Initial Study/Mitigated Negative Declaration

Headworks Site Development Project

Lead Agency:



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CEQA Initial Study and Mitigated Negative Declaration
Headworks Site Development Project

April 2024

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ACRONYMS AND ABBREVIATIONS

AB 52	Assembly Bill 52
APE	Area of Potential Effects
AQMP	Air Quality Management Plan
AWPF	Advanced Water Purification Facility
BMP	Best Management Practice
BSA	biological study area
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CRHR	California Register of Historical Resources
CRMMP	cultural resources monitoring and mitigation plan
dBA	A-weighted decibel scale
DDW	Division of Drinking Water
DPR	Direct Potable Reuse
FESA	Federal Endangered Species Act
GHG	Greenhouse Gas
HWSG	Headworks Spreading Grounds
HVAC	heating, ventilation, and air conditioning
IS	CEQA Initial Study
LADOT	City of Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LAGWRP	Los Angeles-Glendale Water Reclamation Plant
LARAP	Los Angeles Department of Recreation and Parks
LEED	Leadership in Energy and Environmental Design
LAFD	Los Angeles Fire Department
LAPD	Los Angeles Police Department
L_{eq}	Equivalent Noise Level
LID	low-impact development
MBTA	Migratory Bird Treaty Act
MG	million gallons
MGD	million gallons per day
MND	Mitigated Negative Declaration
MRZ	Mineral Resources Zone
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
LST	localized significance thresholds
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
OS	Open Space
PM	particulate matter
PRC	Public Resources Code
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy

SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SO_2	Sulfur dioxide
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resource Control Board
TAC	Toxic Air Contaminants
TAZ	Traffic Analysis Zone
VMT	vehicle miles traveled
VOCs	volatile organic compounds
WQL	Water Quality Laboratory
USFWS	U.S. Fish and Wildlife Service
VHFHSZ	Very High Fire Hazard Severity Zone

1 PROJECT DESCRIPTION

1.1 Overview of the Project

The Los Angeles Department of Water and Power (LADWP) proposes to develop three facilities within its existing Headworks Spreading Grounds (HWSG) property, located along the northwest edge of Griffith Park in the City of Los Angeles. The facilities would include a Water Quality Laboratory (WQL), a Direct Potable Reuse (DPR) Demonstration Facility, and a public park (Headworks Restoration Park), which are the components of the Headworks Site Development Project (referred to herein as the proposed project or project). The purpose of the WQL is to replace the existing obsolete LADWP laboratory facility, which is located in the City of Pasadena. The purpose of the DPR Demonstration Facility is to test various water purification technologies for treating recycled wastewater to help the City of Los Angeles meet the goal to recycle all of its wastewater for beneficial reuse by 2035. The purpose of Headworks Restoration Park is to provide recreational access and educational opportunities regarding local ecosystems and water use. The proposed project would also include roads interior to the HWSG property, surface parking for staff and visitors, landscaping, and security lighting and fencing where required.

1.2 California Environmental Quality Act

The California Environmental Quality Act (CEQA; California Public Resources Code Section 21000 et seq.) applies to proposed projects initiated by, funded by, or requiring discretionary approvals from state or local government agencies. The construction and operation of the Headworks Site Development Project constitute a project as defined by CEQA (California Public Resources Code Section 21065). The CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387) Section 15367 states that a lead agency is “the public agency which has the principal responsibility for carrying out or approving a project.” Therefore, as a municipal utility with discretionary approval authority for the proposed project, LADWP is the lead agency responsible for compliance with CEQA for the project.

As the CEQA lead agency, LADWP must complete an environmental review to determine if implementation of the proposed project would result in significant adverse environmental impacts and to propose measures, as feasible, to eliminate or reduce any such identified impacts. LADWP has prepared an Initial Study (IS) to assist in making that determination. Based on the nature and scope of the proposed project and the evaluation contained in the IS environmental checklist (included herein), LADWP, as the lead agency, has concluded that a Mitigated Negative Declaration (MND) is the proper level of CEQA environmental documentation for the project. The IS shows that impacts caused by the proposed project are either less than significant or would be reduced to a less than significant level with the incorporation of appropriate mitigation measures as included herein. This conclusion is supported by CEQA Guidelines Section 15070, which states that an MND can be prepared when the IS identifies potentially significant effects, but the proposed project would either include revisions to the project plans or incorporate mitigation measures that would avoid the effects or reduce them to a less than significant level.

1.3 Project Location and Setting

The proposed project site is located in the Hollywood community of Los Angeles, within the existing HWSG property, which is located at 6001 West Forest Lawn Drive. HWSG is a 43-acre property situated within the boundaries of Griffith Park. The property is owned by the Los Angeles Department of Recreation and Parks (LARAP), but LADWP retains an easement over the entire 43 acres. The project site is bounded by the Los Angeles River and State Route 134 (SR-134) to the north and by Forest Lawn Drive to the east and south. An LADWP high-voltage transmission line

right-of-way runs along the northern perimeter of HWSG, between the Los Angeles River and the project site boundary. Forest Lawn Memorial Park and Mount Sinai Memorial Park are located on the south side of Forest Lawn Drive across from HWSG. Griffith Park is located adjacent to the eastern edge of HWSG, across Forest Lawn Drive. Local access to the HWSG property is provided via Forest Lawn Drive, and regional access is provided via SR-134. The HWSG property has a General Plan land use designation of OS (Open Space) and is zoned OS-1XL-H-RIO (Open Space in a River Improvement Overlay district). While located within the urban setting of Los Angeles, the project site is more immediately surrounded by open space uses, including cemeteries, passive park areas, and other recreational facilities. Figure 1 illustrates the regional location of the proposed project site and Figure 2 illustrates the existing HWSG and surrounding vicinity.

1.4 Project Background

1.4.1 Headworks Spreading Grounds Property

The HWSG property has historically been a source for water extraction, storage, and distribution for the City of Los Angeles, associated with the adjacent Los Angeles River and the San Fernando Groundwater Basin. The property was acquired by the City in 1899 to serve as the “headworks” for its water distribution system by extracting groundwater from beneath the adjacent Los Angeles River. In 1902, a diversion dam and water supply conduit to convey water south to the City were built at the property. Deep infiltration galleries to extract groundwater were added in 1905 and expanded in 1916 and 1920. Wells were subsequently developed on the property, and by 1925, 14 wells at HWSG fed the City’s water system. Spreading grounds were developed at the property in 1938 to detain river water for percolation. The water was collected in perforated pipes that were connected to infiltration galleries approximately 150 feet below the ground surface. An inflatable dam was built in the 1950s to direct river flows into the spreading grounds for infiltration into the aquifer. The spreading grounds consisted of six separate basins, ranging in size from one acre to more than eight acres. The infiltration galleries were removed from service in 1971, and river diversions into the spreading grounds ceased in 1982.

In 2012, construction began on what is now known as the Tom LaBonge Headworks Water Complex (Headworks Water Complex, formerly, the Headworks Reservoir Complex) at HWSG. The Headworks Water Complex replaced the storage capacity provided by the uncovered Silver Lake Reservoir Complex, which was removed from service to comply with updated United States Environmental Protection Agency water quality regulations. The East Reservoir was completed in 2015, and the West Reservoir was completed in 2022. The reservoirs, which have a combined storage capacity of 110 million gallons (MG), are located in the eastern portion of the HWSG, and occupy approximately half the property. The two reservoirs are roofed concrete structures that are partially below grade (20 feet) and partially above grade (20 feet). The top of the East Reservoir has been buried with approximately 3 feet of soil, the top of the West Reservoir will be similarly covered before initiation of the proposed project. Soil embankments have been built up around the above-grade walls of the reservoirs. However, the west facade of the West Reservoir remains exposed to showcase the technical and engineering achievement of the reservoir’s construction.

The entire HWSG property has been highly disturbed starting in the early 20th century with the installation of water extraction and conveyance facilities involving deep excavation and grading, the mid-century development of the spreading grounds requiring extensive earth movement across the site, and the recent implementation of the Headworks Water Complex, which entailed the construction of large, partially buried structures that encompass the eastern half of the property. Similarly, construction of the River Supply Conduit Improvement Lower Reach Project has resulted in excavation of the HWSG property for the construction of a flow control station and supply conduit in 2022. While trees have reestablished in previously disturbed areas along



HEADWORKS SITE DEVELOPMENT PROJECT

Regional Vicinity

Figure 1



Legend

- Headworks Spreading Grounds Property
- Griffith Park

0 600 1,200 Feet

Source: County of Los Angeles, ArcGIS Online

HEADWORKS SITE DEVELOPMENT PROJECT

Headworks Spreading Grounds and Vicinity

Figure 2

portions of the southern perimeter (adjacent to Forest Lawn Drive) since the spreading grounds function was discontinued decades ago, the remainder of HWSG property is largely devoid of vegetative cover, including the portion of the property west of the reservoirs, which was used as a soil borrow and fill area related to the reservoir construction. The exception to this is at the far eastern portion of the property (east of the East Reservoir), where low-growing scrub vegetation has reestablished, and a portion of the top of the East Reservoir itself, which has been planted with low-growing scrub vegetation.

Water Quality Laboratory

The current LADWP laboratory is located in a former office building in the City of Pasadena that was built in the 1960s. The facility was purchased by the LADWP in 2003 and modified over time to allow the department to conduct critical laboratory functions related to drinking water sample testing necessary to meet regulatory requirements and ensure the quality of drinking water for the City of Los Angeles. The laboratory conducted over 38,000 sample analyses per year (based on the average from 2015 – 2018). In addition, the WQL participates in special studies and projects in support of treatment operations, groundwater assessments, unregulated contaminants, and water security monitoring. The laboratory maintains a quality assurance program that provides data of documented quality and conformance with regulatory standards and collaborates with other laboratories and agencies to enhance analytical capabilities.

The use of the current laboratory building was intended to be temporary but has continued for over two decades. Since its purchase in 2003, the building has been retrofitted multiple times to accommodate the various laboratory functions, which have expanded over time based on new regulations and more stringent testing requirements. The laboratory building has insufficient space, poor functional layout, and inadequate electrical and mechanical systems, which have required continual upgrades and repair. The higher demand for testing services has increased workload and staffing, causing safety concerns related to a lack of sufficient working space.

The proposed WQL at HWSG is necessary to functionally replace the existing deteriorating and inadequate LADWP laboratory, increase operational efficiencies, and improve logistics by locating the laboratory within the LADWP service area. In addition, laboratory staff who currently report to various locations other than the existing laboratory building would be able to work from one central location. The new WQL would improve safety for staff by incorporating ergonomics to comply with standard safety requirements for both personnel and laboratory instruments. The facility would also be designed to meet the Mayor's Resilience by Design Directive by seeking to obtain Leadership in Energy and Environmental Design (LEED) Gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The new WQL would also reduce long-term operations and maintenance costs.

1.4.2 Direct Potable Reuse Demonstration Facility

The City of Los Angeles has a goal to reuse all of its wastewater by 2035 for beneficial uses in order to reduce its use of scarce, costly, and energy-consumptive imported water supplies. This reuse may include the continued use of recycled wastewater for non-drinking water purposes, such as irrigation; environmental uses; and/or the purification of recycled wastewater through advanced treatment processes for non-direct potable reuse, such as groundwater recharge. In the future, reuse may also include DPR, in which purified recycled water could be used for potable water purposes. To help meet the City's wastewater reuse goal, LADWP is exploring various advanced treatment technologies that would ultimately support DPR. The DPR Demonstration Facility component of the proposed project would include an advanced water purification facility (AWPF), as defined in the State Water Resource Control Board (SWRCB) Proposed Framework

for Regulating Direct Potable Reuse in California – Second Edition (August 2019). The demonstration facility would provide the opportunity to verify the technologies and processes required to produce purified recycled water suitable for DPR under close coordination with the SWRCB Division of Drinking Water (DDW), which must ultimately approve DPR programs. The facility would also include an educational element to inform the public about DPR and other aspects of water use in the City.

The Los Angeles-Glendale Water Reclamation Plant (LAGWRP), located adjacent to the Los Angeles River, approximately 3.5 miles downstream from HWSG, is a source of recycled water that would serve as influent for the proposed DPR Demonstration Facility. Recycled water from LAGWRP is shared equally between the City of Los Angeles and the City of Glendale, each retaining ownership of 50 percent of the treated effluent. All wastewater received at LAGWRP is treated to a tertiary level, which includes a nitrification/denitrification process prior to the tertiary treatment step. The plant has a treatment capacity of approximately 20 million gallons per day (MGD) but currently produces an average of approximately 16 MGD. A portion of the tertiary effluent is delivered to recycled water distribution systems for LADWP and the City of Glendale, and a portion is discharged to the Los Angeles River. LADWP currently utilizes the recycled water from LAGWRP primarily to provide irrigation of golf courses, cemeteries, and other sites located in and around Griffith Park, near the HWSG. This water is delivered via a recycled water line that runs within Forest Lawn Drive south of HWSG.

1.4.3 Headworks Restoration Park

The LA River Master Plan (2021) explores the potential to create a public benefit and unifying feature for the diverse communities that span the 51-mile length of the Los Angeles River from Canoga Park in the west San Fernando Valley to Long Beach Harbor. Among the strategies considered in the plan are possible uses for the over 2,300 acres of often underutilized publicly-owned lands adjacent to the river, which provide an opportunity for a series of accessible open spaces linked by pedestrian and bicycle pathways along the river's edge. HWSG has been identified in the Master Plan as a key location along the river based on the availability of a large parcel of City-owned land, primary road access, and adjacency to Griffith Park and existing trails along the river. Consistent with the goals of the Master Plan, the Headworks Restoration Park would incorporate landscaping reflective of native plant communities and provide educational opportunities regarding local ecosystems and the Los Angeles River, as well as passive open-space recreation uses, including a segment of the Los Angeles River Trail system allowing for future linking to adjacent recreation areas and trails. The park, a portion of which would be developed atop the West Reservoir under the proposed project, would be consistent with the previously established plans to plant the top and sides of the buried concrete reservoir and surrounding areas in HWSG with native vegetation.

1.5 Description of Proposed Project

The proposed DPR Demonstration Facility would be located on an undeveloped portion of the project site at the west end of the HWSG property. The proposed WQL would be located on an undeveloped portion of the project site to the east of the DPR Demonstration Facility. The proposed Headworks Restoration Park would be developed in the eastern portion of the project site, atop the West Reservoir, with other park features, including parking, a pavilion building, trails and site landscaping, located in adjacent areas (see Figure 3).



Legend

1. Headworks Park (Proposed)
2. Headworks Park - Pavilion Gateway (Proposed)
3. Headworks Park - Parking Lot (Proposed)
4. LA River Trail Segment (Proposed)
5. Access Road (Proposed)
6. Equestrian Tunnel (Existing)
7. Connection to Griffith Park (Existing)
8. Water Quality Lab (Proposed)
9. DPR Demonstration Facility (Proposed)
10. DPR Demonstration Facility Visitor Center (Proposed)
11. East Reservoir (Existing)
12. Flow Control Station (In Construction)

HEADWORKS SITE DEVELOPMENT PROJECT

0 250 500 Feet

Source: ESRI, Nearmap, County of Los Angeles

Proposed Project Conceptual Site Plan

Figure 3

1.5.1 Water Quality Laboratory

The proposed WQL would include approximately 100,000 gross square feet of floor space; surface parking for 12 visitor vehicles, 102 staff vehicles, and 20 LADWP fleet vehicles; a Mobile Laboratory Trailer; landscaping; and other site improvements. The proposed WQL would include both laboratory and office space. The facility may also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater.

The proposed WQL would be organized around a laboratory planning module, allowing for benches, tables, floor-mounted equipment, fume hoods, and biosafety cabinets. The proposed WQL would require multiple areas for the safe storage of materials, chemicals, gases, and wastes, including flammable or corrosive storage rooms, a hazardous chemical waste room, a gas cylinder support room, and a hazardous waste storage room. The proposed WQL would ensure staff safety through once-through (single pass) air systems in lab areas, fume hoods located away from the exits, air handling units for supply air placed away from exhaust fans/stacks, American National Standards Institute compliant combination eyewash and shower safety stations, a central safety and supplies storage room, and safety stations within each lab. The Mobile Laboratory Trailer would have parking apron space and a weather canopy structure and would include a dedicated power feed and local cage structure for cylinder gases while parked on-site.

The proposed WQL would satisfy criteria for an essential facility and would be designed to remain operational for a minimum of seven days after a disaster, the amount of time deemed necessary to maintain support for repairs. The structures and all non-structural components and equipment would be designed to meet occupancy Risk Category IV structural requirements for life safety. Emergency generators powered by diesel fuel and photovoltaic panels with battery storage would be sized for 72 hours of operation at 100 percent load rating. Essential support services would include electric power, potable water, sewage disposal, and food. The non-structural components and systems of the facility would also follow the seismic requirements and guidelines defined in the latest version of the American Society of Civil Engineers 7 reference code and the Los Angeles Building Code.

The conceptual design for the proposed WQL incorporates best management practices and high-performance strategies in several of the major LA Green New Deal (formerly Sustainable City pLAn) target areas for renewable energy, use of local water, and construction of clean and healthy buildings. The facility would have a photovoltaic array on the rooftop of the building. It would also include an internal landscaped courtyard, and may also include a green roof, to conserve water through stormwater capture and treatment. Recycled water from LAGWRP would provide irrigation water for the landscaping, which would be drought-tolerant in the types and use of plant material. The building would achieve energy efficiency by implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency heating, ventilation, and air conditioning systems. The proposed WQL would include electric vehicle charging stations in compliance with Los Angeles Department of Building and Safety requirements. It would incorporate recycled material in all aspects of the building construction to promote a sustainable supply chain. All lighting and lighting controls for the facility would comply with the latest version of the Building Energy Efficiency Standard (Title 24) and the California Green Building Standard Code.

1.5.2 Direct Potable Reuse Demonstration Facility

As previously discussed, the proposed DPR Demonstration Facility would be an AWPF, using

recycled wastewater from LAGWRP. The proposed DPR Demonstration Facility would serve as a platform for testing specific DPR technologies and strategies and would allow LADWP to engage with the SWRCB DDW in the development of DPR regulations and treatment requirements. In addition to two alternative trains for testing advanced treatment processes, the proposed DPR Demonstration Facility would include a chemical storage area and support areas (e.g., workstations, lockers, breakroom).

The proposed DPR Demonstration Facility would also be used for public outreach and education for the City's water reuse projects, which would be complementary to the overall role that the HWSG property and its facilities play in the City's water supply. As such, a visitor center and a parking lot would be provided. The visitor center would provide a venue for presentations prior to public tours of the AWPF.

The AWPF and its support facilities would be approximately 20,000 square feet, with an additional 20,000 square feet for a surrounding vehicle access road. The visitor center would be approximately 5,000 square feet, with an additional approximately 16,500 square feet for the parking lot to accommodate staff and visitors.

1.5.3 Headworks Restoration Park

The proposed Headworks Restoration Park would provide passive recreational uses and educational opportunities regarding local ecosystems and water use. The centerpiece of Headworks Restoration Park would be the West Reservoir Gardens, constructed on top of the approximately 8-acre West Reservoir. As currently designed, the garden would include a series of ramps, landings, and walkways, as well as tree groves and gardens adhering to LA River Improvement Overlay Guidelines. A surface parking lot and a gateway pavilion are proposed near the entry driveway off of Forest Lawn Drive and adjacent to the West Reservoir on the west. The proposed project would also include a series of pedestrian pathways and a bicycle path on the north end of the property. Design and construction of the bicycle path will consider the existing equestrian trail and allow for future connection to the Los Angeles River Trail. Any plantings will adhere to LA River Improvements Overlay Guidelines.

1.5.4 Vehicular Access and Traffic

The primary vehicular access to the HWSG site for all the proposed project components would be from Forest Lawn Drive at Mt. Sinai Drive. Modifications to traffic lanes on Forest Lawn Drive would be required to provide a westbound right-turn and an eastbound left-turn lane. These modifications would be accommodated within the existing road right-of-way. Modifications to the existing traffic signal at the intersection of Forest Lawn Drive and Mt. Sinai Drive would also be required. Secondary access for employee, service, and maintenance vehicles would be provided from Forest Lawn Drive at the west end of the HWSG site. A series of interior roads would provide access for the public, employees, maintenance, and emergency vehicles to various locations within the site.

1.5.5 Security Features and Lighting

The perimeter of the HWSG would be fenced, and access to the LADWP facilities (i.e., the WQL and the DPR Demonstration Facility) would be fenced to control access. Lighting required for site safety and security at the WQL and DPR Demonstration Facility would be provided. All exterior lights would be full cut off fixtures to prevent spill-over light, and lighting with low color temperature would be used. Minimal site lighting would be provided at Headworks Restoration Park because use of the park, and therefore public access to the HWSG site, would be limited to dawn to dusk.

1.6 Project Construction

It is anticipated that the proposed project construction would begin in the fourth quarter of 2024 with the Headworks Restoration Park, which would take approximately 3.3 years to complete, concluding in 2028. The construction of the proposed WQL would begin in the second quarter of 2027, overlapping the last phases of the park construction by approximately 9 months. The proposed WQL construction would take approximately 2.5 years to complete, concluding in the first quarter of 2030. Construction of the proposed DPR Demonstration Facility would follow in succession, starting in the second quarter of 2030 and concluding in the fourth quarter of 2031, a period of approximately 1.5 years. Accounting for overlaps in the construction periods for the project components, the total construction time for the proposed project would be approximately 7 years, from late 2024 to late 2031. The estimated schedule for the project components is shown in Figure 4.

Construction activities would typically occur Monday through Friday during the daytime hours, beginning no earlier than 7:00 a.m. and generally ending by 5:00 p.m. Personnel may arrive on site prior to 7:00 a.m. to conduct safety meetings and other pre-construction activities, but no noise-generating construction activities would occur before 7:00 a.m. Likewise, personnel may remain on site after 5:00 p.m., conducting closeout activities, but noise-generating construction activities would generally not occur after 5:00 p.m., except under unusual circumstances. Construction on Saturdays may also occasionally be necessary but is generally not anticipated. On Saturdays, noise-generating construction activities would not begin before 8:00 a.m. and would normally end by 5:00 p.m. No construction work would occur on Sundays or federal holidays, except under emergency conditions. These limits are consistent with the provisions in the City of Los Angeles Municipal Code regarding construction noise.

Temporary trailers for construction management activities and temporary laydown areas and storage facilities for construction materials and equipment would be required. All administrative, staging, storage, laydown areas, as well as worker parking related to project construction would be located within the existing HWSG property boundaries. Vehicular access to the site during construction would be provided at the gate at the west end of the HWSG property.

The construction of each project component (i.e., Headworks Restoration Park, the WQL, and the DPR Demonstration Facility) would broadly require similar tasks, which would include mobilization and site clearing, excavation and grading, installation of under-slab utilities, foundations and structures, building exteriors and interiors, site work and landscaping (including parking areas), and commissioning and closeout. However, the extent and duration of these tasks would vary between the project components. For example, because of the nature of the proposed WQL (i.e., a building with 100,000 square feet of floor space), the excavation and grading and under-slab utilities tasks would require approximately 8 months to complete, but the similar tasks for the proposed Headworks Restoration Park would require only approximately 4.5 months. Conversely, the site work and landscaping tasks for the proposed Headworks Restoration Park would require approximately 25 months, but the similar tasks for the proposed WQL would require only approximately 4.5 months.

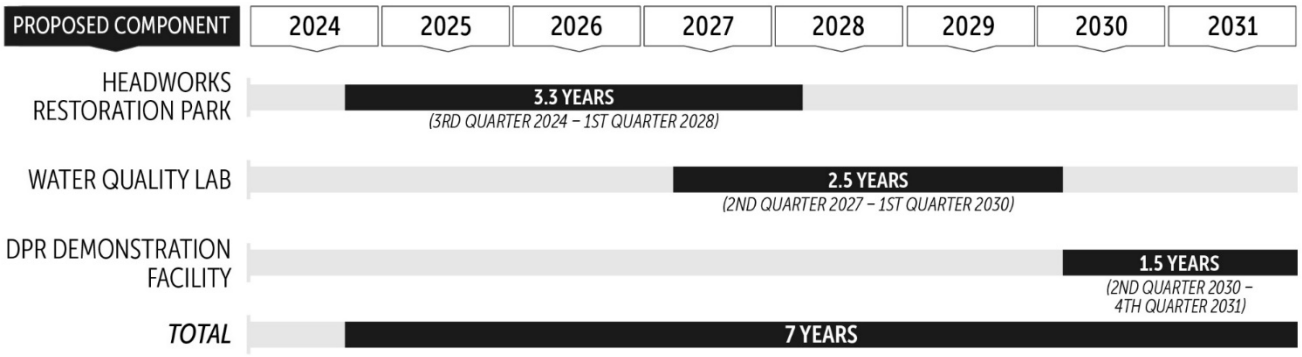


Figure 4: Proposed Project Construction Schedule

These various tasks help establish the general level and type of activities and functions associated with project construction, such as excavation, equipment usage, delivery and haul truck trips, and worker commute trips. These represent factors in relation to assessing the nature and extent of certain environmental impacts that may be created during construction of the project.

Each of the project components would be constructed according to an individual schedule that would involve a lower level of activity during project initiation, an increase of activity over time, and a tapering of activity as tasks near completion and the project component enters the commissioning and construction closeout phases. Therefore, across the approximately 7-year project construction schedule, several peaks of construction activity would occur.

The estimated average daily number of on-site workers would peak at 88 for a 3-month period during the park construction, with several secondary peaks of approximately 55 and 60 workers during the 7-year project construction period. Other than these peak months, the average daily number of workers would remain at or below 40 and often fewer than 20. This would include field personnel and supervisory and office staff. It is conservatively assumed for environmental impact analysis purposes that each individual worker would generate a vehicle trip inbound to the project site in the morning and a vehicle trip outbound from the project site at the end of the workday.

The use of heavy equipment, including excavators, bulldozers, scrapers, loaders, sheepsfoot rollers, and backhoes, would be limited primarily to the excavation and grading tasks early in the construction process for the WQL and DPR Demonstration Facility. The use of certain heavy equipment, including excavators, graders, loaders, sheepsfoot rollers, and backhoes, would also be used during the site work and landscaping tasks for Headworks Restoration Park. During the remaining construction tasks for all the project components, primarily smaller equipment, including skid-steers, forklifts, aerial lifts, skip loaders, generators, and welding machines, would be utilized. The estimated average daily number of pieces of on-site equipment would peak at approximately 39 for a 3-month period during park construction. However, for the majority of the 7-year project construction period, the average daily number of pieces of equipment would remain at or below 20.

