	909 605-0057
Jake Florendo	Regional Safety Management, Airports	jake.florendo@faa.gov	424-405-7313
Paul Foster	FAASTEAM Project Manager, FSDO	paul.m.foster@faa.gov	310-617-5535
Greg Gorlich	ATS System Program Manager, SWA	greg.gorlich@wnco.com	702-622-6552
Rohn Grant	ATC Specialist, OSG	rohn.k.grant@faa.gov	206-231-2247
Gregory Hatcher	ONT Airport	ghatcher@flyontario.com	--
George Hodgson	Pilot, ATS System Program Manager, SWA	george.hodgson@wnco.com	--
Derek Johnson	SSC Coordinator, Technical Operations, ONT	derek.johnson@faa.gov	909-418-260
Ryan Munro	ATCS, Airspace and Procedures, Supervisor, SCT	ryan.a.munro@faa.gov	(858) 537-5830
Scott Quinlan	Chief Pilot, UPS	smquinlan@ups.com	502-303-6727
Chris Phillips	Airport Certification Safety Inspector, Airports	christopher.m.phillips@faa.gov	424-405-7319
Keith Snyder	Chief of Airport Operations, LAWA	--	--
Michael Wester	SSC ESU Manager, ONT	michael.wester@faa.gov	310-889-6777

Observers

Name	Title, Organization	Email	Phone
Jose Bordallo	Airport Certification Safety Inspector, Airports	jose.bordallo@faa.gov	424-405-7308

DRAFT

Michele Cruz	Senior Advisor, WSC	michele.cruz@faa.gov	206-231-2369

Facilitation Team

Name	Title, Organization	Email	Phone
Garry Brown	Facilitator, Safety Risk Management Specialist, QCG, WSC	garry.f.brown@faa.gov	206-231-2317
Larry Crowley	Facilitator, Safety Risk Management Specialist, QCG, WSC	larry.crowley@faa.gov	206-231-2320
Stephen Szehner	Technical Writer, QCG, WSC	stephen.szehner@faa.gov	206-231-2325

APPENDICES

- Final Runway 26R Touchdown Zone Lights CSPP, Revision 3, dated May 21, 2019
- ONT diagram

DRAFT

Appendix L-3

Email from ONT Tower Manager (Sylvia Dee [FAA]) to Director of Planning (Michelle Brantley [OIAA]), 11/5/2020.

From: Dee, Sylvia L (FAA)
To: Brantley, Michelle
Cc: Smith, Jeffrey
Subject: RE: Contra-Flow Next Steps
Date: Thursday, November 5, 2020 10:54:51 AM

Hello Michelle,
I did have the opportunity to discuss with my manager.
During certain conditions such as construction and restrictive movement area closures, ONT ATCT will temporarily cease CONTRA in efforts to reduce risk. Thank you for inquiring and please reach out to the regional administrator's office.
Please note: March 2020 history of discussion- the reduced hours was considered by both, but I do not recall any firm agreement.
Sincerely,
Sylvia L. Dee
Ontario Tower
Air Traffic Manager
909 605-0057 *3110

From: Brantley, Michelle <MBrantley@flyontario.com>
Sent: Wednesday, November 04, 2020 12:32 PM
To: Dee, Sylvia L (FAA) <Sylvia.L.Dee@faa.gov>
Cc: Smith, Jeffrey <JSmith@flyontario.com>
Subject: RE: Contra-Flow Next Steps
Thanks Sylvia, Just touching base to see if you've spoken to your manager? I want to reach out to Raquel / Faviola by the end of the week. Thanks!

Michelle Brantley
Director of Planning
M: 909.227.3055 | **O:** 909.544.5255
mbrantley@flyontario.com | @flyONT



From: Dee, Sylvia L (FAA) <Sylvia.L.Dee@faa.gov>
Sent: Saturday, October 31, 2020 4:13 PM
To: Brantley, Michelle <MBrantley@flyontario.com>
Cc: Smith, Jeffrey <JSmith@flyontario.com>
Subject: Re: Contra-Flow Next Steps
Hi Michelle. I do need some time to discuss your concerns with my regional manager about future projects and applicable CONTRA ops.
I will reach out to my manager this coming week and get back to you soon after. Thank you for the information.
Sincerely,
Sylvia Dee
Ontario ATCT

On Oct 31, 2020, at 11:47 AM, Brantley, Michelle <MBrantley@flyontario.com> wrote:

Hi Sylvia,

I wanted to touch base with you before I reach out to Raquel Girvin and Faviola Garcia on contra-flow during construction runway closures at ONT. We acknowledge that there will not be contra-flow during construction of TDZ lights project in early 2021 and that is unfortunate. The way bigger concern, however, is not having contra-flow during construction of taxiway improvements and runway rehabilitation for up to three years starting in 2024. This will be devastating to our noise mitigation program and Regional Administrator's Office needs to be fully aware of it. If we cannot find a way to support contra-flow during the future projects then I will need them to support us in the community if there are noise complaints.