Large trucks would be required to transport material to and from the project site throughout the construction period. This would include dump trucks to haul excavated material from the site to local landfills or deliver material such as backfill or asphalt, flatbed trucks to deliver large and/or heavier loads, tractor-trailers or box trucks to deliver smaller loads, and concrete trucks. Unlike construction worker commute trips, which would be concentrated during early morning and late

afternoon, truck trips would generally be distributed throughout the workday. The estimated average daily number of off-site truck round-trips would peak at approximately 17 for a 3-month period during park construction. During several months, especially during the overlap between the park and WQL construction, the estimated average daily number of truck trips would exceed ten. However, for the remainder of the 7-year project construction period, the average daily truck trips would remain at or below ten and often fewer than five.

Temporary lane closures may be required during construction of the intersection modifications to provide a westbound right-turn lane and eastbound left-turn lane at Forest Lawn Drive and Mt. Sinai Drive to provide access into the HWSG property. A traffic control plan would be prepared for review and approval by the Los Angeles Department of Transportation (LADOT) prior to project construction and would include such measures as warning signage, speed limits, detours, and flag persons as necessary to minimize disruptions to traffic.

1.7 Project Operation

1.7.1 Water Quality Laboratory

The proposed WQL would include the following operations:

- Microbiology Section
- Chemistry Section
- Science and Research Section
- Chain of Custody/Laboratory Information Management System/Reporting Section
- Sample Collection Section
- Biology Control Section
- Quality Assurance Section
- Mobile Laboratory

The WQL would operate 7 days a week, 12-hours a day, from 6 a.m. to 6 p.m. Initially, 102 personnel would report to the facility in staggered shifts on weekdays. Of this total, 62 personnel would be transferred from the existing laboratory building in Pasadena, and 5 would be transferred from the Rinaldi Yard in Granada Hills, where the water quality mobile laboratory and support trailers are currently located. Therefore, the proposed WQL would initially require an increase of 35 personnel above the current staffing at the Pasadena lab to perform the laboratory functions required to meet state and federal regulations and ensure drinking water quality. Over time, it is anticipated that the number of personnel at the WQL would increase to a maximum of 172 based on the requirement for additional laboratory procedures and on organizational changes that would involve the transfer of existing management and administrative staff from the LADWP headquarters building in downtown Los Angeles. This increase in personnel may occur over a 10-year period. On weekends, the WQL would maintain operations with a skeleton crew. While most personnel would operate from the laboratory building on a daily basis, some personnel would spend a portion of their day in the field collecting water samples using fleet vehicles from the WQL. Regular deliveries of chemicals and other supplies would be accommodated via the secondary, non-public gate at the west end of the HWSG property. It is anticipated that groups of up to 20 people from outside organizations, other government agencies, or the general public may visit the WQL about twice every month on average.

1.7.2 Direct Potable Reuse Demonstration Facility

The AWPF would be designed to receive an average flow of approximately 1.38 MGD of tertiary treated water from LAGWRP. As discussed, this water would be conveyed to HWSG via the existing recycled water line in Forest Lawn Drive, which would require a connection from the street to the AWPF. This influent would be divided between two different treatment trains to test the effectiveness and efficiency of various treatment process for DPR water.

Because the DPR Demonstration Facility is intended to test and verify various advanced treatment technologies and processes and is not approved to supply drinking water, the water processed through the AWPF would not be discharged into the LADWP potable water system. Instead, the water would be continually discharged into the Los Angeles River adjacent to the HWSG. It is anticipated that both trains would utilize micro-filtration, reverse osmosis, and ultraviolet advanced oxidation processes during treatment. Byproducts resulting from these processes, including backwash water used to clean the micro-filtration strainers and membranes and waste solutions from cleaning of the micro-filtration and reverse osmosis equipment, would not be suitable for discharge to the river. These process losses would represent approximately 15 percent of the AWPF influent by volume. Therefore, an average of about 1.17 MGD of water (85 percent of the 1.38 MG of influent) from the AWPF would be discharged to the river at HWSG. Prior to discharge, the reverse osmosis reject water (primarily dissolved solids) would be remixed into the purified water to rebalance the water with minerals, and the water would be dechlorinated.

An average of approximately 0.21 MGD (15 percent of the original AWPF influent) consisting of micro-filtration backwash and cleaning solution water would be returned via the existing sewer system to LAGWRP for processing. The process losses during tertiary treatment of this returned water at LAGWRP would be approximately 18 percent by volume (approximately 0.04 MG) of sludge byproduct, which would be conveyed in the existing sewer system to Hyperion Water Reclamation Plant in El Segundo. The remaining recycled water (approximately 0.17 MG) would be available for discharge to the Los Angeles River at LAGWRP.

The proposed DPR Demonstration Facility would operate 24 hours per day, 7 days per week. Two operators, working on 8-hour shifts, would be present at all times. Facility maintenance personnel for piping, instrumentation, electrical, and mechanical systems would report to the facility during normal weekday hours. A total of approximately five personnel would be present on weekdays.

It is anticipated that groups, including organizations, students, and members of the general public would visit the DPR Demonstration Facility for tours about twice weekly on average.

1.7.3 Headworks Restoration Park

The proposed Headworks Restoration Park would be a public park managed and maintained by LARAP. However, LADWP would maintain its access to the reservoirs and appurtenant facilities as necessary for operations and maintenance. The park would be primarily a passive recreation space with no formal active recreation facilities. The West Reservoir Gardens would include promenades and pathways, overlooks, and informal gathering spaces, organized around a series of groves and color-themed gardens consisting of native vegetation. The Reservoir Gardens would provide for activities such as strolling, picnicking, exercising, and educational field trips. A pavilion structure adjacent to the West Reservoir Garden would include picnic tables, park administrative offices, and restrooms.

Another major organizing element of Headworks Restoration Park is the HWSG segment of the

LA River Trail, which would traverse the property from the secondary access gate on the west, across the northern perimeter, utilizing the transmission line right-of-way adjacent to the river. The trail would connect on the east to Forest Lawn Drive and will consider potential future connections to the existing riverside trail to the northeast. Other pedestrian pathways would also be provided within HWSG, surrounding the reservoirs to the west, south, and east.

Stormwater would be captured and utilized to the extent possible to provide water for plants, and irrigation systems would use recycled water from the LAGWRP distribution system routed along Forest Lawn Drive. The park would be open from dawn to dusk, 7 days per week, including holidays, and would be secured by a perimeter fence. Several park personnel may be present during operating hours to provide for maintenance and visitor assistance.

1.8 Required Permits and Approvals

Numerous approvals and/or permits would be required to implement the proposed project. This IS/MND would be used to facilitate compliance with federal and state laws and the granting of permits by various state and local agencies having jurisdiction over one or more aspects of the project. These approvals and permits may include, but may not be limited, to the following:

City of Los Angeles Department of Building and Safety

- Building permit
- Accessibility review
- Grading and shoring permits
- Haul route permit
- Los Angeles Amendment Green Building Code review

City of Los Angeles Department of Public Works, Bureau of Engineering

- ‘A’ Permit
- ‘B’ Permit
- ‘S’ Permit

City of Los Angeles Department of Public Works, Bureau of Sanitation

- Standard Urban Storm Water Mitigation Plan during construction
- Low Impact Development (LID) ordinance to manage storm water onsite
- Industrial Wastewater Discharge Permit

City of Los Angeles Department of Transportation

- Worksite Traffic Control Plan and Traffic Signal Plan
- Traffic Signal Permit

City of Los Angeles Department of Cultural Affairs

- Design Review and Approval

City of Los Angeles Bureau of Street Services

- Tree Removal Permit

Los Angeles County Flood Control District

- Design Review

South Coast Air Quality Management District

- For construction and operation

State of California State Water Resources Control Board

- Storm Water Pollution Prevention Plan (SWPPP) for General Construction Permit

Los Angeles County Fire Department

- Hazardous Waste Generator Program
- Hazardous Materials Management Program

2 ENVIRONMENTAL DETERMINATION

The following discussion of potential environmental effects was completed in accordance with Section 15063(d)(3) of the CEQA Guidelines (2023) to determine if the proposed project may have a significant effect on the environment.

CEQA INITIAL STUDY FORM

Project Title:
Headworks Site Development Project

Lead Agency Name and Address:
Los Angeles Department of Water and Power
Environmental Planning and Assessment
111 North Hope Street, Room 1044
Los Angeles, CA 90012

Contact Person and Phone Number:
James Howe
Environmental Planning and Assessment
Los Angeles Department of Water and Power
(213) 367-0414

Project Sponsor's Name and Address:
Los Angeles Department of Water and Power
111 North Hope Street
Los Angeles, CA 90012

Project Location:
The proposed project would be located within the LADWP HWSG property (6001 West Forest Lawn Drive, Los Angeles, CA 90068) in the Hollywood community of the City of Los Angeles, California.

General Plan Designation:
The HWSG property is designated as Open Space in the General Plan.

Zoning:
The HWSG property is zoned OS-1XL-H-RIO (Open Space).

Description of Project:
The proposed project involves the development of three facilities within the HWSG property: a Water Quality Laboratory (WQL), a Direct Potable Reuse (DPR) Demonstration Facility, and a public park (Headworks Restoration Park). The proposed project would also include roads interior to the HWSG property, surface parking for staff and visitors, landscaping, pedestrian and bicycle pathways, and security lighting and fencing where required.

Surrounding Land Uses and Setting:
The surrounding area is characterized by moderate development and mostly open space uses such as parks and cemeteries. The site is adjacent to the Los Angeles River and SR-134 to the north.

2.1 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 and Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☐ Transportation/Traffic	☐ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

2.2 Environmental Determination

(To be completed by the Lead Agency)

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 (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) 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 04/24/2024

Date

Jane Hauptman
Manager of Environmental Planning and Assessment
Los Angeles Department of Water and Power

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3 ENVIRONMENTAL IMPACT ASSESSMENT

3.1 Aesthetics

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 non-urbanized 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 which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion

a) Except as provided in Public Resources Code Section 21099, would the project have a substantial adverse effect on a scenic vista?

No Impact. Scenic vistas are generally defined as panoramic public views to various natural features, including large water bodies, striking or unusual natural terrain, or unique urban or historic features. Public access to these views may be from park lands, privately- and publicly-owned sites, and public rights-of-way.

There are no areas designated as scenic vistas in the vicinity of the project site.[1] The proposed project would be constructed within the boundaries of the existing HWSG property, a site that has historically been a source for water extraction, storage, and distribution for the City and is highly disturbed. The proposed project would construct the proposed WQL and DPR Demonstration Facility on the western portion of the site, which is currently undeveloped. Headworks Restoration Park would be constructed on top of the existing West Reservoir. Views of the Santa Monica Mountains are available from areas north of the project site, and views of the Verdugo Hills, Santa Susana Mountains, and the San Fernando Valley are available from areas south of the project site. However, the proposed project would not obstruct scenic vistas from these locations. As such, no impacts to scenic vistas would occur.

b) Except as provided in Public Resources Code Section 21099, would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Less Than Significant Impact. There are no state-designated scenic highways in the vicinity of

[1] City of Los Angeles, Department of City Planning. *City of Los Angeles General Plan – Conservation Element*. Available at: https://planning.lacity.org/odocument/28af7e21-ffdd-4f26-84e6-dfa967b2a1ee/Conservation_Element.pdf. Accessed January 17, 2024.

the project site.[2] However, Forest Lawn Drive, located adjacent to the southern boundary of HWSG, is a City-designated scenic highway.[3] Some trees located within HWSG, along the southern perimeter of the property, may be removed to accommodate proposed project facilities. The trees requiring removal would be determined during final design, but the number is expected to be limited, and no trees would be removed from the public road right-of-way. Therefore, project implementation is not expected to substantially damage scenic resources within the context of the existing visual environment along Forest Lawn Drive, and the impact would be less than significant.

c) Except as provided in Public Resources Code Section 21099, would the project, in non-urbanized 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 project site is located within the boundaries of Griffith Park in the urban setting of Los Angeles and is immediately surrounded by open space uses such as cemeteries, passive park areas, and other recreational facilities. The project site has a General Plan land use designation of OS (Open Space) and is zoned OS-1XL-H-RIO (Open Space). The Headworks Restoration Park component of the project would provide passive open-space recreation areas and is consistent with the zoning designation of the property. The WQL and DPR Demonstration Facility would not be consistent with the site zoning. However, as discussed further in Section 3.11(b), the proposed project would be exempt from zoning review, or any approval process administered by the Department of City Planning, pursuant to City Charter Sections 672 and 675.[4] Additionally, the proposed project would be consistent with the historical use of the property for water extraction, storage, and distribution facilities, which have resulted in highly disturbed conditions at the HWSG property. As such, the proposed project would not conflict with any regulations governing scenic quality at the HWSG site. Therefore, no impact would occur.

d) Except as provided in Public Resources Code Section 21099, would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less Than Significant Impact. Implementation of the proposed project would not create a new source of light or glare that would adversely affect day or nighttime views. During the construction period, activities would be limited primarily to daytime hours and any necessary construction lighting would be temporary. As the proposed project would create new development including the WQL, DPR Demonstration Facility, and associated visitor center on a primarily undeveloped property, new light sources for building security and site safety would be introduced into the area. However, all exterior lights would be full cut off fixtures to prevent spill-over light, and lighting with low color temperature would be used. Minimal site lighting would be provided at the proposed Headworks Restoration Park because use of the park, and therefore public access to the HWSG site, would be limited to dawn to dusk. Although new reflective surfaces, such as windows for the

[2] California Department of Transportation. State Scenic Highway Program – Scenic Highway System Lists. Available at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed January 17, 2024.

[3] City of Los Angeles, Department of City Planning. 2016. *Mobility Plan 2035, An Element of the General Plan*. Available at: https://planning.lacity.org/odocument/523f2a95-9d72-41d7-aba5-1972f84c1d36/Mobility_Plan_2035.pdf. Accessed January 17, 2024.

[4] Department of City Planning. Inter-Departmental Correspondence. September 28, 2022.

proposed WQL and DPR Facility, would be introduced with implementation of the proposed project, the project as a whole would not be considered a substantial source of glare in the project area. Therefore, impacts would be less than significant.

3.2 Agriculture and Forestry Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 which, 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?	☐	☐	☐	☒

Discussion

a) Would the project 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. There is no designated Farmland on or near the project site.[5] Neither the project site nor the surrounding area is designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance on the "Important Farmland in California" map prepared by the California Resources Agency pursuant to the Farmland Mapping and Monitoring Program.[6] Therefore, the proposed project would not convert farmland to a non-agricultural use, and no impact would occur.

[5] California Department of Conservation, Division of Land Resource Protection, California Important Farmland Mapper. Available at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed January 17, 2024.

[6] Ibid.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The project site, which is completely within the HWSG property, is zoned OS. The City of Los Angeles does not offer Williamson Act contracts.[7] Therefore, the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract, and no impact would occur.

c) Would the project 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 project site is not located in an area zoned for forest land, timberland, or Timberland Production as defined in Public Resources Code Section 12220(g) and Government Code Section 4526.[8] Therefore, the proposed project would not conflict with existing zoning for or cause a rezoning of forest land or timberland. No impact would occur.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. No portion of the project site is developed for forest land use or located adjacent to forest lands.[9] Therefore, the proposed project would not result in the loss of forest land or conversion of forest land to non-forest use. No impact would occur.

e) Would the project involve other changes in the existing environment which, 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. As stated in Section 3.2(a) above, no portion of the project site or surrounding area is identified as Farmland. Additionally, as stated in Section 3.2(d), no portion of the project site or surrounding area is designated as forest land. As such, the proposed project would not change the existing environment in a way that would result in the conversion of Farmland to non-agricultural use or forest land to non-forest use. Therefore, no impact would occur.

7 California Department of Conservation, Division of Land Resource Protection, Williamson Act Finder. Available at: https://maps.conservation.ca.gov/dlrp/WilliamsonAct/. Accessed January 17, 2024.
8 ZIMAS. Available at: http://zimas.lacity.org/. January 17, 2024.
9 Ibid.

3.3 Air Quality

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district 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?	☐	☐	☒	☐

Discussion

Potential impacts related to air quality associated with the proposed project were determined from the results presented in the Air Quality Impact Study prepared for the proposed project, which is included as Appendix A to this IS/MND.

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The South Coast Air Quality Management District (SCAQMD) is the regulatory agency responsible for improving air quality for large areas of Los Angeles, Orange County, Riverside, and San Bernardino Counties. The City of Los Angeles, including the project site, is located within the South Coast Air Basin (Air Basin) which is a distinct geographic subarea within the SCAQMD's jurisdiction. Analyses of the proposed project's consistency with the policies of the SCAQMD CEQA Air Quality Handbook and the City of Los Angeles General Plan Air Quality Element are provided below.

SCAQMD CEQA Air Quality Handbook Consistency Analysis

In accordance with the procedures established in SCAQMD's *CEQA Air Quality Handbook*, the impact discussion addresses the following criteria to determine whether the proposed project is consistent with applicable SCAQMD and Southern California Association of Governments (SCAG) planning objectives:

- Would the proposed project create any impacts related to air quality violations, such as:
    - An increase in the frequency or severity of existing air quality violations;
    - Causing or contributing to new air quality violations; or,
    - Delaying timely attainment of air quality standards or the interim emission reductions specified in the Air Quality Management Plan (AQMP).

- Would the proposed project exceed the assumptions utilized in preparing the AQMP:
    - Is the proposed project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;
    - Does the proposed project incorporate mitigation measures to reduce potentially significant impacts; and/or
    - To what extent is proposed project development consistent with the AQMP land use policies and control measures?

The first indicator of AQMP consistency is assessed by determining if the proposed project would result in an air quality violation, which would occur when facilities are out of compliance with applicable SCAQMD rule requirements, permit conditions or legal requirements, or with applicable state or federal air pollution regulations. The regional and localized air quality significance thresholds were designed as a screening tool to avoid the potential occurrence and exacerbation of air quality violations resulting from construction and operation of individual projects based on the designation of emissions sources warranting advanced permitting and regulation. The second indicator of AQMP consistency is assessed by determining potential effects of permanent facility operations on population, housing, and employment assumptions that were used in the development of the AQMP, which is based on the SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). If implementation of the proposed project would render the assumptions invalid by introducing growth within the SCAQMD jurisdiction that exceeds projections incorporated into the AQMP, a significant air quality impact may occur.

With respect to the first criterion, as discussed below, localized emissions of nitrogen oxides (NO_X [as a surrogate for NO_2]), carbon monoxide (CO), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$, respectively) have been analyzed for the proposed project. Sulfur dioxide (SO_2) emissions would be negligible during construction and long-term operations, and therefore, would not have the potential to cause or affect a violation of the SO_2 ambient air quality standard. Since volatile organic compounds (VOCs) are not a criteria pollutant, there is no ambient standard or localized threshold for VOCs. Due to the role VOCs play in ozone (O_3) formation, it is classified as a precursor pollutant and only a regional emissions threshold has been established.

With respect to the second criterion determining consistency with the 2022 AQMP growth assumptions, the projections in the 2022 AQMP for achieving air quality goals are based on assumptions in SCAG's 2020-2045 RTP/SCS regarding population, housing, and growth trends. The emphasis of this criterion is to ensure that the analyses conducted for the project are based on the same forecasts as the AQMP. The 2020-2045 RTP/SCS includes chapters on: the challenges in a changing region, creating a plan for our future, and the road to greater mobility and sustainable growth. These chapters currently respond directly to federal and state requirements placed on SCAG. Local governments are required to use these as the basis of their plans for purposes of consistency with applicable regional plans under CEQA. For this Project, the City of Los Angeles Land Use Plan defines the assumptions that are represented in the AQMP.

Construction

Criterion 1

The SCAQMD localized emissions analysis serves as a screening method for evaluating whether further assessment of potential air quality violations is warranted. As shown in Table 3-1, the increases in PM_{10} and $PM_{2.5}$ emissions during construction would not exceed the

SCAQMD-recommended localized significance thresholds (LST) values corresponding to the daily disturbance area and proximity of sensitive receptors. Additionally, the maximum potential daily NO_X and CO emissions during construction were analyzed to ascertain potential effects on localized concentrations and to determine if there is a potential for such emissions to cause or affect a violation of an applicable ambient air quality standard. Localized unmitigated emissions of NO_X and CO would not exceed the SCAQMD-recommended LST. Therefore, construction activities would result in a less than significant impact with regard to localized air quality.

Table 3-1: Proposed Project Construction Emissions

Project Component & Construction Activity	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
HEADWORKS RESTORATION PARK – SITE CLEARING						
On-Site Emissions	1.4	13.3	17.5	<0.1	3.9	0.8
Off-Site Emissions	0.3	1.0	4.3	<0.1	1.0	0.2
Total[a]	**1.7**	**14.3**	**21.8**	**<0.1**	**4.9**	**1.0**
HEADWORKS RESTORATION PARK –GRADING & UTILITIES						
On-Site Emissions	4.3	38.3	52.9	<0.1	9.5	2.2
Off-Site Emissions	0.5	1.3	8.0	<0.1	1.6	0.4
Total[a]	**4.8**	**39.6**	**60.9**	**<0.1**	**11.1**	**2.6**
HEADWORKS RESTORATION PARK –PAVILION & BRIDGES						
On-Site Emissions	2.4	20.2	30.7	<0.1	10.4	1.8
Off-Site Emissions	0.7	1.7	11.5	<0.1	2.3	0.6
Total[a]	**3.1**	**21.9**	**42.3**	**<0.1**	**12.7**	**2.4**
HEADWORKS RESTORATION PARK – PAVING & LANDSCAPING						
On-Site Emissions	1.2	10.8	15.7	<0.1	9.7	1.3
Off-Site Emissions	0.4	0.8	5.8	<0.1	1.4	0.3
Total[a]	**1.6**	**11.5**	**21.6**	**<0.1**	**11.1**	**1.7**
WQL – SITE CLEARING						
On-Site Emissions	3.7	32.4	35.5	<0.1	7.8	2.9
Off-Site Emissions	0.1	1.0	2.2	<0.1	0.6	0.2
Total[a]	**3.8**	**33.4**	**37.7**	**<0.1**	**8.5**	**3.0**
HEADWORKS RESTORATION PARK – PAVING & LANDSCAPING + WQL – SITE CLEARING						
On-Site Emissions	5.0	43.2	51.3	0.1	17.5	4.2
Off-Site Emissions	0.5	1.8	8.0	<0.1	2.0	0.5
Total[a]	**5.5**	**45.0**	**59.3**	**0.1**	**19.5**	**4.7**
WQL - GRADING						
On-Site Emissions	1.9	16.2	22.2	0.1	5.7	1.0
Off-Site Emissions	0.2	1.1	2.4	<0.1	0.7	0.2
Total[a]	**2.1**	**17.3**	**24.6**	**0.1**	**6.4**	**1.2**
WQL – BUILDING CONSTRUCTION						
On-Site Emissions	0.9	11.2	14.0	<0.1	6.2	0.8
Off-Site Emissions	0.2	0.4	3.4	<0.1	0.8	0.2
Total[a]	**1.1**	**11.6**	**17.4**	**<0.1**	**7.0**	**1.0**
WQL - LANDSCAPING						
On-Site Emissions	11.7	16.9	21.7	<0.1	8.1	1.4
Off-Site Emissions	0.5	1.2	8.7	<0.1	2.3	0.6
Total[a]	**12.2**	**18.1**	**30.3**	**<0.1**	**10.3**	**2.0**

Table 3-1: Proposed Project Construction Emissions

Project Component & Construction Activity	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
DPR DEMO FACILITY – SITE PREPARATION						
On-Site Emissions	1.1	8.2	12.2	<0.1	5.3	0.8
Off-Site Emissions	<0.1	0.1	1.7	<0.1	0.1	<0.1
Total[a]	**1.1**	**8.2**	**13.9**	**<0.1**	**5.4**	**0.8**
DPR DEMO FACILITY – GRADING & FOUNDATION						
On-Site Emissions	2.7	21.8	29.9	<0.1	8.8	2.3
Off-Site Emissions	0.1	0.8	1.8	<0.1	0.6	0.2
Total[a]	**2.8**	**22.5**	**31.6**	**<0.1**	**9.4**	**2.5**
DPR DEMO FACILITY – BUILDING CONSTRUCTION						
On-Site Emissions	1.2	12.1	17.6	<0.1	10.6	1.3
Off-Site Emissions	0.3	0.7	4.2	<0.1	1.2	0.3
Total[a]	**1.5**	**12.8**	**21.8**	**<0.1**	**11.8**	**1.6**
DPR DEMO FACILITY – PAVING & LANDSCAPING						
On-Site Emissions	2.5	13.1	17.5	<0.1	9.7	1.3
Off-Site Emissions	0.5	0.7	7.3	<0.1	2.4	0.6
Total[a]	**3.0**	**13.8**	**24.9**	**<0.1**	**12.1**	**1.9**
REGIONAL ANALYSIS						
Maximum Daily Emissions	**12.2**	**45.0**	**59.3**	**0.1**	**19.5**	**4.7**
Regional Significance Threshold	75	100	550	150	150	55
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum On-Site Emissions	**--**	**43.2**	**51.3**	**--**	**17.5**	**4.2**
LST Screening Value[b]	--	111	1,068	--	21	6
Exceed Threshold?	**--**	**No**	**No**	**--**	**No**	**No**

a. Totals may be off due to rounding.

b. LST screening values correspond to a construction site in Source Receptor Area (SRA) 7 with a two-acre daily disturbance area and sensitive receptors within 50 meters.

Emissions modeling files can be found in Appendix A.

Criterion 2

Construction of the proposed project would result in increased employment opportunities in the construction industry. However, it is not likely that construction workers would relocate their households as a result of their employment associated with construction. The construction industry differs from other employment sectors in that many construction workers are highly specialized and move from job site to job site as dictated by the demand for their skills, and they remain at a job site for only the timeframe in which their specific skills are needed to complete a particular phase of the construction process. Furthermore, it is likely that the construction workers employed for construction would be taken from the ample skilled labor pool currently residing in the region. Thus, the construction phase of the proposed project would be temporary and would not create permanent growth in population, housing, or employment within the City or within SCAQMD jurisdiction. Therefore, construction of the proposed project would have no impact on regional growth projections accounted for in AQMP and RTP/SCS.

Operation

Criterion 1

The proposed project would not introduce any substantial stationary sources of emissions (e.g., gasoline stations, dry cleaners, chrome plating operations), and as such, CO is the preferred benchmark pollutant for assessing local area air quality impacts from post-construction motor vehicle operations. As indicated below, under the analysis in Section 3.3(c), no intersections would require a CO hotspot analysis. Therefore, the proposed project would not increase the frequency or severity of an existing CO violation or cause or contribute to new CO violations, and impacts would be less than significant.

Criterion 2

The following discussion presents an analysis of the proposed project's consistency with the three components of criterion 2 of the SCAQMD CEQA Air Quality Handbook.

- Is the proposed project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based?

The proposed project components would not include housing resulting in a new permanent population. The purpose of the proposed WQL is to replace the existing obsolete LADWP laboratory facility. The WQL is expected to operate from 6 a.m. to 6 p.m. on a daily basis. On weekdays, 102 personnel would initially report to the facility in staggered shifts. Of the initial 102 personnel, 67 personnel would be transferred from the existing laboratory building in Pasadena and the Rinaldi Yard in Granada Hills, where the water quality mobile laboratory and support trailers are currently located. Over time, up to 172 personnel may ultimately report to the facility. This increase may occur over approximately ten years and would include personnel transferring from other LADWP locations. The DPR Demonstration Facility would include a total of approximately five (5) personnel on weekdays. Only a small number of permanent employees would be associated with the proposed Headworks Restoration Park. The number of new employees associated with the proposed WQL, DPR Demonstration Facility, and Headworks Restoration Park would represent a small portion of the City of Los Angeles subregion employment projections and would be within the regional forecast estimates of the 2020-2045 RTP/SCS. There is no potential for the proposed project to interfere with employment projections. The proposed project would be consistent with the projections in the AQMP.

- Does the proposed project incorporate mitigation measures to reduce potentially significant impacts?

As shown in the analyses in Section 3.3, Air Quality, the proposed project would not result in potentially significant impacts related to air quality; therefore, no mitigation measures are required to reduce air quality impacts. The proposed project would comply with all applicable regulatory standards (e.g., SCAQMD Rule 403, etc.) as required by SCAQMD. The proposed project would also incorporate project design features to support and promote environmental sustainability, such as complying with 2022 Title 24 standards and the use of a photovoltaic array on the roof of the proposed WQL building. While these features are designed primarily to reduce greenhouse gas (GHG) emissions, they would also serve to reduce emissions from criteria air pollutants. Thus, the proposed project would be consistent with this portion of Criterion 2.

- To what extent is proposed project development consistent with the AQMP land use policies and control measures?

The 2020-2045 RTP/SCS builds upon and expands land use and transportation strategies established over several prior planning cycles to increase mobility options and achieve a more sustainable growth pattern. The 2020-2045 RTP/SCS includes strategies and tools consistent with local jurisdictions' land use policies that incorporate best practices for achieving the state-mandated reductions in pollutant emissions at the regional level through reduced vehicle miles traveled (VMT). The proposed project would consolidate employees from the existing LADWP laboratory building in Pasadena and the LADWP Rinaldi Yard in Granada Hills to the proposed new WQL, which would result in a reduction in commute distances over time (refer to the VMT analysis in Section 3.17(b)). The proposed project also represents an infill project that would provide new publicly accessible recreational amenities at the project site. As such, the proposed project would be consistent with the following land use strategies that were developed to support the 2020 RTP/SCS:

- Emphasize land use patterns that facilitate multimodal access to work, educational, and other destinations.
- Focus on a regional jobs/housing balance to reduce commute times and distances.
- Prioritize infill and redevelopment of underutilized land to accommodate new growth, increase amenities and connectivity in existing neighborhoods.

City of Los Angeles General Plan Air Quality Element Consistency Analysis

The Air Quality Element of the City's General Plan was adopted on November 24, 1992, and sets forth the goals, objectives, and policies, which guide the City in the implementation of its air quality improvement programs and strategies. The Air Quality Element establishes the following six goals:

- Good air quality in an environment of continued population growth and healthy economic structure;
- Less reliance on single-occupant vehicles with fewer commute and non-work trips;
- Efficient management of transportation facilities and system infrastructure using cost-effective system management and innovative demand-management techniques;
- Minimal impacts of existing land use patterns and future land use development on air quality by addressing the relationship between land use, transportation and air quality;
- Energy efficiency through land use and transportation planning, the use of renewable resources and less-polluting fuels and the implementation of conservation measures including passive measures such as site orientation and tree planting; and
- Citizen awareness of the linkages between personal behavior and air pollution and participation in efforts to reduce air pollution.

The Air Quality Element acknowledges the interrelationships among transportation and land use planning in meeting the City's mobility and air quality goals. To achieve the goals of the Air Quality Element, performance-based standards have been adopted to provide flexibility in implementation of its policies and objectives. The proposed project would promote the City of Los Angeles General Plan Air Quality Element goals discussed above. The proposed project represents an infill development project within an existing urbanized area that would concentrate multiple LADWP facilities in one location. The proposed project would also provide active transportation options. Surrounding Headworks Restoration Park and extending into other portions of the HWSG property would be a series of pedestrian pathways. A bicycle trail would be

constructed along the northern side of the property, allowing for future interconnections with Griffith Park and the existing river trail system via existing tunnels beneath Forest Lawn Drive and SR-134 at the east end of the HWSG property. The proposed project would be designed and constructed to meet 2022 Title 24 standards. In addition, the WQL would be designed to meet the Mayor's Resilience by Design Directive by seeking to obtain LEED Gold certification, with the objective of achieving LEED Platinum certification and Envision Sustainable Infrastructure certification. The WQL may include a green roof, which would be covered with vegetation to reduce heat and capture stormwater; a photovoltaic array on the rooftop of the building; and an internal landscaped courtyard to conserve water through stormwater capture and treatment. The WQL would be designed to achieve energy efficiency by implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency HVAC systems. The proposed project is consistent with applicable policies of the City of Los Angeles Air Quality Element.

Conclusion

The proposed project would be consistent with the AQMP as well as the City of Los Angeles plans and policies. The determination of AQMP consistency is primarily concerned with the long-term influence of the proposed project on air quality in the Air Basin. As discussed above, the proposed project would not increase the frequency or severity of an existing air quality violation or cause or contribute to new violations for these pollutants. As the proposed project would not exceed any of the State and federal standards, the proposed project would also not delay the timely attainment of air quality standards or interim emission reductions specified in the AQMP. In addition, because the proposed project is consistent with growth projections that form the basis of the 2022 AQMP, the proposed project would be consistent with the emissions forecasts in the AQMP. Furthermore, the proposed project does not require the implementation of any air quality mitigation measures, and it would comply with all applicable regulatory standards and would incorporate project design features that would serve to reduce the criteria air pollutants. Thus, the proposed project would not conflict with or obstruct implementation of the AQMP. With regard to City policies, as discussed above, the proposed project would serve to implement applicable policies of the City pertaining to air quality. Therefore, impacts would be less than significant.

b) Would the project 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?

Less Than Significant Impact. The Los Angeles County portion of the Air Basin is presently designated as nonattainment under either the federal or state ambient air quality standards for O_3, PM_{10}, and $PM_{2.5}$. Therefore, there is an ongoing regional cumulative impact associated with these air pollutants. The SCAQMD published guidance addressing the evaluation of potential cumulative impacts for CEQA projects. According to this guidance, if construction or operation of a project would produce maximum daily emissions exceeding the applicable project-specific thresholds, those emissions would also be considered cumulatively significant. For this reason, the SCAQMD applies the same project-level thresholds to cumulative assessments. Conversely, if construction and operation of a project would not generate emissions of sufficient quantity to exceed any of the applicable mass daily thresholds, then that project and its associated emissions would be considered less than significant in the cumulative context.

Construction

Construction activities have the potential to create air quality impacts through emissions

generated using heavy-duty construction equipment and through vehicle trips associated with construction worker commutes and haul and delivery vehicles traveling to and from the project site. Fugitive dust emissions would primarily result from site preparation (e.g., excavation and grading) activities. It is mandatory for all construction projects in the Air Basin to comply with SCAQMD Rule 403 for Fugitive Dust, which requires measures to prevent the generation of visible dust plumes such as applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system, and maintaining effective cover over exposed areas. Compliance with Rule 403 would reduce fugitive $PM_{2.5}$ and PM_{10} emissions associated with construction activities by approximately 61 percent. NO_X emissions would predominantly result from the use of construction equipment and haul truck trips. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions.

The air quality analysis focuses on maximum daily emissions during construction activities. It is unlikely that the maximum number of daily haul truck loads would be required throughout the duration of each activity. Project-specific emissions were assessed based on the schedule of construction activities and the equipment inventory required. The regional analysis shown in Table 3-1, above in Section 3.3(a), identifies the maximum daily emissions that would occur during construction of the proposed project components and compares those emissions to the applicable SCAQMD regional mass daily threshold of significance. Daily construction activities would fluctuate throughout the 7-year construction period, and the maximum daily emissions identified in Table 3-1 that are compared to the regional thresholds do not represent emissions that would be occurring every day of construction. As previously discussed, and shown in Table 3-1, construction emissions associated with the proposed project would not exceed the SCAQMD significance thresholds. Therefore, construction emissions associated with proposed project implementation would not result in cumulatively considerable net increases of nonattainment pollutants at the regional level, and this impact would be less than significant.

As previously discussed, SCAQMD recommends the evaluation of localized air quality impacts to sensitive receptors in the immediate vicinity of the proposed project site. The SCAQMD localized thresholds and LST screening values are based on applicable short-term state and federal ambient air quality standards, as well as existing air quality at the time of the LST methodology development. Project-related localized construction impacts are evaluated based on the SCAQMD LST methodology which accounts for ambient pollutant concentrations. Based on SCAQMD guidance, localized emissions from on-site sources that exceed LST screening values would also be cumulatively considerable and could contribute to instances of the air quality standards being exceeded. As shown in Table 3-1, above, maximum daily localized emissions during construction activities would remain below the applicable SCAQMD LST screening values without mitigation. Therefore, construction emissions associated with proposed project implementation would not result in cumulatively considerable net increases of nonattainment pollutants at the localized level, and this impact would be less than significant.

Operation

The proposed project would generate regional operational emissions from vehicle trips, area sources, and energy use. The California Emissions Estimator Model (CalEEMod) was used to estimate daily operational air pollutant emissions using the project-specific trips and VMT, as well as land use data obtained from the site plans. A VMT analysis was completed for the proposed project (refer to the analysis in Section 3.17(b)). For VMT impacts for a land use project, CEQA requires the identification of impacts based on whether the project conflicts, or is inconsistent with, CEQA Guidelines Section 15064.3, subdivision (b)(1). The City has developed screening criteria

to identify when a detailed analysis is required for projects. The City's guidelines state that public services (e.g., police, fire stations, public utilities, public parks) do not generally generate substantial VMT. Instead, these land uses are often built-in response to development from other land uses (e.g., office and residential). Therefore, these land uses can be presumed to result in less than significant impacts related to VMT. The proposed project includes a public park and a water treatment facility, which are public services that are presumed to have a less than significant VMT impact. Therefore, these components of the project are screened out from analysis. The WQL, although an LADWP function, would not meet the traditional definition of a public service since it would serve as a laboratory and administrative facility that would generate daily employee trips in excess of 250, the threshold that triggers the need for a VMT analysis.

In order to evaluate the VMT per employee for the WQL, the net change in VMT per employee was calculated. Based on this analysis (see Section 3.17(b)), the net change in VMT is 1,051 miles, which results in a net VMT of 6.11 miles per employee, which represents a reduction in VMT/employee from existing conditions.

Table 3-2 presents the CalEEMod results for operational emissions estimates of the proposed project. As shown in Table 3-2, daily emissions of ozone precursors and criteria pollutants would be below the SCAQMD operational thresholds. Operational activities would not result in a new substantial source of air pollutant emissions. Therefore, the air quality impact related to the creation or exacerbation of air quality violations within the SCAQMD jurisdiction would be less than significant during project operation.

Table 3-2: Proposed Project Operational Emissions

Operational Activity	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
EMISSIONS ANALYSIS						
Area Sources	4.2	<0.1	5.4	<0.1	<0.1	<0.1
Energy Sources	<0.1	0.7	0.6	<0.1	<0.1	<0.1
Mobile Sources	1.4	0.6	5.7	<0.1	1.0	0.4
IMPACT ANALYSIS						
Maximum Daily Operational Emissions	**5.5**	**1.3**	**11.7**	**<0.1**	**1.1**	**1.2**
Regional Threshold	55	55	550	150	150	55
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Emissions modeling files can be found in Appendix A.
Source: TAHA, 2024.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact.

Construction

Criteria Pollutants

As discussed previously, the localized construction air quality analysis was conducted using the LST methodology recommended by the SCAQMD. The SCAQMD has published look-up tables with daily mass emissions screening values that correspond to a project's source receptor area (SRA), the area of maximum daily ground disturbance during construction, and the proximity of sensitive receptors to the project site. The LST screening values represent the maximum

allowable emissions from a project that are not expected to cause or contribute to ambient air quality standards being exceeded. Maximum daily on-site unmitigated construction emissions were estimated in CalEEMod and are presented in Table 3-1, above. Also presented are the applicable LST screening values for a project with maximum daily disturbance of two acres in SRA 7 that is within approximately 165 feet (50 meters) of sensitive receptors. Construction of the proposed project would not result in localized emissions exceeding any applicable SCAQMD LST screening value, even in the unmitigated condition. Therefore, emissions from on-site sources during construction would not have the potential to expose nearby sensitive receptors to substantial pollutant concentrations and this impact would be less than significant.

Toxic Air Contaminants

The greatest potential for toxic air contaminants (TAC) emissions during construction would be from diesel particulate emissions associated with heavy equipment operations. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. The SCAQMD’s CEQA guidance does not require a health risk assessment (HRA) for short-term construction emissions The proposed project would not result in a long-term (i.e., 70-year) source of TAC emissions given the short-term construction schedule of approximately 7 years. Although the total construction duration would be 7 years, periods of intense emissions from heavy equipment or truck activity would be intermittent and spread across the 43-acre property. Additionally, there are no receptors adjacent to construction activities with the nearest sensitive receptors being residences located approximately 325 feet to the north. Construction activities associated with the proposed project, including generation of TACs, would not expose sensitive receptors to substantial pollutant concentrations. Project-related TAC impacts during construction would be less than significant.

Operation

Criteria Air Pollutants

Operation of the proposed project would not include any major new sources of air pollution. Emissions estimates for criteria air pollutants from on-site sources during project operation are presented in Table 3-2, above. Maximum on-site daily operational emissions were calculated using CalEEMod and compared to the applicable SCAQMD LSTs as defined above. Operational emissions of CO and NO_x, as well as nonattainment pollutants PM_{10}, and $PM_{2.5}$ would remain below applicable SCAQMD thresholds. Therefore, long-term operations would result in a less than significant impact related to localized pollutant concentrations from on-site sources.

CO “Hot Spots” Analysis

In the 1992 CO Plan, a CO hot spot analysis was conducted for four busy intersections in Los Angeles at the peak morning and afternoon time periods. The busiest intersection evaluated was that at Wilshire Boulevard and Veteran Avenue. The 2003 AQMP estimated that the 1-hour concentration for this intersection was 4.6 ppm, which indicates that the most stringent 1-hour CO standard (20.0 ppm) would likely not be exceeded until the daily traffic at the intersection exceeded more than 400,000 vehicles per day.[10] Consistent with the SCAQMD’s localized CO concentration analysis methodology, if a subject intersection does not exceed 400,000 vehicles

[10] Based on extrapolation of the ratio of the CO standard (20.0 ppm) and the modeled value (4.6 ppm).

per day, then the project does not need to prepare a detailed CO hot spot analysis. There are no intersections near the project site that have volumes that exceed 400,000 vehicles per day. In addition, CO background concentrations within the vicinity of the modeled intersection[11] have substantially decreased since preparation of the 2003 AQMP[12] primarily due to ongoing fleet turnover of older light duty vehicles and production of higher fuel efficiency vehicles. Therefore, the proposed project does not trigger the need for a detailed CO hot spots analysis and would not have the potential to result in elevated CO concentrations at nearby intersections. Off-site mobile source emissions would not expose sensitive receptors to substantial pollutant concentrations, and this impact would be less than significant.

Toxic Air Contaminants

When considering potential air quality impacts under CEQA, consideration is given to the location of sensitive receptors within close proximity of land uses that emit TACs. The California Air Resources Board (CARB) has published and adopted the Air Quality and Land Use Handbook: A Community Health Perspective, which provides recommendations regarding the siting of new sensitive land uses near potential sources of toxic air emissions (e.g., freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and gasoline dispensing facilities). SCAQMD adopted similar recommendations in its Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. Together, CARB and SCAQMD guidelines recommend siting distances for both the development of sensitive land uses in proximity to TAC sources and the addition of new TAC sources in proximity to existing sensitive land uses. Sensitive land uses, such as schools, convalescent facilities, and hospitals, are those where users or occupants could be subject to chronic exposure if sited near TAC sources. The proposed project does not include the development of sensitive land uses. As such, an assessment of siting distances from potential TAC sources is not required.

The primary source of potential air toxics associated with operations include diesel particulate matter (DPM) from delivery trucks (e.g., truck traffic on local streets and idling on adjacent streets) and, to a lesser extent, facility operations. However, these activities, and the land uses associated with the proposed project, are not considered land uses that generate substantial TAC emissions. The SCAQMD recommends that health risk assessments be conducted for substantial individual sources of DPM (e.g., truck stops and warehouse distribution facilities that generate more than 100 trucks per or more than 40 trucks with operating transport refrigeration units) and has provided guidance for analyzing mobile source diesel emissions. The proposed project would not include these types of land uses and is not considered to be a substantial source of DPM since daily trucks would not exceed 100 trucks per day or more than 40 trucks with operating transport refrigeration units. In addition, the CARB-mandated Airborne Toxic Control Measures limits diesel-fueled commercial vehicles (delivery trucks) to idle no more than five minutes at any given time, which would further limit diesel particulate emissions.

Typical sources of acutely and chronically hazardous TACs include industrial manufacturing processes (e.g., chrome plating, electrical manufacturing, petroleum refinery). The proposed project would not include these types of potential industrial manufacturing process sources. It is expected that the quantities of hazardous TACs generated on-site (e.g., cleaning solvents, paints, landscape pesticides, etc.) for the types of land uses proposed would be below thresholds

[11] "Modeled intersection" refers to Wilshire Boulevard/Veteran Avenue.

[12] 2003 AQMP is referenced because that is when the SCAQMD demonstrated that the region was in attainment of the Carbon Monoxide (CO) National Ambient Air Quality Standards (NAAQS). The United States Environmental Protection Agency accepted and approved the analysis and the region was designated as attainment of the CO NAAQS.

warranting further study under the California Accidental Release Program. In addition, the proposed project would result in minimal emissions of TACs from the use of landscape maintenance activities, among other things. As a result, toxic or carcinogenic air pollutants are not expected to occur in any meaningful amounts during operation of the proposed project. As such, impacts on human health would be less than significant.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact.

Construction

Other than the sources addressed above, odors are the only other potential construction emissions. A significant impact would occur if construction activities would result in the creation of nuisance odors that would be noxious to a substantial number of people. The proposed project would utilize typical construction techniques, and the odors would be typical of most construction sites. Potential sources that may produce objectionable odors include equipment exhaust, application of asphalt and architectural coatings, and other interior and exterior finishes. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site. As construction-related emissions dissipate with distance from the construction area, the odors associated with these emissions would also be diluted and decrease. Additionally, construction odors would be temporary in nature and would not persist beyond the termination of construction activities. Therefore, construction of the proposed project would result in a less than significant impact related to other emissions.

Operation

According to the SCAQMD CEQA Air Quality Handbook, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed WQL and Headworks Restoration Park would not include any of the land uses or operations associated with odors. The proposed DPR Demonstration Facility would use recycled wastewater from LAGWRP. However, recycled wastewater is not odorous. Therefore, operation of the proposed project would result in a less than significant impact related to odors.

3.4 Biological Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	☒	☐
c) 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?	☐	☐	☒	☐
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?	☐	☐	☐	☒

Discussion

Potential impacts to biological resources associated with the proposed project were determined from the results presented in the Biological Resources Memorandum prepared for the proposed project, which is included as Appendix B to this IS/MND.

Thorough literature reviews and records searches were conducted to determine which special-status biological resources have the potential to occur on or within the general vicinity of the project site. A field survey was conducted on October 14, 2021, to document existing conditions and determine the potential for special-status plant and wildlife species to occur within the project site. The Biological Study Area (BSA) assessed for potential impacts resulting from the proposed project includes the HWSG property and a 500-foot buffer around the property. Impacts to biological resources can be both direct, which would occur only in the area of disturbance within the HWSG property, and indirect. Indirect impacts could include elevated noise and dust levels, soil compaction, and increased human activity, and could occur both within and outside the HWSG property. It is anticipated that indirect impacts beyond 500 feet from the HWSG property would not significantly affect resources.

a) Would the project 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. A significant impact could occur if the proposed project removed or modified the habitat for, or otherwise directly or indirectly affected, any species identified or designated as a candidate, sensitive, or special status species in local or regional plans, policies, or regulation, or by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS).

Sensitive Plant Species

Special-status plant species include those listed as Endangered, Threatened, Rare or those species proposed for listing by the USFWS under the Federal Endangered Species Act (FESA) and CDFW under the California Endangered Species Act (CESA). The California Native Plant Society (CNPS) inventory is sanctioned by the CDFW and essentially serves as the list of candidate plant species for state listing. CNPS's California Rare Plant Ranks (CRPR) 1B and 2B species are considered eligible for state listing as endangered or threatened.

The footprints of the three proposed project components are composed almost entirely of bare ground, with some areas of concrete, and are generally devoid of vegetation. Extensive areas of bare ground also occur within the surrounding areas within the HWSG property, where previous construction and equipment and materials staging has occurred. However, remnant native habitats, non-native vegetation, and ruderal species common in urbanized and previously disturbed areas are present in isolated areas of the HWSG property. Remnant native vegetation occurs primarily along the southern perimeter of the HWSG property, adjacent to Forest Lawn Drive, where stands of native arroyo willow (*Salix lasiolepis*), black willow (*S. gooddinggii*), and toyon (*Heteromeles arbuitifolia*) are located south of the West Reservoir, and a stand of native laurel sumac (*Malosma laurina*) and blue elderberry (*Sambucus nigra spp. cerulea*) south of the proposed DPR Demonstration Facility. These stands of vegetation are small and are isolated from any larger community of natural vegetation by surrounding development. Native coast live oak (*Quercus agrifolia*), western sycamore (*Platanus racemosa*), and Monterey pine (*Pinus radiata*) trees also occur within the BSA.

Non-native trees occurring within the BSA were noted during the field survey, including primarily mature aleppo pine (*Pinus halephsis*) trees along the north side of Forest Lawn Drive. Canary Island pine (*P. canariensis*) trees also occur on the HWSG property, as well as other ornamental species typical of urbanized areas. Portions of Forest Lawn Memorial Park and Mount Sinai Memorial Park are within the BSA along the south side of Forest Lawn Drive and contain mature non-native ornamental trees and large areas of lawn.

Along the northern edge of the HWSG property, adjacent to the Los Angeles River channel, an approximate 40- to 50-foot wide strip of low-growing vegetation is present within an electrical transmission corridor containing transmission towers. A mix of native and non-native species occur within the corridor, including native deerweed (*Acmisopon glaber*), coast goldenbush (*Isocoma menziesii*), and cudweed (*Pseudognaphalium* sp.), and non-native black mustard (*Brassica nigra*), short-pod mustard (*Hirshfeldia incana*), and Russian thistle (*Salsola tragus*). Landscape trees also occur in the northern portion of the BSA, adjacent to the SR-134 Freeway, across the river channel from the HWSG property.

In addition to the vegetation described above, patches of ruderal vegetation have also colonized previously-disturbed areas within the HWSG property. Mustards, coast goldenbush, tree tobacco (*Nicotiana glauca*), castor bean (*Ricinus communis*), and other native and non-native opportunistic species were observed in these areas.

No special-status plants were observed during the field survey. A historical record of one special-status species, Parish's brittlescale (*Atriplex parishii*), a CNPS-listed species with a California Rare Plant Rank of 1B.1 (Plants rare, threatened, or endangered in California and elsewhere, seriously threatened in California) coincides with the BSA. The record indicates an undated collection from along the northern foot of the Santa Monica Mountains. This species was not documented on site during the field survey, and habitat potentially suitable to support this species (alkali meadows, vernal pools, chenopod scrub, playas) no longer occur within the BSA. As such this species is considered extirpated from the BSA.

No USFWS-designated critical habitat for any special-status plant species coincides with the BSA. The nearest critical habitat is located approximately 8 miles north of the BSA at Hansen Dam. Based on the results of the literature review and field surveys, special-status plant species are generally not anticipated to occur within the BSA, or have a low potential to occur within the BSA based on existing site conditions and a review of specific habitat requirements, occurrence records, and known distributions of each species.

Construction

Individual plant species could be damaged or destroyed from crushing or trampling or from indirect impacts (e.g., dust) during construction activities. However, no federal or state-listed special-status plant species were identified during the field survey, and special-status plants are not expected to occur in the BSA due to a lack of potentially suitable habitat. As a result, there would be no direct and indirect impacts to special-status plants during project construction.

Operation

As discussed previously, special-status plant species do not occur at the project site or in the surrounding area due to existing site conditions and lack of suitable habitat present in the BSA. Therefore, there would be no direct or indirect impacts to special-status plant species during project operation.

Sensitive Wildlife Species

Special-status wildlife species include those listed as Endangered, Threatened, Rare or those species proposed for listing by the USFWS under the FESA and CDFW under the CESA. Additional species receive federal protection under the Bald Eagle Protection Act (e.g., bald eagle, golden eagle), the Migratory Bird Treaty Act (MBTA), and state protection under CEQA Section 15380(d).