This is the history of contra-flow discussions at ONT this year as I know it. Is there anything you would like to add or discuss before I elevate this? Please feel free to add others from your team to this email for additional input. I hope we can continue to work together on these issues.

February 2020	ONT ATCT Informed ONT they would not operate in contra-flow during runway closures associated with the TDC Lights Project
March 2020	Several meetings to discuss, inform and negotiate. Agreement was reached that ATCT would operate in contra-flow from 0000 hrs (12 Midnight) to 0500 hrs each night (weather-permitting) throughout the duration of this project
July 2020	ONT ATC reverted to original position of unable to operate in contra-flow during the TDZ project during any time period
August 2020	SRMP was conducted on TDZ Lights Project and Associated Runway 26R/08L and Taxiway Closure and CONFIRMED no contra-flow during construction.

Thanks so much!

Michelle Brantley
Director of Planning
M: 909.227.3055 | **O:** 909.544.5255
mbrantley@flyontario.com | @flyONT

Appendix L-4

Title 49 U.S. Code § 40103 - Sovereignty and use of airspace

49 U.S. Code § 40103 - Sovereignty and use of airspace

U.S. Code Notes

(a) S VE EIGNTY AND PUBLIC RIGHT F T AN IT.—

(1) The United States Government has exclusive sovereignty of airspace of the United States.

(2) A citizen of the United States has a public right of transit through the navigable airspace. To further that right, the Secretary of Transportation shall consult with the Architectural and Transportation Barriers Compliance Board established under section 502 of the Rehabilitation Act of 1973 (29 U.S.C. 792) before prescribing a regulation or issuing an order or procedure that will have a significant impact on the accessibility of commercial airports or commercial air transportation for handicapped individuals.

(b) U E F AI ACE.—

(1) The Administrator of the Federal Aviation Administration shall develop plans and policy for the use of the navigable airspace and assign by regulation or order the use of the airspace necessary to ensure the safety of aircraft and the efficient use of airspace. The

NEW

(A) navigating, protecting, and identifying aircraft;

(B) protecting individuals and property on the ground;

(C) using the navigable airspace efficiently; and

(D) preventing collision between aircraft, between aircraft and land or water vehicles, and between aircraft and airborne objects.

(3) To establish security provisions that will encourage and allow maximum use of the navigable airspace by civil aircraft consistent with national security, the Administrator, in consultation with the Secretary of Defense, shall—

(A) establish areas in the airspace the Administrator decides are necessary in the interest of national defense; and

(B) by regulation or order, restrict or prohibit flight of civil aircraft that the Administrator cannot identify, locate, and control with available facilities in those areas.

(4) Notwithstanding the military exception in section 553(a)(1) of title 5, subchapter II of chapter 5 of title 5 applies to a regulation prescribed under this subsection.

(c) Foreign Aircraft.—
A foreign aircraft, not part of the armed forces of a foreign country, may be navigated in the United States as provided in section 41703 of this title.

(d) Aircraft of Armed Forces of Foreign Countries.—
Aircraft of the armed forces of a foreign country may be navigated in the United States only when authorized by the Secretary of State.

(e) No Exclusive Right at Certain Facilities.—A person does not have an exclusive right to use an air navigation facility on which Government money has been expended. However, providing services at an airport by only one fixed-based operator is not an exclusive right if—

(1) it is unreasonably costly, burdensome, or impractical for more than

NEW

(Pub. L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1101.)

U.S. Code Toolbox

Law about... Articles from Wex
Table of Popular Names
Parallel Table of Authorities
How current is this?

21

NEW

ACCESSIBILITY

ABOUT LII

CONTACT US

ADVERTISE HERE

HELP

TERMS OF USE

PRIVACY

[LII]

NEW



NEW