All birds, except European starlings, English house sparrows, rock doves (pigeons), and non-migratory game birds such as quail, pheasant, and grouse are protected under the MBTA. However, non-migratory game birds are protected under California Fish and Game Code (CFGC) Section 3503. Many other species are considered by CDFW to be California Species of Special Concern, and others are on a CDFW Watch List. The California Natural Diversity Data Base (CNDDB) tracks species within California for which there is conservation concern, including many that are not formally listed, and assigns them a CNDDB Rank. Although CDFW Species of Special Concern and Watch List species and species that are tracked in the CNDDB but not formally

listed are afforded no official legal status, they may receive special consideration during the CEQA environmental review process. CDFW further classifies some species as "Fully Protected" (FP), indicating that the species may not be taken or possessed except for scientific purposes, under special permit from CDFW. Additionally, CFGC Sections 3503, 3505, and 3800 prohibit the take, destruction, or possession of any bird, nest, or egg of any bird except English house sparrows and European starlings unless authorization is obtained from CDFW.

No special-status wildlife species were observed during the field survey. CNDDB records of least Bell's vireo (*Vireo bellii pusillus*, federally-listed endangered and State-listed endangered) coincide with the BSA; however, the records are from the 1920s along the Los Angeles River adjacent to the HWSG property. No riparian habitat potentially suitable for this species currently occurs along the river or in the vicinity of the BSA. This species is considered extirpated from the BSA. Additionally, an undated CNDDB record of western ridged mussel (*Gonidea angulate*; species tracked in CNDDB) from the Los Angeles River coincides with the BSA, but no suitable habitat currently exists, and it is considered extirpated from the BSA.

American peregrine falcon (*Falco peregrinus anatum*), a species de-listed from the FESA and the CESA but still Fully Protected by CDFW, is known to occur within nearby Griffith Park and has as recently as 2020 attempted to fledge young at a known nest site within the park.[13] As a result, this species could occur within the BSA as a migrating or foraging transient; however, it is not expected to nest within the BSA due to the lack of suitable nesting habitat. Additionally, mature trees within the BSA provide potentially suitable nesting habitat for Cooper's hawk (*Accipter cooperii*; CDFW Watch List species), a special-status raptor species not identified during the literature review, but one known to successfully nest throughout urban environments within the Los Angeles Basin, including in nearby Griffith Park and the Glendale-Burbank area. However, American peregrine falcon and Cooper's hawk have low potential to occur within the BSA due the presence of low-quality habitat and the activity levels in the area.

No USFWS-designated critical habitat for any federally listed wildlife species coincides with the BSA. Based on the results of the literature review and field surveys, special-status wildlife species are generally not anticipated to occur within the BSA, or have a low potential to occur within the BSA based on existing site conditions and a review of specific habitat requirements, occurrence records, and known distributions of each species.

Construction

While not expected to occur, Cooper's hawk may nest in mature trees within the BSA. However, by adhering to Best Management Practice (BMP) 1, related to pre-construction surveys for nesting birds and providing a qualified biological monitor should nesting birds be present, direct impacts to special-status wildlife species would be avoided.

Indirect impacts to special-status wildlife species occurring in the surrounding BSA could occur as a result of noise, increased human presence, and vibrations resulting from construction activities. If such impacts were to occur, they would be considered significant. However, with the exception of American peregrine falcon and Cooper's hawk, special-status wildlife species are not expected to occur within the BSA because suitable habitat is not present. Because American peregrine falcon would be present on site only as a migrating or foraging transient, indirect impacts to the species during construction would be considered less than significant. Indirect

[13] Cooper, Daniel S and Courtney McCammon (Cooper and McCammon). 2020. Nesting Raptors of Griffith Park and Surround Area. August 18. 35 pp.

impacts to Cooper's hawk related to disruption of nesting activity would be avoided by adhering to BMP-1.

Non-special-status bird species protected by the MBTA and CFGC also have the potential to nest in the BSA, although nesting within the construction footprints of the three proposed project components is not anticipated due to a lack of any vegetation. However, nesting may occur within native and non-native trees and shrubs located along the perimeter of the HWSG property. By avoiding vegetation removal during the nesting bird season (generally February 15 through August 31), or by implementing BMP-1 related to pre-construction surveys for nesting birds and providing a qualified biological monitor should nesting birds be present, direct impacts to nesting birds and associated nesting habitat would be less than significant.

Indirect impacts to non-special-status nesting birds within the BSA could occur as a result of noise, increased human presence, and vibrations resulting from construction activities. Disturbances related to construction could result in increased nestling mortality due to nest abandonment or decreased feeding frequency. However, with implementation of BMP-1, indirect impacts to nesting birds would be less than significant.

Although no special-status bat species are expected to occur within the BSA, large trees in the BSA may provide suitable roosting habitat for individual or small groups of bats within the vicinity of the project site. Mature trees potentially suitable for short-term day or night-time roosting, such as palm trees, may be removed. Therefore, by adhering to mitigation measure BIO-1, related to pre-construction roosting bat surveys, direct impacts to special-status bat species would be avoided. Potentially suitable colonial roosting sites do not occur within the BSA, as caves are absent and large suitable structures are limited in the project vicinity. As a result, direct impacts to colonial bat roosting habitat and day or night-roosting habitat would not occur during project construction.

Indirect impacts to bats roosting within the vicinity of the project could occur as a result of noise, increased human presence, and vibrations resulting from construction activities. Disturbances related to construction could result in displacement from daytime roosts and temporary avoidance of the project area; however, suitable trees for bat roosting are present beyond the BSA in the project vicinity. Disruption of night-time roosts is not anticipated as construction will not occur during dusk or evening hours. Therefore, indirect impacts to bats would be less than significant.

BMP-1: Nesting Bird Surveys: Construction should, if possible, occur outside of the nesting bird season (generally February 15 through September 15, and as early as January for raptors). If construction outside this time period is not feasible, the following measures should be employed to avoid and minimize impacts to nesting birds protected under the MBTA and CFGC:

1. A pre-construction nesting bird survey should be conducted by a qualified biologist within 3 days (72 hours) prior to the start of project construction to determine whether active nests are present within or directly adjacent to the construction zones. Following completion of the survey, a memo report should be prepared to document the location of all nests found (if any), their status (i.e., eggs or hatchlings present), existing biological conditions of the project area, and the bird species detected during the survey. If an active nest is found, recommendations to avoid and minimize impacts to the nest, such as those presented below, should be included as appropriate.

2. A no-work (or reduced work) buffer shall be established around any active passerine bird nest or raptor nest. The qualified biologist should monitor the nest on a weekly

basis, and project activities within 300 feet of an active nest of any passerine bird or within 500 feet of an active nest of any raptor shall be evaluated for potential impacts to the active nest. Monitoring should occur until the nest is no longer active. The buffers may be adjusted (including increases or reductions to the buffer) by the qualified biologist on a case-by-case basis taking into consideration the location, type, duration and timing, and severity of work, distance of nest from construction activities, surrounding vegetation and line-of-sight between the nest and work areas, and the species' site-specific level of habituation to the disturbance. If the qualified biologist determines nesting activities may fail as a result of project activities, the biologist should immediately inform the resident engineer and construction supervisor, and all project activities shall cease within the recommended no-disturbance buffer until the biologist determines the adults and young are no longer reliant on the nest site.

3. Avoidance buffers around active nests should be delineated on site with bright flagging or other means, for easy identification by construction personnel. The resident engineer and construction supervisor will be notified of the nest and the buffer limits to ensure it is maintained.

Mitigation Measure

BIO-1 *Roosting Bat Surveys:* No less than 60 days prior to initiating project activities, a qualified bat biologist shall conduct a bat roosting habitat suitability assessment of any vegetation that may be removed, altered, or indirectly impacted by the project activities. Any locations identified as having potentially suitable bat roosting habitat by the qualified bat biologist shall be subject to additional nighttime surveys (bat surveys) during the summer months (i.e., June-August) to determine the numbers and bat species using the roost(s). The information collected during these additional bat surveys shall be used by the qualified bat biologist to develop species-specific measures to minimize impacts to roosting bats should bats be detected using the site. The bat surveys shall be conducted by the qualified bat biologist using an appropriate combination of visual inspection, sampling, exit counts, and acoustic surveys.

If the presence of bats within the project site is confirmed, avoidance and minimization measures, including the designation of buffers based upon the particular bat species found and phased removal of trees, shall be developed and implemented.

Operation

Impacts to any special-status wildlife species are not anticipated during operation of the proposed project. Removal of trees or vegetation that could affect special-status wildlife species would not occur during project operation.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less Than Significant Impact. The Los Angeles River is located along the northern limits of the BSA. This section of the river consists of a concrete box channel, about 130 feet wide with up to 20-foot sidewalls. There is no riparian vegetation in or along this reach of the river. Six special-status vegetation communities have been reported in the CNDDB within the six quad search area (an area of approximately 360 square miles). Of these six vegetation communities, one sensitive native vegetation community, arroyo willow, occurs within the BSA. Along with black willow, arroyo willow are common riparian species in southern California. Within the HWSG property, these species occur along a linear swale-like feature south of the West Reservoir. This area is outside the proposed project development footprint.

Construction

Construction of the proposed project would occur within bare ground and areas that have been previously disturbed and would avoid stands of remnant native riparian vegetation within the HWSG property. Therefore, direct impacts to sensitive natural communities would not generally occur. Indirect impacts to native riparian vegetation communities occurring in the BSA could include the accumulation of fugitive dust, and the colonization of non-native, invasive plant species. Other indirect impacts could include an increase in the amount of compacted or modified surfaces that, if not controlled, could increase the potential for surface runoff, increased erosion, and sediment deposition within the remnant native riparian communities. As discussed in Section 3.3(b) above, the proposed project would be required to comply with SCAQMD Rule 403, which requires measures to prevent the generation of visible dust plumes such as applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system, and maintaining effective cover over exposed areas. Additionally, as further discussed in Section 3.7(b), a SWPPP, including the development and implementation of a site-specific erosion and sedimentation control plan, would be prepared for the project. This would include measures for general site management, construction materials and waste management, and erosion and sediment controls for wet and dry seasons. Implementation of the SWPPP would help to minimize erosion and runoff from the site during construction. With adherence to construction requirements related to the control of fugitive dust and implementation of the SWPPP, the potential for indirect impacts to vegetation in the surrounding BSA would be less than significant.

Operation

No operational activities would occur within riparian habitat areas in the HWSG. As such, no direct impacts to these resources would occur during project operation. Following construction, the project site would have more impervious surfaces than under existing conditions. However, the project would comply with the City's LID ordinance to reduce the volume and intensity of stormwater flows such that the erosion created by runoff from impervious surfaces would be controlled. Additionally, stormwater would be captured and utilized to the extent possible to provide water for plants, minimizing the amount of stormwater runoff from the site that could lead to erosion. Therefore, indirect impacts to sensitive riparian habitat would be less than significant during operation.

c) Would the project 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?

Less Than Significant Impact. Based on a review of the US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), several features were originally mapped by NWI within the BSA, including freshwater ponds, freshwater emergent wetland, and riverine habitat (the Los Angeles River channel); all were classified as being man-made and having temporary or seasonally flooded water regimes. These aquatic features are no longer evident within the HWSG property. One remaining potentially jurisdictional feature, a swale-like feature located south of the West Reservoir, along the southern boundary of the HWSG property, is not mapped in the NWI. This feature does not coincide with the footprint of any of the project components. Additionally, no construction activities would occur within the Los Angeles River channel.

As discussed in detail in Section 3.10(a), during project operation, an average of approximately 1.38 MGD of tertiary treated wastewater would be diverted from the LAGWRP to the proposed DPR Demonstration Facility, where it would undergo advanced treatment. It has been assumed that the entire 1.38 MGD provided by LAGWRP to the DPR Demonstration Facility would represent a diversion of recycled water that would otherwise be discharged to the Los Angeles River adjacent to LAGWRP. After undergoing advanced treatment, approximately 1.17 MGD of treated effluent from the DPR Demonstration Facility would be discharged to the Los Angeles River adjacent to the HWSG property, while the remaining approximately 0.21 MGD of water processed through the facility would be returned to LAGWRP for treatment. The process losses during tertiary treatment of this returned water at LAGWRP would be approximately 18 percent by volume (approximately 0.04 MG) of sludge byproduct, which would be conveyed in the existing sewer system to Hyperion Water Reclamation Plant in El Segundo. The remaining recycled water (approximately 0.17 MG) would be available for discharge to the Los Angeles River. This entire process would result in a reduction in discharge of 0.04 MGD to the Los Angeles River downstream of LAGWRP, representing a decrease in flow of approximately 0.06 cubic feet per second, resulting in a reduction in depth of approximately 0.1 millimeter or less, depending on the location in the river. This would represent an essentially immeasurable change and is therefore, considered de minimis. Therefore, operation of the proposed project would not have a substantial adverse effect on the Los Angeles River channel. The impact would be less than significant.

d) Would the project 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 Impact. Habitat fragments are isolated patches of habitat separated by otherwise foreign or inhospitable areas, such as urban/suburban tracts, agricultural lands, or highways. Habitat fragments can isolate species populations by limiting migration, foraging, and breeding opportunities. Isolation of populations can have many harmful impacts and may contribute significantly to local species extinction. In an urban context, a wildlife migration corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two comparatively undisturbed habitat fragments, or between a habitat fragment and some vital resource that encourages population growth and diversity.

Mature trees and shrubs along Forest Lawn Drive in the southern portion of the HWSG property and in the memorial parks on the other side of Forest Lawn Drive may provide a corridor for localized bird movement between natural open space areas in nearby Griffith Park and the surrounding urban environment. However, the BSA does not occur within or intersect a

recognized/established regional wildlife corridor.

The Los Angeles River is located along the northern limits of the HWSG. This section of the river consists of a concrete box channel, about 130 feet wide with up to 20-foot high sidewalls. There is no riparian vegetation in or along this reach of the river; however, storm flows and urban sources promote the production of algae within sheet flow in the channel that support some bird species that feed on the algae and associated invertebrates. Although the river channel provides a food source for bird species and potentially other wildlife, and may provide opportunities for localized wildlife movement, it does not connect significant open or green-space areas or natural habitats that may provide critical wildlife resources (i.e., food, cover, water) and does not serve as a significant wildlife movement corridor.

Construction

The BSA does not generally serve as a regional wildlife corridor, and as a result, direct impacts to a regional wildlife movement corridor would not occur. However, as discussed, the Los Angeles River channel occurs within the BSA and could provide opportunities for local wildlife movement. Since no work would occur in the channel, project construction activities are not anticipated to directly impact the channel's potential to facilitate wildlife movement.

As previously discussed, indirect impacts to nesting birds could occur as a result of noise, increased human presence, and vibration from construction activities. Disturbances related to construction could result in increased nestling mortality due to nest abandonment or decreased feeding frequency. Such indirect effects would be temporary in nature, restricted to the project construction duration. By implementing and adhering to BMP-1 listed in Section 3.4(a) related to pre-construction surveys and providing qualified biological monitors as necessary, indirect impacts to localized bird movement and nesting are not anticipated, and impacts would be less than significant during construction.

Operation

As discussed in Section 3.4(c) above, operation of the proposed DPR Demonstration Facility would result in a *de minimis* change in flows to the Los Angeles River below LAGWRP, which is located approximately 3.5 miles downriver of HWGS. The discharge of approximately 1.17 MGD from the DPR Demonstration Facility to the river would actually increase in flow in the river between the HWSG property and LAGWRP. As such, operation of the proposed project would not interfere with the river's potential to provide opportunities for local wildlife movement. The impact would be less than significant during project operation.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less Than Significant Impact. Native tree species protected under the City's Native Tree Protection Ordinance (Ordinance No. 177404) include oak trees indigenous to California but excluding scrub oak (*Q. dumosa*); southern California black walnut (*Juglans californica*); western sycamore; and California bay (*Umbellularia californica*) (Section 17.02 of City of Los Angeles Municipal Code). In December 2020, the City added two native shrub species, blue elderberry and toyon. Pursuant to the ordinance, native trees that were planted or grown as part of a tree planting program are not "Protected Trees." Trees and shrubs must be four inches or greater in diameter at 4.5 feet above ground to be considered protected. The City's Board of Public Works must issue a permit before any alterations to protected trees are made that could cause them to be damaged,

relocated, or removed. Pruning also requires a permit and must comply with the pruning standards set forth by the Western Chapter of the International Society of Arboriculture in a manner that does not cause permanent damage or adversely affect the health of the trees. Per the ordinance, the tree removal permit may require replanting of native trees within the vicinity if possible or, if not, at another location within the City to mitigate for the removal of trees. The ordinance requires the size and number of replacement trees to approximate the value of the tree or shrub removed.

Trees have reestablished along the southern perimeter of the HWSG property after the spreading grounds function at the property was discontinued in the early 1980s. These trees are a mix of native and non-native species and do not constitute an intact natural community. Nonetheless, a permit may be required for the removal or pruning of any of the protected tree species. Coast live oak, western sycamore, toyon, and blue elderberry were identified within these stands along the southern perimeter. A limited number of these trees and shrubs may be impacted at the proposed primary entry to the project site at Mt. Sinai Drive and Forest Lawn Drive and south of the proposed DPR Demonstration Facility. Impacts to any ordinance-protected species would be determined during final design. A Tree Removal Permit in compliance with the City's Native Tree Protection Ordinance would be required for the removal of any protected tree. With issuance of a tree removal permit from Public Works and implementation of compensation to mitigate for tree removals pursuant to the permit requirements, the project would be in compliance with the Native Tree Protection Ordinance, and direct impacts to ordinance-protected species would be less than significant.

The City of Los Angeles Department of Public Works also manages removal, replacement, and maintenance of the City's street trees and landscaped median islands. "Street trees" are those occurring in the public right-of-way, and a permit from Public Works Urban Forestry Division is required to remove a street tree. Under Los Angeles Municipal Code Section 62.170, as a condition to the permit, the permittee may be required to plant another tree of the type and size specified in the permit. However, in accordance with Los Angeles Municipal Code Section 62.177, a payment of in-lieu fees for the purchase, installation, and maintenance of trees is allowable when the required replacement trees cannot feasibly be planted on site.

In the event it is determined that street trees would require removal to accommodate construction of the proposed primary entrance point to the project site, LADWP would obtain a street tree removal permit from the City of Los Angeles Department of Public Works, and the appropriate compensation to mitigate any street tree removals would be completed in compliance with the City's street tree policy. With adherence to existing regulations and permitting requirements, the proposed project would not conflict with any local policies or ordinances protecting biological resources. The impact would be less than significant.

f) Would the project 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. No adopted Habitat Conservation or Natural Community Conservation Plans coincide with the boundaries of the HWSG property.[14] Therefore, no impact would occur.

[14] California Department of Fish and Wildlife. Natural Community Conservation Plans, Map. Available at: https://wildlife.ca.gov/Conservation/Planning/NCCP/Plans. Accessed January 19, 2024.

3.5 Cultural Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☐	☒	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☒	☐

Discussion

Potential impacts related to cultural resources resulting from implementation of the proposed project were determined from the results presented in the Cultural Resources Technical Memorandum prepared for the proposed project, which is included as Appendix C to this IS/MND.

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

No Impact. CEQA Section 15064.5 states that historical resources are “any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource.” In addition, “a resource is "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources and is:

A. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

B. Is associated with the lives of persons important in our past;

C. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

D. Has yielded, or may be likely to yield, information important in prehistory or history.

A cultural resource determined to meet one or more of the above criteria is considered a historical resource under CEQA. Historical resources eligible for listing in the California Register of Historical Resources (CRHR) must retain enough of their historic character or appearance to be able to convey the reasons for their significance. Such integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

Archival research conducted for the proposed project included a review of South Central Coastal Information Center records search, archival research, literature, historical map, and aerial photograph review, and archaeological site sensitivity analysis. The records search included the Area of Potential Effects (APE), which is identified as the boundary of the 43-acre Headworks property. In addition, the records search included a half-mile radius around the APE. As part of the records search, the following federal and California inventories were reviewed: National Register of Historic Places (NRHP), California Inventory of Historic Resources, California Points

of Historical Interest. California Historical Landmarks, Archaeological Determinations of Eligibility and Los Angeles County Archaeological Resources Directory, Built Environmental Resources Directory for Los Angeles County, and City of Los Angeles Historic-Cultural Monuments (LAHCM).

Archival records search revealed that 15 studies have taken place within the 0.5-mile records search radius. Of the 15 previous studies, seven have previously surveyed the APE, resulting in previous survey coverage of 100 percent of the APE. The records search revealed two resources located within the APE and two resources within the 0.5-mile records search radius. All four resources are historic-period resources, and are summarized in Table 3-3 below.

Table 3-3: Previously Recorded Cultural Resources within 0.5 Mile of the APE

Primary Number (P-19-)	Trinomial (CA-LAN)	Description	Evaluation	Distance from APE
004712	4712H	Headworks Spreading Grounds	Not eligible for listing in NRHP	Within
150414	0022H	Adobe house, Ranch House of Rancho Cahuenga	Unevaluated	0.3 miles north
150415	0023H	House structure, “Old House of Lopez”	Unevaluated	Precise location unknown (not within APE)
175297	None	Griffith Park	Individually determined eligible for NRHP by consensus through Section 106 process Listed in the CRHR LAHCM	Within

As shown in Table 3-3 above, only one resource, P-19-175297 (Griffith Park), is listed in the CRHR, and is a historical resource as defined by CEQA Section 15064.5(a). Resource P-19-004712 (Headworks Spreading Grounds) was determined ineligible for the NRHP and CRHR in 2020 and is not a historical resource as defined by CEQA Section 15064.5(a). Resources P-19-150414 (Adobe house) and P-19-150415 (House structure) are not located within the APE.

The boundaries of P-19-175297 (Griffith Park) overlap the APE; however, historically the area within the APE did not function as part of the park. The APE has a separate history associated with water acquisition as opposed to recreation. At some point over the park’s history, the area within the APE was incorporated into the park’s boundaries. However, none of the park’s defining historic features are located within or adjacent to the APE. The closest character-defining feature, Travel Town, is 0.14 miles east of the APE and separated by a sixty-foot-wide roadway and two high fences. The APE is located along the northernmost boundary of the park property and is not visible from any of the park’s character-defining features. The proposed project would not constitute a substantial adverse change because the park would not be materially altered in an adverse manner, and the physical characteristics that convey its historical significance and justify its eligibility for inclusion in the NRHP, CRHR, and LAHCM will remain intact and unchanged (CEQA Section 15064.5[b][2][A-C]). There would be no impact to the historical resource.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Less Than Significant Impact. The entire APE has been surveyed on multiple occasions, most recently in 2020 when it was subject to an intensive pedestrian survey. The project site is located on the banks of the Los Angeles River and beside the hills that are now a part of Griffith Park. Map research shows no buildings within the APE prior to the channelization of the Los Angeles River. Moreover, the area also has a history of intensive disturbance. The APE is located on a natural low-lying area beside the Los Angeles River, and flooding likely washed away archaeological remains that may have existed at the site prior to the river's channelization. Wells and pipes up to 150 feet deep have been dug at the site since the first quarter of the 20th century. The massive earthmoving associated with the channelization of the Los Angeles River and the construction of the spreading grounds in 1938, and the spreading grounds' reorganization between 1954 and 1964, disturbed the APE to significant depths and would most likely have destroyed any cultural resources located within the APE. Additionally, recent earthmoving construction associated with the Headworks East and West Reservoirs has eradicated most features associated with the original Headworks Spreading Grounds. No archaeological resources were encountered in the APE during three archaeological surveys conducted at HWSG or during the construction of the reservoirs. Based on the results of the archival research and past surveys, there is low potential that unknown archaeological resources will be encountered during ground-disturbing activities.

Although not expected to occur due to the low potential in the APE, there could be an inadvertent discovery of previously unrecorded archaeological resources during project construction activities. Therefore, BMP-2 regarding cultural resources awareness training, as outlined below, would be employed during construction of the proposed project.

BMP-2 All field supervisors and construction workers shall participate in cultural resources awareness training prior to the initiation of project construction activities that involve ground-disturbance. The training shall include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training shall address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures shall be documented in a cultural resources monitoring plan (CRMP) that shall establish, in the event of an inadvertent discovery of cultural resources, monitoring procedures (including applicable archaeological and/or tribal monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMP shall be written to ensure compliance with appropriate state and federal laws. The training presentation and CRMP shall be available to additional supervisory or construction personnel who may join after project construction has begun.

If archaeological material is uncovered in the course of ground-disturbing activities, in accordance with California PRC Section 21083.2(i) regarding provisions related to the accidental discovery of archaeological resources, work shall be temporarily halted in the vicinity of the find, and LADWP shall retain a qualified professional archaeologist meeting the Secretary of the Interior's Standards for archaeology to evaluate the significance of the find and determine appropriate treatment for the resource in accordance with provisions of CEQA Guidelines Section 15064.5, the National Historic Preservation Act, 36 CFR (Code of Federal Regulations) Section 800.6 (Resolution of adverse effects), and Section 800.13 (Post-review discoveries). Construction activities may continue on other parts of the construction site while the evaluation and treatment of archaeological resources take place. With implementation of BMP-2 and compliance with existing regulations, impacts related to archaeological resources would be less than significant.

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Less Than Significant Impact. While the project site is located adjacent to two cemeteries, Forest Lawn Memorial Park and Mount Sinai Memorial Park, there are no cemeteries or known burial grounds located within the HWSG property. Based on the results of the archival research, there is low potential for such sites to be encountered during ground-disturbing activities. Moreover, historical construction activities have disturbed the entire APE. The likelihood of encountering undisturbed soils that may contain human remains is considered highly unlikely.

While not expected to occur, in the event that human remains are discovered, the remains would be treated in accordance with all applicable regulations. In accordance with the provisions of the California Health and Safety Code Section 7050.5, in the event that human remains are discovered during project construction, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains would occur, and the Los Angeles County Coroner would be notified. The coroner will provide recommendations concerning the treatment and disposition of the human remains within two working days. If the remains and/or related resources, such as funerary objects, are determined to be of Native American origin, the coroner would contact the California Native American Heritage Commission (NAHC) within 24 hours. In accordance with California PRC Section 5097.98, the NAHC would notify the person it believes to be most likely descended from the deceased Native American. The most likely descendent would be given access to the site where the remains were discovered and may make recommendations for the treatment and disposition of the remains and related resources, as well as provide input regarding the potential for other remains to be present. Work at the discovery site may commence only after consultation with the most likely descendent and treatment of the remains and any associated resources have been concluded. Work may continue on other parts of the project site while consultation and treatment are conducted. With adherence to existing regulations, impacts related to human remains would be less than significant.

3.6 Energy

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

Discussion

Potential impacts related to energy use resulting from implementation of the proposed project were determined from the results presented in the Energy Impact Study prepared for the proposed project, which is included as Appendix D to this IS/MND.

a) Would the project 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 following analysis discusses short-term construction and long-term operational use of electricity, natural gas, and petroleum.

Construction

Electricity

Construction of the proposed project would require electricity for construction trailers and the operation of electrically powered tools and equipment. Electricity to the site would be provided by LADWP, and it is anticipated that the source of electricity would be a connection to the existing grid. Consumption of electricity for construction would be relatively minimal and would cease after completion of the proposed project. Therefore, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of electricity.

Natural Gas

Construction activities typically do not require the consumption of natural gas to power equipment or heavy machinery. Natural gas that would be consumed during construction would be negligible and would not result in a significant drain on natural gas resources. Therefore, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of natural gas.

Petroleum

Petroleum would be consumed during construction activities of the proposed project by heavy-duty equipment, which is usually diesel powered. Construction of the proposed project would also result in an increased consumption of gasoline and diesel fuels associated with haul trucks, deliveries, and worker commute trips. The proposed project would require approximately

355,380 gallons of diesel fuel and 110,616 gallons of gasoline over the seven-year construction period. The annual average petroleum fuels consumption would be approximately 50,769 gallons of diesel fuel and 15,802 gallons of gasoline per year during construction of the proposed project. For context, in 2021, California consumed approximately 605 million barrels of oil.[15] There are 42 U.S. gallons in a barrel, so California consumes approximately 25 billion gallons of petroleum annually. The proposed project would use best practices to eliminate the potential for the wasteful consumption of petroleum. Exported materials (e.g., demolition debris and soil hauling) would be disposed of at the closest facility that accepts such materials, and the proposed project would be required to comply with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to five minutes. Therefore, because petroleum use would be minimized to the extent feasible and represents a comparatively small amount of fuel consumption, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of petroleum.

Operation

Electricity

Operation of the proposed project would require electricity for all three project components. As previously stated, minimal site lighting would be provided at the proposed Headworks Restoration Park because use of the park would be limited to dawn to dusk. Electricity would be required for indoor and outdoor lighting and other functions at the WQL and DPR Demonstration Facility. Excluding the electricity required for the micro-filtration and reverse osmosis processes during water treatment at the DPR Demonstration Facility (see below), the proposed project is estimated to consume 2,220 megawatt-hours of electricity per year. However, the WQL would be designed to meet the Mayor's Resilience by Design Directive by seeking to obtain LEED Gold certification, with the objective of achieving LEED Platinum certification and Envision Sustainable Infrastructure certification. This would represent a substantial energy savings over the operation of the existing Pasadena WQL, which is housed in a building constructed in the 1960s.

In addition, the DPR Demonstration Facility would help prove technologies that may eventually allow for the reuse of locally generated wastewater, thus limiting the use of imported water, which consumes the majority of the energy used by the water sector in the state.

Natural Gas

The proposed project would not consume natural gas consumption. Space and water heating at the WQL and DPR Demonstration Facility would be achieved with solar panels and heat pump units that operate on electricity. Therefore, operation of the proposed project would not result in a significant impact related to wasteful, inefficient, or unnecessary consumption of natural gas.

Petroleum

Petroleum consumption during operation of the proposed project would be related to vehicle trips for employees and visitors. The assessment of transportation fuels is based on the VMT analysis completed for the proposed project. As detailed in Section 3.17(b), the net VMT for the proposed project is estimated to be 6.11 miles per employee. This VMT would be less than the average per

[15] U.S. Energy Information Administration. California State Profile and Energy Estimates – Table F16: Total Petroleum Consumption Estimates, 2021.Available at: https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_fuel/html/fuel_use_pa.html&sid=US&sid=CA. Accessed January 2024.

employee for the Central Area Planning Commission factor. There are no unusual project characteristics or processes that would require intensive petroleum consumption, or use of equipment that would not conform to current emissions standards and related fuel efficiencies. Implementation of the proposed project would not require the development of additional petroleum fuels infrastructure or supply. Therefore, operation of the proposed project would not result in a significant impact related to wasteful, inefficient, or unnecessary consumption of petroleum.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Less Than Significant Impact. The proposed project would not obstruct a State or local plan for renewable energy or energy efficiency. The WQL would be designed to meet the Mayor ‘s Resilience by Design Directive by seeking to obtain LEED Gold certification, with the objective of achieving LEED Platinum certification and Envision Sustainable Infrastructure certification. The conceptual design for the WQL incorporates best management practices and high-performance strategies in several of the major LA Green New Deal target areas. The WQL would have a photovoltaic array on the rooftop and would also include an internal landscaped courtyard, and may include a green roof, to reduce heat and conserve water through stormwater capture and treatment. Recycled water from LAGWRP would provide irrigation water for landscaping, which would be drought-tolerant in the types and use of plant material. The WQL building would achieve energy efficiency by implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency HVAC systems. The proposed project would also include EV charging stations in compliance with LADBS EVCS requirements. It would incorporate recycled material in the building construction to promote a sustainable supply chain. All lighting and lighting controls would comply with the latest version of the Building Energy Efficiency Standard (Title 24) and the California Green Building Standard Code. The Headworks Restoration Park would incorporate landscaping reflective of native plant communities and use recycled water for irrigation.

In addition, as discussed above, the DPR Demonstration Facility would help prove technologies that may eventually allow for the reuse of locally generated wastewater, thus limiting the use of imported water, which consumes the majority of the energy used by the water sector in the state.

3.7 Geology and Soils

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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.	☐	☐	☒	☐
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 direct or indirect 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 wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

Discussion

a) Would the project 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.

Less Than Significant Impact. There are several earthquake faults in the project vicinity, but the project site is not located within an Alquist-Priolo Earthquake Fault Zone or other known fault

zone.[16,17] The proposed WQL, DPR Demonstration Facility, and structures associated with Headworks Restoration Park would be designed and constructed in compliance with the latest version of the Los Angeles Building Code and other applicable federal, state, and local codes to minimize impacts related to fault rupture. With adherence to existing regulations, impacts related to directly or indirectly causing potential adverse effects from the rupture of a known earthquake fault would be less than significant.

ii. Strong seismic ground shaking?

Less Than Significant Impact. The project site is located within a seismically active region, and as with all locations in Southern California, is subject to strong seismic ground shaking. However, as discussed in Section 3.7(a)(i) above, the proposed WQL, DPR Demonstration Facility, and structures associated with Headworks Restoration Park would be designed and constructed in compliance with the latest version of the Los Angeles Building Code and other applicable federal, state, and local codes to minimize impacts related to seismic ground shaking. Additionally, as an essential facility, the proposed WQL would also be constructed in compliance with the seismic requirements and guidelines defined in the latest version of the American Society of Civil Engineers building code standards. With adherence to existing regulations, impacts related to strong seismic ground shaking would be less than significant.

iii. Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. The project site is located within a City designated liquefaction area.[18] A previous geotechnical report of the project site conducted by LADWP for the now complete Headworks Water Complex recorded groundwater at approximately 26 feet below ground surface, which did not pose a potential impact related to liquefaction for the reservoir construction; however, historically, groundwater at the site has been reported as shallow as 10 feet below ground surface.[19] As standard practice for all LADWP facility construction projects, an updated geotechnical investigation will be conducted and an updated report will be a prepared with detailed recommendations for seismic loads for all project components, which will be incorporated into the facility designs. Based on the recommendations established in the geotechnical report and with compliance with all applicable federal, state, and local codes related to seismic criteria, impacts related to seismic-related ground failure, including liquefaction, would be less than significant.

iv. Landslides?

No Impact. The HWSG property is not identified as a potential landslide hazard area.[20] The proposed project would not increase the risk of landslides. Therefore, no impacts related to landslides would occur.

16 California Department of Conservation. CGS Seismic Hazards Program: Alquist-Priolo Fault Hazard Zones. Available at: https://gis.data.ca.gov/maps/ee92a5f9f4ee4ec5aa731d3245ed9f53/about. Accessed January 19, 2024.
17 United States Geologic Survey. Quaternary Faults Database. Interactive Map. Available at: https://doi.org/10.5066/F7S75FJM. Accessed January 19, 2024.
18 ZIMAS. Available at: http://zimas.lacity.org/. Accessed January 19, 2024.
19 LADWP. 2005. Silver Lake Reservoir Complex Storage Replacement Project Draft Environmental Impact Report.
20 ZIMAS. Available at: http://zimas.lacity.org/. Accessed January 19, 2024.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. The eastern half of the HWSG property is currently developed with the Headworks Water Complex, while the western portion is undeveloped and highly disturbed from previous excavation, earth work, and grading. Portions of the proposed Headworks Restoration Park would be developed atop the concrete roof of the recently constructed West Reservoir. Other portions of the park, such as parking, a pavilion building, trails, and site landscaping, located in adjacent areas, would require excavation and grading activities. Additionally, the proposed structures for the WQL and DPR Demonstration Facility would require excavation, earth moving, and grading. During construction, transport of sediments from the project component sites by stormwater runoff and winds would be prevented through adherence with existing regulations such Rule 403 dust control measures required by the SCAQMD and a SWPPP for construction activities, including a site-specific an erosion and sedimentation control plan, in compliance with the latest Los Angeles Regional Water Quality Control Board's National Pollutant Discharge Elimination System (NPDES) permit requirements for stormwater discharges. With adherence to applicable regulations and implementation of preventative measures, construction impacts associated with soil erosion or the loss of topsoil would be less than significant.

Following construction, the project site would have more impervious surfaces. However, the project would comply with the City's LID ordinance to reduce the volume and intensity stormwater flows such that the erosion created by runoff from impervious surfaces would be controlled. Additionally, stormwater would be captured and utilized to the extent possible to provide water for plants, minimizing the amount of stormwater runoff from the site that could lead to erosion. Therefore, there would be no substantial soil erosion or loss of topsoil during project operations, and the impact would be less than significant.

c) Would the project 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. As discussed in Sections 3.7(a)(iii) and 3.7(a)(iv), the HWSG site is not identified as a potential landslide hazard area. Therefore, impacts related to landslides would not occur.

Subsidence is the lowering of surface elevation due to changes occurring underground, such as extraction of large amounts of groundwater. When groundwater is extracted from aquifers at a rate that exceeds the rate of replenishment, overdraft occurs, which can lead to subsidence. No groundwater extraction would occur as part of the proposed project. Therefore, impacts related to subsidence would not occur.

Lateral spreading is a type of liquefaction-induced ground failure on mildly sloping ground. As discussed above, HWSG is located in a designated liquefaction area. Collapsible soils consist of unconsolidated, low-density materials that may collapse and compact under the addition of excessive water or loading. Soil collapse occurs when the land surface is saturated at depths greater than those reached by typical rain events. The HWSG site is underlain by young alluvial valley deposits (sand, silt, and gravel) and fill, which are susceptible to collapse. As discussed previously, an updated geotechnical investigation will be conducted for the proposed project. All project components would be designed and constructed based on the report recommendations and in accordance with all applicable federal, state, and local codes related to seismic criteria. Therefore, impacts would be less than significant.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

No Impact. Expansive soils are clay-based soils that tend to expand (increase in volume) as they absorb water and shrink (lessen in volume) as water is drawn away. The geologic materials underlying the project site are composed of young alluvial deposits, fill, and loamy sand soils, which are not susceptible to expansion.[21,22]

e) Would the project 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. Wastewater from the project, which is anticipated to be relatively low in volume, would be handled through a connection to the existing sewer line that is located parallel to Forest Lawn Drive at the east end of HWSG and that is routed to LAGWRP. No septic tanks or alternative wastewater disposal systems are proposed as part of the project. Therefore, no impact associated with the use of such systems would occur.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact. The existing HWSG site has previously been disturbed by a long history of excavation, earth moving, and grading for various water extraction, storage, and distribution facilities. Based on previous disturbance and analysis at HWSG, the excavation and removal of fill and alluvial materials at the site would not be likely to alter any unique or significant geologic features. Therefore, the proposed project would not be anticipated to directly or indirectly destroy a unique paleontological resource or site or unique geological feature. In addition, although not expected to occur, in the event previously uncovered paleontological resources are encountered during project construction, the provisions of CEQA Guidelines Section 15064.5(f) would be followed. Accordingly, the construction manager would halt construction activities in the immediate area. LADWP would retain a qualified paleontologist to make an evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and treatment of paleontological resources take place, if necessary. Compliance with these existing policies would ensure that the impact to paleontological resources would be less than significant.

[21] California Department of Conservation. Compilation of Quaternary Surficial Deposits Map. Available at: https://maps.conservation.ca.gov/cgs/QSD/. Accessed January 19, 2024.

[22] United States Department of Agriculture. Natural Resources Conservation Service. Web Soil Survey. Available at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed January 19, 2024.

3.8 Greenhouse Gas Emissions

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

Discussion

Potential impacts related to GHG emissions associated with the proposed project were determined from the results presented in the Greenhouse Gas Emissions Impact Study prepared for the proposed project, which is included as Appendix E to this IS/MND.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. The proposed project would generate GHG emissions during temporary construction activities and long-term operations. Construction would result in short-term GHG emissions produced by construction equipment exhaust as well as on-road vehicle trips from personal vehicles for worker commuting, vendor deliveries of equipment and materials, and trucks for soil and debris hauling. Construction of the proposed project would generate a total of approximately 4,400 metric tons of carbon dioxide equivalents ($MTCO_2e$), which equates to approximately 147 $MTCO_2e$ annually when amortized over the life of the project, which is defined as 30 years under SCAQMD guidance. Sources of GHG emissions during project operation include automobile trips, landscaping equipment, water use, and waste generation. Annual GHG emissions would be approximately 1,399 $MTCO_2e$ during the first full year of operations, including annualize construction emissions.

Table 3-4 presents the estimated annual GHG emissions that would be generated by operation of the proposed project from area, energy, mobile, water, and waste sources, as well as the amortized construction emissions. As shown in Table 3-4, the annual GHG emissions of 1,399 $MTCO_2e$ would be below the interim SCAQMD quantitative threshold value of 3,000 $MTCO_2e$ for residential and commercial developments, including industrial parks and warehouses. Therefore, implementation of the proposed project would result in a less than significant impact related to the generation of GHG emissions.

Table 3-4: Proposed Project Annual Greenhouse Gas Emissions

Emissions Source	CO_2e Emissions (Metric Tons per Year)
Construction	
Construction Emissions Amortized (Direct)	147
Operation	
Area Source Emissions (Direct)	3
Energy Source Emissions (Indirect)	832
Mobile Source Emissions (Direct)	169
Waste Disposal Emissions (Indirect)	4
Water Processes Emissions (Indirect)	244
TOTAL CONSTRUCTION AND OPERATION	**1,399**
SCAQMD Draft Significance Threshold	3,000
EXCEED THRESHOLD?	**No**

Source: TAHA, 2022.

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact. The proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. The WQL would be designed to meet the Mayor's Resilience by Design Directive by obtaining LEED Gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The WQL may also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater. The conceptual design for the WQL incorporates best management practices and high-performance strategies in several of the major LA Green New Deal target areas. The WQL would include a photovoltaic array on the rooftop of the building. It would also include an internal landscaped courtyard, and may include a green roof, to conserve water through stormwater capture and treatment. Recycled water from LAGWRP would provide irrigation water for the proposed project landscaping, which would be drought-tolerant in the types and use of plant material. The WQL building would achieve energy efficiency by implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency HVAC systems. The proposed project would include EV charging stations in compliance with LADBS EVCS requirements. It would also incorporate recycled material in all aspects of the building construction to promote a sustainable supply chain. All lighting and lighting controls for the proposed project would comply with the latest version of the Building Energy Efficiency Standard (Title 24) and the California Green Building Standard Code. In addition, the DPR Demonstration Facility would help prove technologies that may eventually allow for the reuse of locally generated wastewater, thus limiting the use of imported water, which consumes the majority of the energy used by the water sector in the state.

A detailed analysis describing the extent to which the proposed project complies with or does not conflict with adopted plans and policies to reduce GHG emissions, including Executive Orders S-3-05 and B-30-15, the Assembly Bill 32 *Climate Change Scoping Plan*, and SCAG's 2020-2045 RTP/SCS, is included in Appendix E to this IS/MND and summarized below.

Executive Orders S-3-05 and B-30-15 established goals to reduce GHG emissions to 80 percent below 1990 levels by 2050. Studies have shown that in order to meet the 2050 goal, aggressive

technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, will be required. In the *First Update to the Climate Change Scoping Plan*, CARB generally described the types of activities required to achieve the 2050 target: "energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately."[23] In 2008, CARB approved a *Climate Change Scoping Plan* as required by Assembly Bill 32. The *Climate Change Scoping Plan* and subsequent updates in 2014, 2017, and 2022 contain a range of GHG reduction actions that include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an Assembly Bill 32 implementation fee to fund the program.

The proposed project would be designed and constructed to meet 2022 Title 24 standards, and the proposed WQL would be designed to meet the Mayor's Resilience by Design Directive by obtaining LEED Gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The project would be consistent with the *Climate Change Scoping Plan* GHG Reduction Strategies and would not conflict with initiatives to reduce emissions.

The California legislature passed Senate Bill 375 to connect regional transportation planning to land use decisions made at a local level by integrating land use planning with the goal of reducing VMT for cars and light duty trucks. Senate Bill 375 requires the metropolitan planning organizations to prepare an SCS in their regional transportation plans to achieve the regional per capita GHG reduction targets established by CARB. Under Senate Bill 375, the primary goal of the RTP/SCS is to provide a framework for future growth that will decrease per capita GHG emissions from cars and light-duty trucks. The proposed project would not have a VMT impact, as analyzed in Section 3.17(b), and is therefore consistent with the 2020-2045 RTP/SCS. Therefore, the proposed project would be consistent with and would not conflict with the applicable GHG reduction plans, policies and regulations.

[23] CARB. *First Update to the Climate Change Scoping Plan*. May 2014.

3.9 Hazards and Hazardous Materials

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 Section 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 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 or excessive noise 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?	☐	☐	☒	☐

Discussion

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant Impact. Implementation of the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Construction activities would be temporary in nature and would involve the limited transport, storage, use, and disposal of hazardous materials for the purpose of developing the proposed project facilities. Such hazardous materials could include on-site fueling of construction equipment, and the transport of fuels, lubricating fluids, and solvents. These types of materials are not acutely hazardous, and all storage, handling, and disposal of these materials are regulated by the California Department of Toxic Substances Control, United States Environmental Protection Agency, the Occupational Safety & Health Administration, the Los Angeles County Fire Department, and the Los Angeles County Health Department. The transport, use, and disposal of construction-related hazardous materials would occur in conformance with applicable federal, State, and local regulations governing such activities. Therefore, the

construction impacts would be less than significant.

Each storage room within the WQL would be designed for the specific mix of substances that can be safely stored together within that room. The proposed WQL would be designed for the safe handling of hazardous materials, and would include flammable and corrosive storage rooms, a hazardous chemical room, a gas cylinder support room, and a hazardous waste storage room. The proposed WQL would ensure staff safety through once-through (single pass) air systems in lab areas, fume hoods located away from the exits, air handling units for supply air placed away from exhaust fans/stacks, American National Standards Institute compliant combination eyewash and shower safety stations, a central safety and supplies storage room, and safety stations within each lab. Additionally, a Mobile Laboratory Trailer would have a local cage structure for cylinder gases while parked on-site. Hazardous waste would be transported in accordance with applicable federal, State, and local regulations, and disposed of at a Class I landfill.

The proposed DPR Demonstration Facility would also be designed to include a chemical storage area, which would conform with all applicable federal, State, and local regulations governing storage of hazardous materials. All project components, including the Headworks Restoration Park, would also require the minimal, limited routine transport, storage, use, or disposal of hazardous materials for activities associated with long-term operations such as landscaping, scheduled maintenance, or emergency repair.

All project components would be designed to ensure hazardous materials would be properly contained and that such substances would not spill or leak. Additionally, the WQL would continue to implement a Chemical Hygiene Plan, similar to the plan in place at the existing laboratory in Pasadena. The Chemical Hygiene Plan establishes and describes procedures, equipment, personal protective equipment, and work practices to protect personnel from the potential hazards of using chemicals in the WQL and to ensure that exposure to substances stored and used in the WQL are within the limits established in the California Code of Regulations, Title 8, Section 5191(c). The contents of the Chemical Hygiene Plan are derived in part from, and are intended to supplement, the LADWP Water Quality Division Injury and Illness Prevention Program. The proposed DPR Demonstration Facility would be required to prepare and implement a similar Chemical Hygiene Plan. The materials transported and used at the proposed WQL and DPR Demonstration Facility are typical of water quality and treatment processes used at other LADWP facilities; therefore, the storage and use of these chemicals would comply with federal, State, and local regulations, similar to their other facilities. With adherence to applicable regulations, project operation would not pose a significant hazard to the public or the environment. Therefore, the impact related to a significant hazard through the routine transport, use, and handling of hazardous materials would be less than significant.

b) Would the project 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. The proposed project would not create reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. As discussed in Section 3.9(a), construction activities may involve limited transport, storage, and use of some hazardous materials, such as fuel for construction equipment. These types of materials are not acutely hazardous, and compliance with existing federal, State, and local regulations would ensure that construction impacts related to reasonably foreseeable upset accident conditions involving the release of hazardous materials would be less than significant. As discussed in Section 3.9(a), the proposed project would incorporate design elements to ensure

the safe handling and storage of the hazardous materials required to carry out the activities of the proposed project. Compliance with existing federal, State, and local regulations would ensure that operational impacts related to reasonably foreseeable upset accident conditions involving the release of hazardous materials would be less than significant.

c) Would the project 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. Providence High School, located in the City of Burbank, is approximately 0.2 miles northwest of the western border of the HWSG property and approximately 0.25 miles of the proposed DPR Demonstration Facility. Construction of the proposed project would involve the handling of materials such as fuels, lubricating fluids, and solvents, which are not acutely hazardous. Furthermore, construction activities are short-term in nature. As discussed above in Section 3.9(a), the proposed project would comply with existing federal, state, and local regulations related to the transport, use, and disposal of hazardous materials during construction. Operation of the proposed project would involve the routine use of hazardous materials in the proposed WQL and DPR Demonstration Facility, as well as for landscaping and maintenance for the proposed Headworks Restoration Park and surrounding area. As described above, while operation of the proposed project would involve the use of hazardous materials, stringent design elements would ensure the safe handling and storage of such materials. Additionally, as discussed in Section 3.3(c), the proposed project would not result in a long-term source of TAC emissions and would not include operational uses that would result in acutely and chronically hazardous TACs during operation. Therefore, the potential impact associated with the emission of hazardous materials within one-quarter mile of an existing or proposed school would be less than significant.

d) Would the project 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?

No Impact. The project site is not included on any hazardous waste site lists including the Department of Toxic Substances Control's EnviroStor database, which includes CORTESE sites, the SWRCB's GeoTracker site, the United States Environmental Protection Agency's database of regulated facilities, or other lists compiled pursuant to Section 65962.5 of the Government Code.[24, 25, 26] As such, the proposed project would not create a significant hazard to the public or the environment, and no impact would occur.

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 or excessive noise for people residing or working in the project area?

No Impact. The nearest airport to the project site is Hollywood Burbank Airport, located 3.3 miles north of the project site. The project site is not located within an airport land use plan or within two

[24] California Department of Toxic Substances Control. EnviroStor Database, Search by Map Location. Available at: http://www.envirostor.dtsc.ca.gov/public/. Accessed January 19, 2024.

[25] California State Water Resources Control Board. GeoTracker Database, Search by Map Location. Available at: http://geotracker.waterboards.ca.gov/map/. Accessed January 19, 2024.

[26] United States Environmental Protection Agency. Envirofacts Database. Available at: https://enviro.epa.gov/. Accessed January 19, 2024.

miles of a public airport.[27] Therefore, no impact would occur.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. The City of Los Angeles Emergency Management Department coordinates evacuations in the case of emergency with LAPD and LAFD, as outlined in the City's Emergency Operations Plan.[28] The County of Los Angeles designates disaster routes within the County, including within the City. Within the proposed project area, SR-134 is a designated freeway disaster route.[29] However, local access to the HWSG property is provided via Forest Lawn Drive. Required modifications to traffic lanes on Forest Lawn Drive at Mt. Sinai Drive would provide a westbound right-turn lane and an eastbound left-turn lane, accommodated within the existing road right-of-way. During construction for the intersection modification, temporary lane closures may be required, but a traffic control plan would be required and approved by the LADOT. The traffic control plan would include measures such as signage, flag persons, and lane detour plans as necessary to minimize disruptions to traffic. Emergency access to the site and surrounding area, particularly for emergency response vehicles, would be maintained at all times. Except for these intersection modifications, all construction would occur within the HWSG site. No impacts to SR-134, the designated freeway disaster route, would occur.

Operation of the proposed project would not alter the adjacent street system such that the City's adopted emergency response plan or emergency evacuation plan would be impacted. Secondary access for employee, service, and maintenance vehicles would be provided from Forest Lawn Drive at the west end of the HWSG. A series of interior roads would provide access for the public, employees, maintenance, and emergency vehicles to various locations within the site as appropriate. Therefore, operation of the proposed project would not interfere with implementation of an adopted emergency response plan or emergency evacuation plan. No impact would occur.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less Than Significant Impact. The far eastern portion of HWSG, which includes the eastern portion of the existing Headworks East Reservoir, is located within a designated Very High Fire Hazard Severity Zone (VHFHSZ).[30] The components of the proposed project (WQL, DPR Demonstration Facility, and Headworks Restoration Park) would not be constructed within the VHFHSZ. Under the proposed project, this area would remain similar to existing conditions with no additional structures. In this portion of the property, low-growing scrub vegetation has reestablished, and the top of the East Reservoir itself has been covered with soil and planted with low-growing scrub vegetation. In other areas of the HWSG property, construction activities would require the use of construction equipment or flammable materials. LADWP would comply with the provisions of the Municipal Code regarding fire protection and prevention.

In addition, the surrounding urban uses, including Forest Lawn Memorial Park and Mount Sinai

27 AirNav, LLC. Airports Search by Location. Available at: http://www.airnav.com/airports/get. Accessed January 19, 2024.

28 City of Los Angeles, Emergency Management Department. 202218. City of Los Angeles Emergency Operations Plan. Available at: https://emergency.lacity.org/emergency-plans-and-annexes. Accessed January 19, 2024.

29 Los Angeles County Department of Public Works. Disaster Route Maps: City of Los Angeles Central Area. Available at: http://dpw.lacounty.gov/dsg/disasterRoutes/map/Los%20Angeles%20Central%20Area.pdf. Accessed January 19. 2024.

30 California Department of Forestry and Fire Protection (CAL FIRE). FHSZ Viewer. Available at: https://egis.fire.ca.gov/FHSZ/. Accessed January 19, 2024.

Memorial Park to the south and the Los Angeles River and SR-134to the north, limits the risk of spread of wildfire. Therefore, the proposed project would not expose people or structures to significant risk involving wildland fires, and impacts would be less than significant.

3.10 Hydrology and Water Quality

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 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 off-site?	☐	☐	☒	☐
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?	☐	☐	☒	☐
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?	☐	☐	☒	☐

Discussion

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Significant Impact.

Construction

Construction activities would require excavation and grading, which would expose soils to potential erosion and runoff. However, the proposed project would be required to adhere to local, state, and federal storm water quality compliance standards, which would include compliance with storm water permits, as listed in Section 1.8 above, and other relevant standards and regulations, including the development and implementation of an erosion control plan and SWPPP to control runoff from the project site during construction. Therefore, adherence to local, state, and federal storm water quality compliance standards would ensure that impacts related to water quality standards or waste discharge requirements during construction would be less than significant.

Operation

Similar to existing conditions, excess storm flows from the project site would be diverted to the Los Angeles River via storm drain inlets located in the eastern end of the HWSG property. As previously discussed, the project would comply with the City's LID ordinance to capture and reduce the volume of stormwater flows. Sanitary wastewater from the project components is anticipated to be relatively low in volume and would be conveyed through a connection to the existing sewer line located parallel to Forest Lawn Drive at the eastern end of the HWSG property and routed to LAGWRP. As such, surface flows and sanitary wastewater from the project site are not anticipated to violate water quality standards or waste discharge requirements.

The proposed DPR Demonstration Facility would also include the discharge of purified recycled water from the AWPF to the Los Angeles River. As discussed in Section 1.7.2 of this IS/MND, LAGWRP would be the source of recycled water that would serve as influent for the proposed DPR Demonstration Facility AWPF. All wastewater received at LAGWRP is treated to a tertiary level. LAGWRP has a treatment capacity of approximately 20 MGD but currently produces an average of approximately 16 MGD of recycled water. A portion of the treated effluent is delivered to recycled water distribution systems of LADWP and the City of Glendale. LADWP utilizes the recycled water from LAGWRP primarily to provide irrigation for golf courses, cemeteries, and other sites located in and around Griffith Park and the HWSG property. This water is delivered via a recycled water pipeline that runs within Forest Lawn Drive adjacent to the HWSG property. A portion of the recycled water produced at LAGWRP that is not delivered to the recycled water system is discharged to the Los Angeles River.

The proposed AWPF would be designed to receive an average flow of approximately 1.38 MGD of recycled water from LAGWRP. For the purposes of this assessment, it is assumed that the entire 1.38 MGD average provided by LAGWRP to the DPR Demonstration Facility would otherwise be discharged to the Los Angeles River adjacent to LAGWRP. This water would be conveyed from LAGWRP to the HWSG property via the existing recycled water pipeline in Forest Lawn Drive. The recycled water influent to the AWPF would be directed to the various treatment trains, where it would be processed to produce purified water. Because the DPR Demonstration Facility is intended to test and verify various advanced treatment technologies and processes and is not intended or approved to supply drinking water, the water processed through the AWPF would not be discharged into the LADWP potable water system. Instead, the water would be continually discharged into the Los Angeles River adjacent to HWSG.

The various treatment trains in the AWPF would utilize micro-filtration and reverse osmosis processes. Some byproducts resulting from these processes, including backwash water used to clean the micro-filtration strainers and membranes and waste solutions from cleaning of the micro-filtration and reverse osmosis equipment, would not be suitable for discharge to the river. These process losses would represent approximately 15 percent by volume of the original recycled water influent to the AWPF, or approximately 0.21 MGD. Therefore, an average of approximately 1.17 MGD of water (85 percent of the 1.38 MGD of influent) would be discharged from the AWPF to the river at HWSG. This discharged water would include the reject water from the AWPF reverse osmosis processes, which would contain a high concentration of dissolved solids and would be remixed with the purified water prior to discharge to rebalance the water with minerals. Since the final step of the water purification process at the AWPF for all treatment trains is the addition of chlorine, the purified water would also be dechlorinated prior to discharge to the river.

The process losses, consisting of an average of approximately 0.21 MGD (15 percent of the

AWPF 1.38 MGD influent) that would not be suitable for discharge to the river would instead be returned via the existing sewer system to LAGWRP for additional processing. The tertiary treatment of this returned water at LAGWRP would produce a sludge byproduct of approximately 18 percent by volume (less than 0.04 MGD), which would be conveyed in the existing sanitary sewer system to Hyperion Water Reclamation Plant in El Segundo. The remaining recycled water (approximately 0.17 MGD) would be available for discharge to the Los Angeles River from LAGWRP.

In summary, at the outset of the DPR facility operations, 1.38 MGD would be diverted from the river at LAGWRP and conveyed to the HWSG property, which is located approximately 3.5 miles upriver. Approximately 1.17 MGD would be discharged back to the river from the DPR Demonstration Facility, resulting in an increase in the flows in the river by an average of 1.17 MGD in the reach between the HWSG property and LAGWRP after project implementation compared to current average conditions. The balance of the water processed through the proposed AWPF that would not be discharged to the river at HWSG (approximately 0.21 MGD) would be returned to LAGWRP to receive tertiary treatment. During this treatment, process losses of less than 0.04 MGD would occur, and approximately 0.17 MGD of recycled water effluent would be available for discharge to the river at LAGWRP. Therefore, combined with the 1.17 MGD downriver flow from the AWPF discharge, a total of 1.34 MGD of the original 1.38 MGD diverted from the river at LAGWRP and conveyed to the AWPF would be returned to the river (a reduced net discharge of less than 0.04 MGD). Once the treatment process at the AWPF is underway, a discharge volume in the amount of 1.34 MGD (over 97 percent of the original diversion) would be in equilibrium within the river adjacent to LAGWRP.

The reduction in discharge of 0.04 MGD to the Los Angeles River downstream of LAGWRP would represent a decrease in flow of approximately 0.06 cubic feet per second, resulting in a reduction in depth of approximately 0.1 millimeter or less, depending on the location in the river, which would represent an essentially immeasurable change and is, therefore, considered de minimis.

As discussed, operation of the proposed DPR Demonstration Facility would not substantially affect discharges to the Los Angeles River. Additionally, all flows to the river would be treated to all applicable water quality standards at either the proposed AWPF or LAGWRP prior to discharge. The effluent not suitable for discharge to the Los Angeles River would be conveyed in the existing sanitary sewer system to the Hyperion Water Reclamation Plant. Therefore, with adherence to existing regulations and requirements, operation of the proposed project would not violate any water quality standards or waste discharge requirements. The impact would be less than significant.

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

No Impact. During construction, the proposed project would not require excavation to a depth that would encounter groundwater, affect the rate of groundwater recharge, or involve the extraction of groundwater. Construction activities would require water for dust control during demolition, grading, and construction activities. Water for these activities would be supplied from existing water connections or would be transported in trucks from an off-site source. As such, no impacts to local groundwater supplies or groundwater recharge would occur during project operation.

During operation, potable water would be required for various purposes at the proposed WQL,

DPR Demonstration Facility, and Headworks Restoration Park. The project would not use large amounts of water that would substantially deplete groundwater supplies nor would it interfere with groundwater recharge. Therefore, the project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, and no impact would occur.

c) Would the project 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 substantial erosion or siltation on- or off-site?

Less Than Significant Impact. During construction, grading and excavation activities would expose soils and leave them susceptible to erosion. As previously discussed, transport of sediments from the project site by stormwater runoff and winds would be prevented through best management practices such as implementation of Rule 403 dust control measures required by the SCAQMD and a SWPPP for construction activities in compliance with the latest Los Angeles Regional Water Quality Control Board's NPDES permit requirements for stormwater discharges. With adherence to existing regulations and implementation of preventative measures, construction impacts associated with erosion and siltation would be less than significant.

Following construction, the project site would have more impervious surfaces. However, the project would comply with the City's LID ordinance to reduce the volume and intensity of stormwater flows such that the erosion created by runoff from impervious surfaces would be controlled. Additionally, stormwater would be captured and utilized to the extent possible to provide water for irrigation of plants, minimizing the amount of stormwater runoff from the site that could lead to erosion or siltation. Therefore, there would be no substantial soil erosion or siltation would occur during project operations, and the impact would be less than significant.

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Less Than Significant Impact. LADWP would develop and implement an erosion control plan and SWPPP to control runoff from the project site during construction. With adherence to existing regulations and implementation of preventative measures, impacts associated with surface runoff would be less than significant during construction.

As previously discussed, the proposed project would comply with the City's LID ordinance to reduce the volume and intensity of runoff from the project site. Additionally, stormwater would be captured and utilized to the extent possible to provide water for irrigation of plants, minimizing the amount of stormwater runoff from the site that could result in flooding. The impact would be less than significant.

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?

Less Than Significant Impact. As previously discussed, an erosion control plan and SWPPP would be implemented to control runoff during construction. Similar to existing conditions, excess storm flows from the project site would be diverted to the Los Angeles River via storm drain inlets located in the eastern end of the HWSG property. Additionally, stormwater would be captured and

reused to the extent possible at the project site, minimizing the amount of stormwater runoff from the site. Furthermore, the project would comply with the City's LID ordinance to reduce the volume of and capture stormwater flows such that they would not exceed the capacity of the existing stormwater drainage system. The impact would be less than significant.

iv. Impede or redirect flood flows?

No Impact. The HWSG property is not located within a flood zone.[31] Therefore, the project would not impede or redirect flood flows. No impact would occur.

d) Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Impact. As discussed in Section 3.10(c)(iv) above, the project site is not located in a flood hazard zone. Therefore, no impact related to such a hazard would occur.

Tsunamis are large ocean waves caused by the sudden water displacement that results from an underwater earthquake, landslide, or volcanic eruption. Tsunamis affect low-lying areas along the coastline. The project site is located approximately 14.5 miles northeast of the Pacific Ocean and is not located within a tsunami inundation area.[32] No impact would occur.

Seiches are oscillations generated in enclosed bodies of water usually as a result of earthquake related ground shaking. The project site is not located within the inundation zone of any enclosed water bodies or open reservoirs. Therefore, no impact would occur.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less Than Significant Impact. As previously discussed, LADWP would develop and implement an erosion control plan and SWPPP pursuant to the NPDES permit requirements to control runoff from the project site during construction. Operation of the proposed project is not anticipated to create runoff in excess of or in varying quality to existing conditions. Following project construction, stormwater would be captured and reused to the extent possible. Implementation of the proposed project would not include the extraction of groundwater. Therefore, the project would not obstruct implementation of a water quality control plan or sustainable groundwater management plan. The impact would be less than significant.

[31] Federal Emergency Management Agency (FEMA). Flood Map Service Center, Search by Location. Available at: https://msc.fema.gov/portal/search. Accessed January 19, 2024.

[32] City of Los Angeles, Emergency Management Department. *2018 Local Hazard Mitigation Plan*. Available at: https://emergency.lacity.gov/sites/g/files/wph1791/files/2021-10/2018_LA_HMP_Final_with_maps_2018-02-09.pdf. Accessed January 19, 2024.

3.11 Land Use and Planning

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Discussion

a) Would the project physically divide an established community?

No Impact. The proposed project would develop the proposed WQL, DPR Demonstration Facility, and Headworks Restoration Park completely within the existing HWSG property. The project site is currently fenced, and public access to the site is prohibited. Portions of the project site would be opened to the public after project implementation with the development of the Headworks Restoration Park as well as the DPR Demonstration Facility visitor center. Neither construction nor operation of the proposed project would include any physical barriers that would divide an established community. Instead, the proposed Headworks Restoration Park would provide connections to Forest Lawn Drive for pedestrians and cyclists. Similarly, the design and construction of the bicycle path will allow for future connections to be made to the existing LA River Trail. Therefore, the proposed project would not divide an established community, and no impact would occur.

b) Would the project 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 proposed project would develop the WQL, DPR Demonstration Facility, and Headworks Restoration Park within the existing HWSG property. The proposed project would also include roads interior to the HWSG property, surface parking for staff and visitors, landscaping, and security lighting and fencing where required. The eastern half of the project site is currently developed with the Headworks Water Complex, while the western portion is undeveloped but highly disturbed from previous excavation, earth work, and grading.

The HWSG property is located on parcels zoned OS-1XL-H-RIO (Open Space). The property is owned by LARAP, but LADWP retains an easement over the entire 43 acres. The Headworks Restoration Park would provide passive open-space recreation uses, including a segment of the Los Angeles River Trail system which will allow for future linking to adjacent recreation areas and trails, consistent with the goals of the LA River Master Plan and the zoning designation of the property.

The WQL and DPR Demonstration Facility would not be consistent with the site zoning. However, as previously discussed, for more than a century, the HWSG property has been used as a source for water extraction, storage, and distribution for the City associated with the adjacent Los Angeles River and the San Fernando Groundwater Basin. It once served as the City's "headworks" for groundwater extraction and distribution, and featured facilities such dams, conduits, infiltration galleries, wells, and spreading grounds to feed the City's water system. While the facilities

associated with the spreading grounds are no longer present, the Headworks Water Complex was recently constructed on the property to replace the storage capacity of the Silver Lake Reservoir Complex. Consistent with past uses at the property, the WQL and DPR Demonstration Facility would be water assets as defined under City of Los Angeles Charter (Charter) Section 672(a), which encompasses all "water rights of every nature and kind owned or controlled by the City, and all the lands, rights-of-way, sites, facilities and property used for the capture, transportation, distribution and delivery of water for the benefit of the City." The City's water assets are under the exclusive control of the Board of Water and Power Commissioners, subject to City Council oversight under Charter Section 245. As per Charter Section 675(a), the Board has "the power and duty to make and enforce all necessary rules and regulations governing the construction, maintenance, operation, connection to and use of the Water and Power Assets for [LADWP] Purposes." Therefore, the proposed project would be exempt from zoning review, or any approval process administered by the Department of City Planning.[33] As such, the proposed project would not conflict with land use plans, policies, or regulations that have been adopted for the purpose of avoiding or mitigating an environmental effect and would be similar to long-standing use of the HWSG property. Therefore, no impact would occur.

[33] Department of City Planning. Inter-Departmental Correspondence. September 28, 2022.

3.12 Mineral Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Discussion

a) Would the project 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. California's Surface Mining and Reclamation Act of 1975 (SMARA) requires the State Geologist to classify land into mineral resource zones based on the known or inferred mineral resource potential of that land. The California Department of Conservation's Mineral Resources Program provides data about California's varied non-fuel mineral resources, and information about active and historic mining activities throughout the state.[34] Classification is completed by the State Geologist into Mineral Resource Zones (MRZ) wherein lands classified MRZ-1 are areas where geologic information indicates little likelihood exists for the presence of significant Portland cement concrete aggregate resources, lands classified MRZ-2 are areas where geologic information indicates the presence of significant Portland cement concrete aggregate resources, and lands classified MRZ-3 are areas containing known or inferred Portland cement concrete aggregate resource of undetermined mineral resource significance.[35]

According to the California Department of Conservation CGS Information Warehouse: Mineral Land Classification data mapper, the HWSG property is located on lands classified MRZ-2.[36] MRZ-2 sites contain potentially significant aggregate resources, which are to be conserved. Any proposed development plan must consider access to the deposits for the purposes of extraction. However, the HWSG property has been used as a source for water extraction, storage, and distribution for the City, including facilities such dams, conduits, infiltration galleries, wells, and spreading grounds, for over a century. The HWSG property has never been nor is it currently being used for purpose of mineral extraction, and the proposed project would not include any mineral extraction activities. Therefore, the proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state, and no impact would occur.

[34] California Department of Conservation. 2023. The California Mineral Resources Program. Available at: https://www.conservation.ca.gov/cgs/mrp. Accessed January 19, 2024.

[35] Wesoloski, C., Reioux, D., Callen, B. 2021. California Geological Survey *Updated Mineral Resource Zones for Portland Cement Concrete Aggregate in the San Fernando Valley and Saugus-Newhall Production-Consumption Regions.* Available at: https://www.conservation.ca.gov/cgs/Documents/Publications/Special-Reports/SR_254-MLC-SanFernandoValleySaugusNewhallPCR-2021-Plate01-MRZs-a11y.pdf. Accessed January 19, 2024.

[36] Ibid.

b) Would the project 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. According to the City of Los Angeles General Plan Conservation Element, the project site is not delineated as a locally-important mineral resource recovery site.[37] Additionally, the HWSG property does not contain any oil wells. The proposed project would not affect any existing oil, gas, or other mineral resource recovery facilities. Therefore, implementation of the proposed project would not result in the loss of availability of a locally-important mineral resource recovery site, and no impact would occur.

[37] City of Los Angeles, Department of City Planning. *City of Los Angeles General Plan – Conservation Element*. Available at: https://planning.lacity.org/odocument/28af7e21-ffdd-4f26-84e6-dfa967b2a1ee/Conservation_Element.pdf. Accessed January 19, 2024.

3.13 Noise

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion

Potential impacts related to noise resulting from implementation of the proposed project were determined from the results presented in the Noise and Vibration Impact Study prepared for the proposed project, which is included as Appendix F to this IS/MND.

The standard unit of measurement for noise is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, the noise measurements reflected in this analysis are given in dB reflecting the normal hearing sensitivity range of the human ear, known as the A-weighted decibel scale (dBA). On this scale, the range of human hearing extends from approximately 3 to 140 dBA. The noise analysis discusses sound levels in terms of Equivalent Noise Level (L_{eq}). L_{eq} is the average noise level on an energy basis for any specific time period. For example, the L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level.

a) Would the project result in 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?

Less Than Significant Impact with Mitigation Incorporated.

Construction

Table 3-5 shows noise levels associated with various pieces of construction equipment. Construction noise levels were calculated using the Federal Highway Administration Roadway Construction Noise Model. Noise levels would fluctuate depending on equipment type, horsepower, and atmospheric conditions, among other factors. Construction equipment is expected to generate noise levels ranging from approximately 63.2 dBA L_{eq} to 81.0 dBA L_{eq} at a distance of 50 feet, and noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance.

Table 3-5: Construction Noise Levels by Phase and Equipment Type

Noise Source	Noise Level (dBA)L_{eq} at 50 Feet
MAXIMUM CONSTRUCTION PHASE - 39 EQUIPMENT PIECES	
Air Compressor	73.7
Backhoe	73.6
Forklift	63.2
Generator	77.6
Grader	81.0
Loader	75.1
Manlift	67.7
Pickup Truck	71.0
Roller	73.0
Skiploader	75.1
Water Truck	70.3
Welding Machine	70.0
39 Equipment Pieces Combined Noise Level	**83.8[a]**
TYPICAL CONSTRUCTION SCENARIO - 15 EQUIPMENT PIECES	
Bobcat	64.3
Concrete Pump Truck	74.4
Forklift	63.2
Generator	70.0
Grader	81.0
Loader	75.1
Pickup Truck	71.0
Roller	73.0
Skiploader	75.1
Water Truck	70.3
15 Equipment Pieces Combined Noise Level	**79.7[b]**
TYPICAL CONSTRUCTION SCENARIO – 5 EQUIPMENT PIECES	
Excavator	76.7
Manlift	67.7
Pickup Truck	71.0
Skiploader	75.1
Water Truck	70.3
Excavator	76.7
5 Equipment Pieces Combined Noise Level	**76.3[c]**

a. Logarithmic sum of four pieces of equipment at one location.
b. Logarithmic sum of three pieces of equipment at one location.
c. Logarithmic sum of two pieces of equipment at one location.
Source: Federal Highway Administration, Roadway Construction Noise Model Version 1.1. Table Source: TAHA, 2024.

Construction activities typically require the use of numerous pieces of noise-generating equipment. The noise levels shown in Table 3-5 consider the likelihood that multiple pieces of construction equipment would be operating simultaneously and the typical overall noise levels that would be expected for each phase of construction throughout the approximately four-year construction period. Three construction scenarios were studied, including the maximum construction phase, in which 39 pieces of equipment would be operating, and two typical construction phases, in which either 15 or 5 pieces of equipment would be operating. Equipment would be spread throughout the project site for the duration of construction and would typically

not present a concentrated noise source. The combined construction noise levels are based on work zones where two to four pieces of equipment may be operating simultaneously at one time. When considered as an entire process with multiple pieces of equipment, the construction scenario during which 39 pieces of equipment would be used on site would be the loudest phase of construction and would generate a noise level of approximately 83.8 dBA L_{eq} at 50 feet.

Noise associated with construction is controlled by the City of Los Angeles Noise Ordinance. Therefore, the proposed project would result in a significant impact if construction equipment noise levels would exceed 75 dBA at a noise-sensitive use (unless technically infeasible) or if construction would occur between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday. Construction activity for the project would be limited to daytime hours and would not occur between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday.

Table 3-6 presents the estimated noise levels at the sensitive receptors nearest to the project site as well as the incremental increase in noise associated with project construction. The combined equipment noise level for each of the three construction scenarios studied was used to predict noise during each construction scenario. The most noise-intensive construction activities would occur during the early phases of construction (e.g., excavation and grading). The majority of the latter phases of construction would involve smaller equipment or would occur within the interior of buildings, and result in lower noise levels. As shown in Table 3-6, noise levels would potentially exceed 75 dBA at the two closest receptors during the maximum construction phase, in which 39 pieces of equipment would be operating on-site. As such, mitigation measures NOI-1 through NOI-5 would be required to reduce construction equipment noise levels.

The last two columns in Table 3-6 show the estimated construction noise levels with implementation of the mitigation measures and indicate whether the threshold would be exceeded. The equipment mufflers associated with mitigation measure NOI-1 would reduce construction noise levels by approximately 5 dBA. Mitigation measures NOI-2 through NOI-5, would also reduce and/or control construction noise levels but are difficult to quantify. Therefore, no numeric reduction in noise has been incorporated for these latter measures. As shown in Table 3-6, the mitigation measures would reduce the construction noise levels at all sensitive receptors to below the 75 dBA threshold. Therefore, with implementation of mitigation measures NOI-1 through NOI-5, construction equipment noise levels would be less than significant.

Table 3-6: Construction Equipment Noise Levels Without and With Mitigation

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA, L_{eq})[a]	Without Mitigation		With Mitigation	
			Project Noise Level (dBA, L_{eq})	Exceed Threshold (75 dBA, L_{eq})?	Project Noise Level (dBA, L_{eq})	Exceed Threshold (75 dBA, L_{eq})?
MAXIMUM CONSTRUCTION PHASE – 39 EQUIPMENT PIECES						
Forest Lawn Cemetery Property Line	100	72.2	77.8	Yes	72.8	No
Mount Sinai Cemetery Property Line	100	72.2	77.8	Yes	72.8	No
Mount Sinai Chapel	150	61.4	74.3	No	69.3	No
Forest Lawn Cemetery Interior	300	55.3	68.2	No	63.2	No
Mount Sinai Cemetery Interior	300	56.5	68.2	No	63.2	No
TYPICAL CONSTRUCTION SCENARIO – 15 EQUIPMENT PIECES						
Forest Lawn Cemetery Property Line	100	72.2	73.7	No	68.7	No
Mount Sinai Cemetery Property Line	100	72.2	73.7	No	68.7	No
Mount Sinai Chapel	150	61.4	70.2	No	65.2	No
Forest Lawn Cemetery Interior	300	55.3	64.1	No	59.1	No
Mount Sinai Cemetery Interior	300	56.5	64.1	No	59.1	No
TYPICAL CONSTRUCTION SCENARIO – 5 EQUIPMENT PIECES						
Forest Lawn Cemetery Property Line	100	72.2	70.3	No	65.3	No
Mount Sinai Cemetery Property Line	100	72.2	70.3	No	65.3	No
Mount Sinai Chapel	150	61.4	66.8	No	61.8	No
Forest Lawn Cemetery Interior	300	55.3	60.7	No	55.7	No
Mount Sinai Cemetery Interior	300	56.5	60.7	No	55.7	No

a. The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2024.

Haul trucks associated with construction activity would potentially increase noise levels along the haul route. The anticipated haul route is the SR-134 Freeway to Forest Lawn Drive then to the project site. The greatest number of daily haul truck trips that would occur would be approximately 16 haul trucks or 32 one-way trips. This would equate to approximately four truck trips per hour. According to the Los Angeles Department of Transportation, Forest Lawn Drive in the vicinity of the project site experiences approximately 21,299 vehicle trips per day with an AM and PM peak hour volume of 1,845 trips, and 1,661 trips, respectively. The off-peak hours of 10:00 a.m. to 3:00 p.m. averages approximately 1,158 trips per hour. A doubling of traffic volumes is typically needed to audibly increase noise levels along a roadway. The addition of four haul truck trips per hour during any portion of the day during typical construction hours would not result in a doubling of traffic volumes. Therefore, the proposed project would result in a less than significant impact related to haul truck noise.

Mitigation Measures

NOI-1 Construction equipment shall be properly maintained and equipped with mufflers to manufacturer specifications.

NOI-2 Rubber-tired equipment shall be used rather than tracked equipment when feasible.

NOI-3 Equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance.

NOI-4 A public liaison shall be appointed for project construction will be responsible for addressing public concerns about construction activities, including excessive noise. As needed, the liaison shall determine the cause of the concern (e.g., starting too early, bad muffler) and implement measures to address the concern.

NOI-5 The public shall be notified in advance of the location and dates of construction hours and activities.

Operation

The operational analysis assesses noise related to mechanical equipment, recreational activities, parking activities, and off-site vehicle movements associated with all components of the proposed project. In addition to measuring noise levels in L_{eq}, the change in community noise levels is also measured as the Community Noise Equivalent Level (CNEL). CNEL is the average A-weighted noise level during a 24-hour day that includes an addition of 5 dBA to measured noise levels between the hours of 7:00 p.m. and 10:00 p.m. and an addition of 10 dBA to noise levels between the hours of 10:00 p.m. and 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. A significant impact would result during project operation if the ambient noise level measured at the property line of the nearest sensitive receptors increases by 3 dBA CNEL to or within 70 to 75 dBA CNEL, or any 5 dBA or more increase in noise level.

Noise from Mechanical Equipment

Mechanical sources of noise would typically be located on the rooftops of the WQL and the DPR Demonstration Facility. Heating, ventilation, and air conditioning (HVAC) equipment typically generates noise levels of approximately 50 dBA at 50 feet. The noise level was then calculated for the use of 10 HVAC units on the near side of the proposed buildings to sensitive receptors which would result in an approximate noise level of 60 dBA at 50 feet. As shown in Table 3-7, HVAC equipment would not generate audible noise at offsite land uses. In addition, HVAC noise would be less than the existing noise level and would result in a 0.1 dBA L_{eq} increase in noise. As such, the estimated ambient noise levels at all off-site receptor locations with the addition of the project's mechanical equipment would be below the significance criteria. Therefore, the project would not result in a substantial temporary or permanent increase in ambient noise levels related to mechanical equipment noise.

Table 3-7: Mechanical Equipment Noise Analysis

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA, L_{eq})	Noise Level (dBA, L_{eq})	New Ambient Noise Level (75 dBA, L_{eq})	Noise Level Increase (dBA, L_{eq})	Exceed Threshold (+5 dBA, L_{eq})?
Mount Sinai Cemetery Property Line	200	72.2	48.0	72.2	0.0	No
Forest Lawn Cemetery Property Line	370	72.2	42.6	72.2	0.0	No
Mount Sinai Funeral Home	530	61.4	39.5	61.5	0.1	No

Source: TAHA, 2024.

Noise from Recreation Use

The proposed project would include the construction of new passive recreational facilities, including the proposed Headworks Restoration Park. Surrounding the garden and extending into other portions of the HWSG property would be a series of pedestrian pathways. A bicycle path would be constructed along the northern portion of the property which will allow for future interconnections with Griffith Park and the existing river trail system. The park would be developed in the eastern portion of the property and would include parking, a pavilion building, trails, and site landscaping, located in adjacent areas. The main noise source from the park would be conversational noise. A normal speaking voice generates a noise level of approximately 57.8 dBA L_{eq} at 3 feet. The park is anticipated to generate approximately two vehicle trips during the peak hour. Conservatively it has been assumed that 25 people would be located in one area of the park which would generate a noise level of approximately 71.8 dBA, L_{eq} at 3 feet.

Noise levels from the park at off-site sensitive receptors are shown in Table 3-8. This noise would be overshadowed by existing noise sources such as traffic noise generated by Forest Lawn Drive and the SR-134 Freeway. If the noise source is not audible at off-site uses, then there is no potential for an increase in the 24-hour CNEL noise level to occur. Park activity noise would therefore not increase noise levels at adjacent receptors by 3 dBA CNEL to or within 70 to 75 dBA CNEL or increase noise levels by 5 dBA CNEL or more. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels related to recreational activity noise.

Table 3-8: Headworks Restoration Park Noise Analysis

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA, L_{eq})	Noise Level (dBA, L_{eq})	New Ambient Noise Level (75 dBA, L_{eq})	Noise Level Increase (dBA, L_{eq})	Exceed Threshold (+5 dBA, L_{eq})?
Mount Sinai Cemetery Property Line	300	72.2	31.8	72.2	0.0	No
Forest Lawn Cemetery Property Line	570	72.2	26.2	72.2	0.0	No
Mount Sinai Chapel	650	61.4	25.1	61.4	0.0	No

Source: TAHA, 2024.

Noise from Vehicle Parking

Parking would be provided for the WQL, DPR Demonstration Facility, and the Headworks Restoration Park. Parking noise typically includes engine starting, tire noise, and vehicle movements. Passenger vehicles traveling within a parking lot at low speed would generate a noise level of approximately 50 dBA at 50 feet. Parking noise was calculated based on the number of peak hour trips associated with each of the three project components. As shown in Table 3-9, the Water Quality lab would generate the highest noise level of approximately 44.5 dBA L_{eq} at 50 feet. Table 3-10 shows the parking noise from each project component at each of the sensitive receptors.

Table 3-9: Parking Activity Noise Levels

Parking Lot Location	Average Peak Hour Vehicle Volume	Parking Noise Level at 50 Feet (dBA, L_{eq})
Water Quality Lab	65	44.5
DPR Demonstration Facility	2	29.4
Headworks Restoration Park Parking Lot	2	29.4

Source: TAHA, 2022.

Table 3-10: Parking Activity Noise Analysis

Sensitive Receptor	Distance (feet)[a]	Existing Noise Level (dBA, L_{eq})	Combined Parking Noise Level (dBA, L_{eq})[a]	New Ambient Noise Level (75 dBA, L_{eq})	Noise Level Increase (dBA, L_{eq})	Exceed Threshold (+5 dBA, L_{eq})?
Mount Sinai Cemetery Property Line	Variable	72.2	30.7	72.2	0.0	No
Forest Lawn Cemetery Property Line	Variable	72.2	29.0	72.2	0.0	No
Mount Sinai Chapel	Variable	61.4	25.5	61.4	0.0	No

a. Distance to each sensitive receptor from each parking lot would vary; these distances are included in Appendix F.
Source: TAHA, 2024.

Project parking noise would be overshadowed by existing noise sources such as traffic noise generated by Forest Lawn Drive and the SR-134 Freeway. If a noise source is not audible at off-site uses, there is no potential for an increase in the 24-hour CNEL noise level to occur. Noise at the parking lots for the project components would therefore not increase noise levels at adjacent receptors by 3 dBA CNEL to or within 70 to 75 dBA CNEL or increase noise levels by 5 dBA CNEL or more. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels related to parking noise.

Noise from Off-Site Vehicle Movements

The proposed project would generate approximately 608 daily vehicle trips, including 72 AM peak hour trips and 60 PM peak hour trips.[38] According to the Los Angeles Department of Transportation, Forest Lawn Drive in the vicinity of the project site experiences approximately 21,299 vehicle trips per day with an AM and PM peak hour volume of 1,845 trips, and 1,661 trips,

[38] Project trip generation estimates are presented in Appendix I to this IS/MND.

respectively. A doubling of traffic volumes is typically needed to audibly increase noise levels along a roadway. The addition of 72 vehicle trips per hour during the AM peak hour and 60 trips during PM peak hour would not result in a doubling of traffic volumes. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels related to operational mobile noise.

Composite Noise Level Impacts from Proposed Project Operation

In addition to considering the potential noise impacts resulting from individual on-site stationary noise, including mechanical equipment noise, Headworks Restoration Park noise, parking noise, and off-site mobile noise, noise levels of all activities during project operation were assessed. As presented in the analysis of operational noise sources in this section, the various individual sources of noise would not be audible at the sensitive receptors. During project operation, the noise sources would be dispersed throughout the project site and would not present a concentrated noise source that would be greater than the individual sources. As the proposed project's operational sources of noise would not be audible off site, there is no potential to increase noise levels at adjacent receptors by 3 dBA CNEL to or within 70 to 75 dBA CNEL or increase noise levels by 5 dBA CNEL or more. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels related to operational noise.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

No Impact. Vibration can be interpreted as energy transmitted in waves through the ground or man-made structures, which generally dissipate with distance from the vibration source. Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Since energy is lost during its transfer from one particle to another, vibration becomes less perceptible with increasing distance from the source. Several different methods are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal in inches per second (in/sec) and is most frequently used to describe vibration impacts to buildings. The decibel notation (VdB) acts to compress the range of numbers required to describe vibration. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include buildings where vibration would interfere with operations within the building or cause damage (especially older masonry structures), locations where people sleep, and locations with vibration sensitive equipment.

Groundborne noise specifically refers to the rumbling noise emanating from the motion of building room surfaces due to the vibration of floors and walls; it is perceptible only inside buildings.

Construction

Construction activity can generate varying degrees of vibration, depending on the procedure and equipment. The construction phases that would typically generate higher vibration levels include clearing, excavation, and grading and foundations due to the use of heavier pieces of construction equipment, that are similar to a large bulldozer. Equipment movements generate vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver buildings. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and

perceptible vibration at moderate levels, and to slight damage at the highest levels. In most cases, the primary concern regarding construction vibration relates to damage.

Based on visual characteristics of adjacent structures (e.g., age), building foundations are assumed to be constructed of engineered timber and masonry. According to the Federal Transit Authority guidance, buildings constructed of engineered concrete and masonry can withstand vibration levels up to 0.3 inches per second without experiencing damage. Equipment that would be utilized in construction of the proposed project components would be most similar to a bulldozer and loaded trucks. Vibration levels for various types of construction equipment with an average source level reported in terms of velocity are shown in Table 3-11.

Table 3-11: Vibration Velocities for Construction Equipment

Equipment	Vibration Levels							
	PPV (Inches per Second)				VdB (Micro-Inch per Second)			
	25 Feet	50 Feet	75 Feet	100 Feet	25 Feet	50 Feet	75 Feet	100 Feet
Large Bulldozer	0.089	0.031	0.017	0.011	87	78	73	69
Loaded Trucks	0.076	0.027	0.015	0.010	86	77	72	68
Small Bulldozer	0.003	0.001	0.001	0.000	58	49	44	40

Source: Federal Transit Authority Transit Noise and Vibration Impact Assessment, September 2018; Table Source: TAHA, 2024.

Table 3-12 shows the estimated vibration levels at each sensitive receptor during project construction activities. Construction equipment would typically be located more than 100 feet from the off-site structures. However, the vibration levels shown in Table 3-12 are a conservative estimate based on a large bulldozer operating at the property boundary. Equipment activity at the property edge would be limited by space and the need for maneuvering; however, estimating vibration levels from this location would represent the closest construction activity to sensitive receptors. As shown in Table 3-12, the maximum vibration level at the nearest sensitive receptor would be approximately 0.011 inches per second, which would remain substantially below the 0.3 inches per second vibration damage threshold. Therefore, the proposed project would result in no impact related to vibration damage.

Table 3-12: Vibration Damage Impact Analysis

Sensitive Receptor	Distance from Construction Activity	Reference Vibration Level (PPV)	PPV at Structure	Exceed 0.3 Inches/Second Threshold?
Mount Sinai Cemetery Property Line	100	0.089	0.011	No
Forest Lawn Cemetery Property Line	100	0.089	0.011	No
Mount Sinai Chapel	150	0.089	0.006	No

Source: TAHA, 2024.

Perceptible vibration is not typically a concern for human health and is a common occurrence within the urban environment. However, special uses such as select medical facilities, research facilities, and recording studios could be potentially impacted by construction vibration due to the presences of sensitive equipment. No such uses have been identified within the project vicinity. Therefore, the proposed project would result in no impact related to vibration annoyance.

Operation

The proposed project would not include a significant source of permanent vibration. Project-related vehicle trips could generate vibration, although similar to the existing condition, roadway vibration from passenger vehicles would not be perceptible outside of the road right-of-way. Therefore, no impact would occur related to operational vibration.

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?

No Impact. The project site is not located within the vicinity of a private airstrip or two miles of a public airport or within an airport land use plan. The nearest airport is the Hollywood Burbank Airport, located approximately 3.3 miles from the project site. Due to the distance from the nearest airport, the proposed project would not expose people working or residing in the area to excessive aircraft noise. Therefore, no impact would occur.

3.14 Population and Housing

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Induce substantial unplanned 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)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

a) Would the project induce substantial unplanned 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 proposed project would develop a WQL, DPR Demonstration Facility, and Headworks Restoration Park within the existing HWSG property, and would not include development of new homes and businesses. During construction, it is anticipated that construction workers would come from the labor pool currently residing in the region. Additionally, due to the temporary nature of construction, it is not likely that construction workers would relocate their households as a result of their employment associated with construction. As such, there would be no impact related to unplanned population growth during construction of the proposed project.

During operation, the proposed WQL would replace the existing obsolete LADWP laboratory facility, which is located in the City of Pasadena. The WQL would initially require an increase of 35 personnel above the current staffing at the Pasadena lab (62 personnel) to perform the laboratory functions required to meet state and federal regulations and ensure drinking water quality. In addition, 5 personnel would be transferred from the LADWP Rinaldi Yard in Granada Hills, where the water quality mobile laboratory and support trailers are currently located. This function would be entirely relocated to the proposed WQL. Over time, it is anticipated that the number of personnel at the WQL may increase to a maximum of 172 based on the requirement for additional laboratory procedures and on organizational changes that would involve the transfer of existing management and administrative staff from the LADWP headquarters building or other facilities in downtown Los Angeles. This increase in personnel from 102 to 172 may occur over a 10-year period and would not directly induce substantial unplanned population growth.

The proposed DPR Demonstration Facility would test various water purification technologies for treating recycled wastewater and would include an educational element to inform the public about DPR and other aspects of water use in the City. As a demonstration and educational facility, the proposed DPR Demonstration Facility would not expand infrastructure, and thus, would not indirectly induce unplanned population growth. The proposed Headworks Restoration Park would provide recreational access and educational opportunities regarding local ecosystems and water use to existing residents of the City and County of Los Angeles. The proposed Headworks Restoration Park would also include pedestrian pathways and a bicycle path on the northern portion of the property. This bicycle path would allow for future connection to the existing trail system of the Los Angeles River and Griffith Park. As such, the proposed Headworks Restoration

Park would not extend roads or infrastructure that would indirectly induce unplanned population growth. Therefore, the proposed project components would not directly or indirectly induce substantial unplanned population growth. No impact would occur.

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed project would be developed completely within the existing HWSG property. The proposed project would not remove existing housing, and no people would be displaced as a result of project implementation. Therefore, the proposed project would not affect the number or availability of existing housing in the area and would not necessitate the construction of replacement housing elsewhere. No impact would occur.

3.15 Public Services

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project 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 public services:				
i) Fire protection?	☐	☐	☐	☒
ii) Police protection?	☐	☐	☐	☒
ii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

Discussion

a) Would the project 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 public services:

i. Fire protection?

No Impact. The proposed project would introduce new structures and visitors to the HWSG property. The site is within the service area of Los Angeles Fire Department Station Number 76, which currently provides response to areas adjacent to HWGS. Based on the location of HWGS within the service area and the types of uses provided under the proposed project, it is not anticipated that new or physically altered fire protection facilities would be required to maintain acceptable service ratios, response times or other performance objectives. In addition, as discussed in Section 3.14(a), the proposed project would not increase the permanent residential population in the area. As such increased demand for fire protection services is not expected to occur. Therefore, no impact would occur.

ii. Police protection?

No Impact. The site is within the service area of Los Angeles Police Department Northeast Community Station, which currently provides response to areas adjacent to HWGS. Although the proposed project would introduce new facilities and increase the number of people present on the site over existing conditions, it would not generate the need for new or physically altered police protection facilities to maintain acceptable service ratios, response times or other performance objectives. As discussed in Section 3.14(a), the proposed project would not increase the permanent residential population in the area. As such increased demand for police protection services is not expected to occur. Therefore, no impact would occur.

iii. Schools?

No Impact. As discussed above, the proposed project would not increase the permanent residential population in the area. Therefore, no new or altered school facilities would be required. No impact would occur.

iv. Parks?

No Impact. As stated previously, the proposed project would not increase the permanent residential population in the area, and, therefore, would not increase the demand for local and regional park facilities. Additionally, the Headworks Restoration Park component of the proposed project would fulfill a need for recreation with passive open-space recreation uses, including a segment of the Los Angeles River Trail system allowing for future linking to adjacent recreation areas and trails. Therefore, no impact would occur.

v. Other public facilities?

No Impact. The proposed project does not include development of residential or commercial uses and would not increase the permanent residential population such that the demand for other public facilities would be increased. Therefore, the proposed project would not result in the need for new or physically altered public facilities. No impact would occur.

3.16 Recreation

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

Discussion

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 HWSG property was identified in the LA River Master Plan as a key location along the Los Angeles River that has the potential to create a public benefit and unifying feature for the diverse communities and existing trails along the river. The proposed project would develop the Headworks Restoration Park atop the West Reservoir, and would provide passive open-space recreation uses, including a pedestrian and bicycle trail as part of the Los Angeles River Trail system allowing for future linking to adjacent recreation areas and trails, consistent with the goals of the LA River Master Plan. As such, the proposed Headworks Restoration Park would be a beneficial use that would fulfill recreation needs in the region. Construction and operation of the proposed Headworks Restoration Park would not generate new permanent residents that would increase the use of existing parks and recreational facilities. Additionally, the proposed WQL and DPR Demonstration Facility have no potential to increase the use of existing parks or recreational facilities such that substantial physical deterioration of the facilities would occur. Therefore, no impact would 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?

Less Than Significant Impact. As discussed above, the proposed project would develop Headworks Restoration Park, which would be managed and maintained by LARAP. The proposed Headworks Restoration Park would provide new passive recreational opportunities for the public, including pathways, overlooks, and informal gathering spaces. The impacts related to the construction and operation of the proposed Headworks Restoration Park are assessed throughout this IS/MND, and would be less than significant.

3.17 Transportation

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 section 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?	☐	☐	☐	☒

Discussion

a) Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit roadway, bicycle and pedestrian facilities?

No Impact.

Construction

No transit facilities exist within the HWSG property. A Tier II bicycle lane is located along both the north and south sides of Forest Lawn Drive adjacent to the HWSG property.[39] Required modifications to traffic lanes would provide a westbound right-turn lane and an eastbound left-turn lane on Forest Lawn Drive at Mt. Sinai Drive. These modifications would be accommodated within the existing road right-of-way. The continuity of the bicycle lane may be disrupted on the north side of Forest Lawn Drive at Mt. Sinai Drive during construction of these modifications, but it would be restored after the lane modifications are complete. Modifications to the existing traffic signal at Mt. Sinai Drive would also be required.

Temporary lane closures may be required during construction of the intersection modifications at Forest Lawn Drive and Mt. Sinai Drive. Project construction activities would otherwise be confined to the HWSG property with the exception of haul and delivery trucks. Based on the projected level of truck trips, which would generally remain at fewer than 10 per day throughout construction, it is not anticipated that project construction would substantially disrupt traffic in the area, including automobile, bus, and bicycle traffic. A traffic control plan would be required and approved by the LADOT to maintain the flow of traffic, and there would be no permanent effects to a program, plan, ordinance, or policy related to the intersection modifications. Therefore, no impact would occur.

[39] City of Los Angeles, Department of City Planning. 2016. Mobility Plan 2035, An Element of the General Plan. Available at: https://planning.lacity.org/odocument/523f2a95-9d72-41d7-aba5-1972f84c1d36/Mobility_Plan_2035.pdf/ Accessed January 19, 2024.

Operation

During operation, access to the existing bicycle lane on Forest Lawn Drive would be fully restored. Additionally, the proposed project would provide connections to existing bicycle and pedestrian paths and trails in the area surrounding the HWSG property. A major organizing element of Headworks Restoration Park is the HWSG segment of the LA River Trail, which would traverse the property from the secondary access gate on the west, across the northern perimeter, utilizing the transmission line right-of-way adjacent to the river. The trail would connect on the east to Forest Lawn Drive and allow for future connection to existing trails that pass through existing tunnels beneath Forest Lawn Drive into Griffith Park and SR-134 to the path running along the south side of the river. These future connections would provide a pedestrian and bicycle link for the Headworks Restoration Park to the regional trail system, which would also continue west of the HWSG property as future trail segments are implemented. Other pedestrian pathways would also be provided within the HWSG property, surrounding the reservoirs to the west, south, and east. As such, the proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system. Therefore, no impact would occur during operation of the proposed project.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

The following VMT analysis is based on the results presented in the Vehicle Miles Traveled Technical Memorandum prepared for the proposed project, which is included as Appendix G to this IS/MND.

Less Than Significant Impact. CEQA Guidelines section 15064.3 establishes VMT as the most appropriate measure of transportation impacts. VMT refers to the amount and distance of automobile travel attributable to a project. The LADOT Transportation Assessment Guidelines (LADOT Guidelines) establish instructions and standards for preparation of transportation assessments in the City of Los Angeles.[40] The VMT assessment is intended to focus on the long-term, permanent transportation impacts related to the generation of automobile trips and the opportunities for alternative modes of transportation (public transit, walking, bicycling) associated with a development project. A significant VMT-related impact would occur if the project-generated miles traveled would exceed the thresholds established in the LADOT Guidelines.

LADOT has developed several screening criteria to identify whether a VMT analysis is required for a project. The primary screening criterion is a trip-based screening. If a project generates fewer than 250 daily trips, impacts are considered to be less than significant. As previously discussed, it is estimated that the proposed project would generate approximately 608 daily trips. Therefore, this screening criterion does not apply. The LADOT Guidelines also state that public services (e.g., police stations, fire stations, public utilities, public parks) are land uses that do not generally generate substantial VMT. The proposed project includes three components. Two of the components, the DPR Demonstration Facility (a water treatment function) and the Headworks Restoration Park (a public park), are public services that are presumed to have a less than significant VMT impact. Therefore, the DPR Demonstration Facility and the Headworks Restoration Park have been screened out from VMT analysis. The third project component, the WQL, although an LADWP function, would not meet the definition of a public service (i.e., a public utility) since it would serve as a laboratory and administrative facility rather than a traditional water

[40] City of Los Angeles Department of Transportation. Transportation Assessment Guidelines. July 2020. Available at: https://ladot.lacity.org/documents/transportation-assessment. Accessed January 19, 2024.

treatment, storage, or conveyance facility. Therefore, the WQL is subject to a VMT analysis.

As discussed in Chapter 1, Project Description, of this IS/MND, the proposed WQL would functionally replace the existing LADWP Pasadena and Rinaldi WQL facilities. The proposed WQL would operate 7 days a week, 12-hours a day, from 6 a.m. to 6 p.m. At the outset of operations, 102 personnel would report to the facility on weekdays in staggered shifts. Of this total, 62 personnel would be transferred from the existing laboratory building in Pasadena. The Pasadena facility is owned by LADWP, and it would not be backfilled with another department use or leased to an outside entity. In addition, 5 personnel would be transferred from the LADWP Rinaldi Yard in Granada Hills, where the water quality mobile laboratory and support trailers are currently located. This function would be entirely relocated to the proposed WQL.

The WQL would initially require an increase of 35 personnel above the current staffing at the Pasadena lab to perform the laboratory functions required to meet state and federal regulations and ensure drinking water quality. Over time, it is anticipated that the number of personnel at the WQL may increase to a maximum of 172 based on the requirement for additional laboratory procedures and on organizational changes that would involve the transfer of existing management and administrative staff from the LADWP headquarters building or other facilities in downtown Los Angeles. This increase in personnel from 102 to 172 may occur over a 10-year period. It is anticipated that the positions transferred from LADWP downtown facilities to the proposed WQL would be replaced at those downtown facilities with new hires in other disciplines. On weekends, the WQL would maintain operations with a skeleton crew.

To evaluate the project VMT, the net VMT was calculated by subtracting the VMT per employee for the Pasadena and Rinaldi facilities from the total VMT for the proposed WQL because the Pasadena and Rinaldi VMT represent the existing condition. The Pasadena facility is located at 555 E Walnut Street in Pasadena, and the Rinaldi facility is located at 15901 Rinaldi Street in Granada Hills. The VMT for employees that are expected to transfer to the proposed WQL from existing LADWP facilities in downtown Los Angeles were not subtracted from the total project VMT because it is anticipated that those positions would be backfilled at the current locations in the future, unlike the positions in the Pasadena and Rinaldi facilities.

The Pasadena facility is located within Traffic Analysis Zone 22121400 of the SCAG RTP Model. The VMT for this Traffic Analysis Zone is 16.3 miles per employee. The Rinaldi facility is included in the City of Los Angeles VMT Calculator, which shows a VMT of 14.1 miles per employee. The VMT for the project site is 12.4 miles per employee based on the VMT Calculator. The estimated VMT for the proposed WQL is presented in Table 3-13. As indicated, the net change in VMT is 1,051 miles, which results in a VMT of 6.11 miles per employee.

Table 3-13: Estimated Project VMT per Employee

Parameter	Proposed WQL	Existing Pasadena Facility	Existing Rinaldi Facility	Net VMT Total
VMT per Employee	12.4	16.3	14.1	--
Number of Employees	172	62	5	--
Total VMT	2,133	-1,011	-71	1,051
			Net VMT per Employee	**6.11**

Source: Translutions, 2022.

The project is located in the Central Area Planning Commission. The Central Area Planning Commission has a VMT Impact Criteria of 7.6 miles per employee, which, as established by LADOT, is 15 percent below the average for the Central Area Planning Commission. As the VMT associated with the proposed WQL would be below this threshold, the project would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b), and the impact would be less than significant.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. The proposed project would include modifications to provide a westbound right-turn lane and an eastbound left-turn lane on Forest Lawn Drive at the site entrance opposite Mt. Sinai Drive. Modifications to the existing traffic signal at the intersection would also be required. During construction activities, temporary lane closures may be required to implement the intersection modifications. Potential conflicts associated with these lane closures would be addressed in the traffic control plan required by LADOT, which would include such measures as signage, flag persons, and lane detour plans as necessary to minimize disruptions to traffic. Construction related activities would be temporary and relatively short-term, and would not increase hazards due to a geometric design feature or incompatible uses. During project operation, the lane and traffic signal modifications would provide for safe ingress to and egress from the project site and reduce potential conflicts at the intersection on Forest Lawn Drive. All modifications would be completed in accordance with applicable regulations pertaining to roadway safety design. Therefore, operation of the project would not increase hazards due to a geometric design feature or incompatible use. No impact would occur.

d) Would the project result in inadequate emergency access?

No Impact. Required modifications to traffic lanes on Forest Lawn Drive would provide a westbound right-turn lane and an eastbound left-turn lane. These modifications would be accommodated within the existing road right-of-way. During construction for the intersection modification, temporary lane closures may be required but a traffic control plan would be required and approved by the LADOT. The traffic control plan would include measures such as signage, flag persons, and lane detour plans as necessary to minimize disruptions to traffic. Emergency access to the site and surrounding area, particularly for emergency response vehicles, would be maintained at all times. Operation of the proposed project would not inhibit emergency access to the project site. Secondary access for employee, service, and maintenance vehicles would be provided from Forest Lawn Drive at the west end of the HWSG. A series of interior roads would provide access for the public, employees, maintenance, and emergency vehicles to various locations within the site, as appropriate. Therefore, operation of the proposed project would not result in inadequate emergency access. No impact would occur.

3.18 Tribal Cultural Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project 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:				
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	☐	☐	☐	☒
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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Discussion

The following analysis is based on information provided in the Cultural Resources Technical Memorandum prepared for the proposed project, which is included as Appendix C to this IS/MND. The identification of tribal cultural resources pursuant to Assembly Bill (AB) 52, which requires that a lead agency must consult with California Native American tribes who request formal consultation regarding potential impacts to tribal cultural resources, has been conducted by LADWP.

a) Would the project 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:

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)?

No Impact. As discussed in Section 3.5, Cultural Resources, based on archival research and field surveys of the project site, the proposed project would result in no impact to the one cultural resource (P-19-175297, Griffith Park) within the APE that is listed or eligible for listing in the CRHR or a local register. No tribal cultural resources, including sites, places, landscapes, or objects, were identified within the APE based on archival research, field surveys of the project site, and consultation with Native American tribal representatives pursuant to AB 52. Therefore, the proposed project would not result in a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in a state or local register of historical resources. No impact would occur.

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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Less Than Significant Impact with Mitigation Incorporated. A Native American Heritage Commission (NAHC) Sacred Lands File search conducted for the proposed project was determined to be positive; however, the sacred land designation relates to the general regional area including and surrounding the project site and does not necessarily equate to the existence of resources within the project site itself. The NAHC identified Native American tribal representatives who could potentially have specific and unreported knowledge of Native American cultural resources within the project site. In 2022, LADWP initiated tribal consultation with interested California Native American tribes consistent with Assembly Bill (AB) 52. As of the publication date of this IS/MND, LADWP has consulted with all tribes that requested consultation on the proposed project in accordance with AB 52. Specifically, LADWP consulted with two tribes, the Fernandeño Tataviam Band of Mission Indians and the Gabrielino Tongva Indians of California, beginning in April 2022. The Fernandeño Tataviam Band of Mission Indians did not have concerns regarding the proposed project. Although no known tribal cultural resources were identified within the project site based upon consultations, the Gabrielino Tongva Indians of California requested tribal monitoring for ground disturbing activities, which has been incorporated into Mitigation Measure TCR-1, discussed below.

Because no specific tribal cultural resources have been identified within the project site, including during AB 52 consultation, and based on archival research and field surveys of the project site, and because of previous substantial subsurface disturbance associated with past activities at the HWSG property, the potential for the existence of tribal cultural resources is considered low. However, because the site is located in a generally sensitive area adjacent to the Los Angeles River, during the construction of the proposed project, unknown subsurface archaeological resources, including tribal cultural resources, could potentially be encountered during ground-disturbing activities. Mitigation Measure TCR-1 would require LADWP to retain a tribal monitor to monitor all ground-disturbing activities in the project area in order to reduce impacts to a less than significant level.

As discussed in Section 3.5(b), in the event previously unknown archaeological resources are encountered during construction activities, the proposed project would be subject to California PRC Section 21083.2(i) regarding provisions related to the inadvertent discovery of archaeological resources. Work shall be temporarily halted in the vicinity of the find, and LADWP shall retain a qualified professional archaeologist meeting the Secretary of the Interior Professional Qualifications Standards for archaeology to evaluate the significance of the find and determine appropriate treatment for the resource in accordance with provisions of CEQA Guidelines Section 15064.5, the National Historic Preservation Act, 36 CFR Section 800.6 (Resolution of adverse effects), and Section 800.13 (Post-review discoveries). With compliance with California PRC Section 21083.2(i) and implementation of Mitigation Measure TCR-1, as well as implementation of BMP-2 (cultural resources awareness training), as outlined in Section 3.5(b) of this IS/MND, impacts to tribal cultural resources would be less than significant.

Mitigation Measure

TCR-1 LADWP shall retain a tribal monitor prior to the commencement of ground-disturbing activities at the project site. The tribal monitor shall be retained from a consulting tribe that is ancestrally affiliated with the project area and qualified by their tribe to monitor tribal cultural resources. The tribal monitor will be present on-site during ground-disturbing activities during project construction. "Ground-disturbing activity" shall include demolition, pavement removal, potholing, auguring, grubbing, boring, grading, excavation, drilling, and trenching. Monitoring needs shall be routinely evaluated throughout ground disturbance activities to determine whether additional monitoring is warranted; for instance, the monitoring program may be concluded if previous site fill material is determined to have come from an imported source, monitoring efforts have not yielded finds, or mutual consensus is reached between LADWP and consulting tribes to conclude the program.

Before initial ground-disturbing activities, and any time new personnel is hired at the project site, the tribal monitor shall conduct a brief awareness training session for the benefit of all construction workers, supervisory personnel, and/or the new hire. The training, which could be held in conjunction with the project's initial on-site safety meeting, shall explain the importance of, and legal basis for, the protection of significant tribal cultural resources. Each worker shall be notified of the proper procedures to follow in the event that tribal cultural resources or human remains are uncovered during ground-disturbing activities.

The tribal monitor shall complete daily monitoring logs that will be provided to LADWP and held in confidentiality; however, the logs shall be made available for inspection by all consulting tribes.

In the event that previously unknown resources are encountered during construction activities, the proposed project shall be subject to California PRC Section 21083.2(i) regarding provisions related to the accidental discovery of archaeological resources. Work shall be temporarily halted in the vicinity of the find, and LADWP shall retain a qualified professional archaeologist meeting the Secretary of the Interior Professional Qualifications Standards for archaeology to evaluate the significance of the find and determine appropriate treatment for the resource in accordance with provisions of CEQA Guidelines Section 15064.5, the National Historic Preservation Act, 36 CFR Section 800.6 (Resolution of adverse effects), and Section 800.13 (Post-review discoveries). Upon discovery of any archaeological resources, construction activities in the immediate vicinity of the find (i.e., not less than the surrounding 60 feet) shall cease until the find can be assessed. All archaeological resources unearthed by project construction activities shall be evaluated by a qualified archaeologist and the on-site tribal monitor. If the resources are determined to be Native American in origin, all consulting tribes shall be notified and be provided information regarding the nature of the find, and interested tribes shall coordinate with LADWP regarding significance, treatment, and final disposition of these resources.

The input of all consulting tribes shall be taken into account in the preparation of any required treatment plan for the resources. Work in the area of the discovery may not resume until evaluation and treatment of the resource is completed and/or the resource is recovered and removed from the site. Construction activities may continue on other parts of the construction site while evaluation and treatment of the resource takes place.

3.19 Utilities and Service Systems

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

Discussion

a) Would the project 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. The proposed project would require new infrastructure within the HWSG property to provide water (including potable and recycled water), electrical, gas, and telecommunication services. These services would connect to existing infrastructure supply lines within Forest Lawn Drive, including potable and recycled water, gas, and telecommunications lines. The proposed project components do not represent unusual land uses that would require substantial demand for utilities. Thus, the capacity of these existing supply lines is anticipated to be sufficient to provide service to the proposed project, and the project connections would not be expected to create significant impacts. Sanitary wastewater from the project, which is anticipated to be relatively low in volume, would be handled through a connection to the existing sewer line that is located parallel to Forest Lawn Drive at the eastern end of the HWSG property and is routed to LAGWRP. This line would have sufficient capacity to accommodate the project's sanitary wastewater needs, and no additional treatment capacity at LAGWRP would be required. Similar to existing conditions, excess storm flows from the project site would be diverted to the Los Angeles River via storm drain inlets located in the eastern end of the HWSG property. As previously discussed, the project would comply with the City's LID ordinance to reduce the volume of and capture stormwater flows such that they would not exceed the capacity of the existing

stormwater drainage system. Therefore, the project would not require or result in the relocation or construction of new or expanded infrastructure that would cause significant environmental effects. The impact would be less than significant.

b) Would the project 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. Construction activities are anticipated to occur over an approximate 7-year period and would require water for activities such as dust control and concrete. However, these activities are limited and temporary in nature, and would not require large amounts of water. Therefore, impacts to water supply during project construction would be less than significant.

Potable water would be required for various purposes at the proposed WQL, DPR Demonstration Facility, and Headworks Restoration Park. High water demand is typically associated with residential developments and various industrial uses. The proposed project would not include land uses that require substantial water supply. Additionally, the proposed project would incorporate water demand reduction features into the project design. The proposed WQL would include an internal landscaped courtyard, and may include a green roof, to conserve water through stormwater capture and treatment. Recycled water from LAGWRP would provide irrigation water for landscaping throughout the project site, which would be drought-tolerant in the types and use of plant material. As such, sufficient water supplies would be available to serve the proposed project and reasonably foreseeable future development during normal, dry, and multiple dry years. The impact related to water supply would be less than significant during project operation.

c) Would the project 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. As discussed in Section 3.19(a), sanitary wastewater from the proposed project, which is anticipated to be relatively low in volume, would be routed to LAGWRP. As discussed in Section 3.10(a), in addition to sanitary wastewater, an average of approximately 0.21 MGD discharged from the AWPF of the proposed DPR Demonstration Facility would be routed to LAGWRP for processing. LAGWRP has a treatment capacity of approximately 20 MGD and currently treats an average of approximately 16 MGD. Therefore, there would be adequate capacity to serve the project's demand, and the impact would be less than significant.

d) Would the project 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. During project construction, attempts would be made to balance cut and fill material on site. However, some material excavated during foundation construction for the WQL and DPR Demonstration Facility may need be hauled to a local landfill authorized to accept such material, which is not expected to be hazardous. Additionally, the proposed project would incorporate source reduction techniques and recycling measures in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance, which would reduce the amount of construction-generated solid waste that would require disposal in the landfill. Thus, the amount of solid waste generated during construction of the proposed project would be minimized.

Construction impacts related to landfill capacity and solid waste reduction goals would be less than significant.

The implementation of the proposed project is anticipated to result in an increase in visitors to the project site. As such, the operation of the proposed project would result in an increase in solid waste generation over existing conditions. This waste is not expected to be hazardous, and the proposed project uses are not anticipated to generate large volumes of solid waste. Therefore, it is anticipated that area landfills have sufficient remaining capacity to accommodate operation of the proposed project. The impact would be less than significant.

e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less Than Significant Impact. As previously discussed, the construction waste generated by the proposed project would be properly disposed of in existing solid waste facilities. Construction materials and excavated soils would be disposed in accordance with federal, state, and local statutes and regulations. Construction and operation of the proposed project would occur in compliance with the City's Construction and Demolition Ordinance with the County-wide Integrated Waste Management Plan. The impact would be less than significant.

3.20 Wildfire

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐
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?	☐	☐	☐	☒

Discussion

a) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. The far eastern portion of the HWSG site is located within a designated VHFHSZ.[41] The components of the proposed project (WQL, DPR Demonstration Facility, and Headworks Restoration Park) would not be constructed within the VHFHSZ. Under the proposed project, this area would remain similar to existing conditions with no additional structures. In this portion of the HWSG, which includes the eastern portion of the Headworks East Reservoir, low-growing scrub vegetation has reestablished, and the top of the East Reservoir itself has been covered with soil and planted with low-growing scrub vegetation. The City of Los Angeles Emergency Management Department coordinates evacuations in the case of emergency with LAPD and LAFD, as outlined in the City's Emergency Operations Plan.[42] The County of Los Angeles designates disaster routes within the County, including within the City. Within the proposed project area, SR-134 is a designated freeway disaster route.[43]

Required modifications to traffic lanes on Forest Lawn Drive would provide a westbound right-turn lane and an eastbound left-turn pocket. These modifications would be accommodated within the existing road right-of-way. Modifications to the existing traffic signal at the intersection would also be required. During construction for the intersection modification, temporary lane closures may

41 California Department of Forestry and Fire Protection (CAL FIRE). FHSZ Viewer. Available at: https://egis.fire.ca.gov/FHSZ/. Accessed January 19, 2024.

42 City of Los Angeles, Emergency Management Department. 2022. City of Los Angeles Emergency Operations Plan. Available at: https://emergency.lacity.org/emergency-plans-and-annexes. Accessed January 19, 2024.

43 Los Angeles County Department of Public Works. Disaster Route Maps: City of Los Angeles Central Area. Available at: http://dpw.lacounty.gov/dsg/disasterRoutes/map/Los%20Angeles%20Central%20Area.pdf. Accessed January 19, 2024.

be required but a traffic control plan would be required and approved by the LADOT. The traffic control plan would include measures such as signage, flag persons, and lane detour plans as necessary to minimize disruptions to traffic. Emergency access to the site and surrounding area, particularly for emergency response vehicles, would be maintained at all times. Except for these intersection modifications, all construction would occur within the HWSG site. No impacts to SR-134, the designated freeway disaster route, would occur.

Operation of the proposed project would not alter the adjacent street system such that the City's adopted emergency response plan or emergency evacuation plan would be impacted. Secondary access for employee, service, and maintenance vehicles would be provided from Forest Lawn Drive at the west end of the HWSG. A series of interior roads would provide access for the public, employees, maintenance, and emergency vehicles to various locations within the site as appropriate. Therefore, no impacts related to substantially impairing an adopted emergency response plan or emergency evacuation plan would occur.

b) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, 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?

Less Than Significant Impact. The far eastern portion of the HWSG is within a designated VHFHSZ. The HWSG is primarily flat and undeveloped, and the eastern portion of the property is characterized by low-growing scrub vegetation. In addition, the surrounding urban uses, including Forest Lawn Memorial Park and Mount Sinai Memorial Park to the south and the Los Angeles River and SR-134 to the north, limits the risk of spread of wildfire. The portion of the HWSG property located in the designated VHFHSZ would remain unchanged under the proposed project and would not exacerbate wildfire risk. In other areas of the HWSG property, the construction for the proposed WQL and DPR Demonstration Facility would require the use of flammable materials or construction equipment that may spark. LADWP would comply with the provisions of the Municipal Code regarding fire protection and prevention. The impact would be less than significant.

During operation of the proposed project, the Headworks Restoration Park would be open to the public for passive recreation users. Although the Headworks Restoration Park could draw users to the HWSG property where it was previously publicly inaccessible, passive use of the park would not exacerbate wildfire risks. Additionally, as the Headworks Restoration Park is located in an area with existing trails and other passive recreation uses, the risk of exposing project occupants (i.e., passive recreation users) to pollutant concentrations from wildfire is similar to existing conditions.

It is anticipated that the proposed WQL would require a maximum of 172 people over the next decade. Additionally, it is anticipated that groups of up to 20 people from outside organizations, other government agencies, or the general public may visit the WQL about twice every month on average. A total of approximately five personnel would be present on weekdays at the proposed DPR Demonstration Facility. While the proposed project would introduce workers and the public to the HWSG property, the proposed WQL and DPR Demonstration Facility would be constructed in conformance with the latest Los Angeles Fire Code standards, which includes requirements and standards for new building construction as well as for building occupancy. With conformance to existing regulations, the proposed WQL and DPR Demonstration Facility would not exacerbate wildfire risk. Therefore, impacts would be less than significant.

c) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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?

Less Than Significant Impact. As discussed previously, the portion of the HWSG property located in the designated VHFHSZ would remain unchanged under the proposed project. In other areas of the HWSG property, the proposed WQL and DPR Demonstration Facility would require the installation of roads interior to the site and underground utilities infrastructure that would connect to existing utilities infrastructure. The proposed project would not include any fuel breaks, emergency water sources, or new power lines, and the impact would be less than significant.

d) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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 HWSG site is not located in a landslide area or adjacent to hillside areas that would be subject to instability or increased runoff as result of a wildfire. Therefore, no impact would occur.

3.21 Mandatory Findings of Significance

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially 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, substantially 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?	☐	☒	☐	☐
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 which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion

a) Does the project have the potential to substantially 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, substantially 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 Impact With Mitigation Incorporated. As described in Section 3.4, Biological Resources, no special-status plant or wildlife species are anticipated to occur within or close to the project site. Nesting birds and roosting bats in trees along the perimeter of the HWSG property adjacent to Forest Lawn Drive would have the potential to be disturbed by construction activities. However, as required under the MBTA and the CFGC, nesting birds would be protected via implementation of BMP-1. Additionally, mitigation measure BIO-1 would avoid potential impact to roosting bats during construction activities. A limited number of individual trees and shrubs protected under the City's Native Tree Protection Ordinance may be impacted at the primary entry driveway at Mt. Sinai Drive and south of the proposed DPR Demonstration Facility. Impacts to any protected species would be determined during final design. However, a Tree Removal Permit in compliance with the City's Native Tree Protection Ordinance would be required for any removal or pruning of protected species. With issuance of a tree removal permit from Public Works and implementation of compensation for tree removals pursuant to the permit, the project would be in compliance with the Native Tree Protection Ordinance, and impacts to ordinance-protected species would be less than significant. Therefore, the Proposed Project would not have the potential to 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, or reduce the number or restrict the range of a rare or endangered plant or animal. Impacts would be less than significant.

As described in Section 3.5, Cultural Resources, the project site does not support any important examples of major periods in California history. While there are no known important examples of California prehistory on the project site, there is the potential for previously unknown archaeological resources to be encountered during ground-disturbing activities associated with construction of the project. BMP-2 would be implemented to provide cultural resources awareness training to construction personnel. Additionally, if archaeological material is uncovered during ground-disturbing activities, in accordance with California PRC Section 21083.2(i) regarding provisions related to the accidental discovery of archaeological resources, work would be temporarily halted in the vicinity of the find and the LADWP shall retain a qualified professional archaeologist meeting the Secretary of the Interior's Standards for archaeology to evaluate the significance of the find and determine appropriate treatment for the resource in accordance with exiting requirements. As discussed in Section 3.18, based on the results of AB 52 consultation that LADWP has conducted with interested local tribal representatives, tribal cultural resources, although not known to exist within the project site, could lie beneath the surface and may be inadvertently discovered during ground-disturbing construction activities. Because the potential to encounter tribal cultural resources exists, mitigation measure TCR-1 (related to the inadvertent discovery, evaluation, and treatment of tribal cultural resources) would be implemented. This measure includes, as necessary, the procurement of a tribal monitor from a consulting Native American tribe to monitor the ground-disturbing activities. With compliance with existing requirements, implementation of mitigation measure TCR-1, and incorporation of BMP-2 regarding cultural resources awareness training as outlined in Section 3.5(b), impacts to archaeological and tribal cultural resources would be less than significant with mitigation incorporated.

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 with Mitigation Incorporated. A significant environmental impact could result from the combined effects of two or more projects that are closely related geographically (i.e., within the same vicinity or greater region, depending on the nature and scope of the project and environmental factor under consideration) and in time (i.e., recently completed projects, projects currently under construction, and/or projects anticipated to be implemented in the near-term future). In general, the effects of a proposed project when combined with the effects of past projects (other than recently completed projects) are accounted for in the baseline conditions under CEQA for the analysis of the proposed project's environmental impacts.

The analysis of the combined impacts of more than one project allows decision makers to consider the potential consequences of a project in a broader environmental context rather than in isolation. This is necessary because a significant combined impact could result even when the individual impacts of related projects are less than significant. The combined effects of several related projects with impacts that are less than significant may also be determined to be less than significant on a cumulative basis. In addition, even if the combined effects of several related projects are determined to be significant, an individual project's incremental contribution to those significant combined effects may be determined to be less than cumulatively considerable and therefore less than significant.

The entire HWSG property has been highly disturbed starting early in the 20th century with the installation of water extraction and conveyance facilities involving deep excavation and grading, the mid-century development of spreading grounds requiring extensive earth movement across

the site, and the recent implementation of the Headworks Water Complex, which entailed the construction of large, partially buried structures that encompass the eastern half of the property. Because the project is a public utilities function located within existing property historically controlled and used by a public utility, it would not generally represent a substantial change in the existing environment such that it would make a cumulatively considerable contribution to a significant impact when considered in combination with impacts from closely related projects. Specific environmental factors addressed throughout this IS/MND are discussed in greater detail below with respect to cumulative impacts.

As shown in the environmental analysis in this IS/MND, the proposed project was determined to have no impact related to agriculture and forestry resources, land use and planning, mineral resources, population and housing, and public services. Because the project would have no impact in relation to these factors, it would not have the potential to contribute to a significant effect created by the combined impacts of closely related projects.

Impacts for all other environmental factors considered in this IS/MND were determined to be less than significant without the need for mitigation measures, except for impacts related to potential disturbance of roosting bats, noise created by construction activity, and tribal cultural resources not currently listed or identified as eligible for listing in the CRHR, which were determined to be less than significant with the incorporation of mitigation measures.

Impacts to aesthetic resources, including the removal of a limited number of trees adjacent to Forest Lawn Drive (a City-designated scenic highway) and the introduction of new sources of light or glare were determined to be less than significant. These impacts would be isolated to the immediate area of the proposed project, and there are no known other related projects in the immediate area. Therefore, there would be no potential for the project to make a make a cumulatively considerable contribution to a wider significant impact to aesthetic resources.

Air pollutant and GHG emissions, as assessed under CEQA, are inherently recognized as cumulative impacts. Project-level thresholds of significance for these emissions are used in the determination of whether a project's individual emissions would make a cumulatively considerable contribution to a significant impact. Based on the analysis contained in this IS/MND, both air quality and GHG emissions would remain below the defined thresholds of significance. Therefore, the proposed project would not make a cumulatively considerable contribution to a wider adverse air quality or GHG impact.

The use of energy is likewise considered an impact with broader effects based on the potential consumption of limited energy resources. However, it was determined in this IS/MND that project energy consumption during construction would be relatively minor, would not be wasteful, and would be temporary in nature. During operation, the WQL would be LEED Gold certified, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. This would represent an energy savings over the operation of the existing Pasadena WQL, which is housed in a building constructed in the 1960s. In addition, the DPR Demonstration Facility would help prove technologies that would eventually allow for the reuse of locally generated wastewater, thus limiting the use of imported water, which consumes the majority of the energy used by the water sector in the state. Therefore, the project would not make a cumulatively considerable contribution to a wider adverse impact related to energy consumption and conservation.

Potential impacts to certain resources, including biological resources (nesting birds and roosting bats) and the inadvertent discovery of unknown buried archaeological, paleontological, or tribal

cultural resources, and human remains were determined in this IS/MND to be less than significant through compliance with existing policies or regulations, with the implementation of applicable BMPs established as part of the proposed project, or with the implementation of mitigation measures introduced based on the results of the environmental analysis contained in the IS/MND. However, such impacts, should they occur, are site-specific in nature, are limited to the project construction footprint, and therefore would not make a cumulatively considerable contribution to similar potentially adverse impacts resulting from other closely related projects in the vicinity.

Geology and hydrology impacts related to increased potential for erosion, runoff, siltation, flooding, and pollution discharges would also generally be site-specific in nature, but such impacts could also extend off site and result in a larger impact when combined with similar impacts from closely related projects in the area. However, given the nature of the proposed project and the existing setting and through compliance with existing policies or regulations (NPDES Permit, SWPPP, and LID ordinance), off site impacts would be largely eliminated and therefore would not make a cumulatively considerable contribution to a more widespread impact potentially created by the combined effects of closely related projects.

Geology impacts related to seismic hazards and hazards created by various soil conditions pertain to the potential impacts from the environment on the proposed project rather than impacts to the environment caused by the project. In this regard the project would not make a cumulatively considerable contribution to similar impacts experienced by closely related projects in the area.

Impacts related to noise have the potential to affect a limited area beyond the boundaries of HWSG. However, the assessment of such impacts in this IS/MND and the conclusion of a less than significant impact with mitigation incorporated accounted for the combined effect of the project and the surrounding existing setting. These noise impacts would be temporary, related only to project construction activities. Furthermore, no major projects that would contribute to a significant combined impact related to noise have been identified in the vicinity of the proposed project.[44]

The WQL and DPR Demonstration Facility would require limited use of some potentially hazardous materials during operation. These materials would be contained and confined to the facilities or in transport vehicles traveling to and from the property. Compliance with required state and federal laws as well as safeguards incorporated into the project to monitor for, limit, and contain accidental releases would minimize the potential for hazardous materials to be released from the facilities. As such, hazardous materials associated with the project are not anticipated to combine with those used for other development projects in the area to create a cumulatively considerable effect.

As discussed in Section 3.10(a), the operation of the DPR Demonstration Facility would result in the potential diversion of 0.04 MGD of recycled water effluent from the LAGWRP that may have been otherwise discharged to the Los Angeles River. This reduction in discharge of 0.04 MGD to the Los Angeles River downstream of LAGWRP would represent a decrease in flow of approximately 0.06 cfs, resulting in a reduction in depth of approximately 0.1 millimeter or less, depending on the location in the river. This would be an essentially immeasurable change and is, therefore, considered de minimis. Therefore, because of the de minimis nature of this change, the project would make a less than cumulatively considerable contribution to any reduction in

[44] City of Los Angeles, Department of City Planning. n.d. Major Projects. https://ladcp.maps.arcgis.com/apps/MapJournal/index.html?appid=b06f97ccf94741fdaad27443013eead1. Accessed January 19, 2024.

flows to the river potentially caused by other related projects.

Although determined to be less than significant, impacts related to VMT could be cumulatively considerable when combined with impacts from other development projects in the area. According to the LADOT Guidelines, related projects considered in the cumulative analysis for VMT would be those located within 0.5-mile of the project site. There are currently no know development projects within 0.5-mile of the project site that would contribute to a significant combined impact related to VMT. In addition, according to the LADOT Guidelines, long-term cumulative impacts related to VMT could occur if the project was determined to be inconsistent with the planning assumptions and strategies contained in the SCAG RTP/SCS. As discussed in Section 3.3(a), the proposed project would be consistent with the RTP/SCS, and, therefore, it would have a less than significant long-term cumulative impact on VMT.

Impacts to utilities and service systems could contribute to a significant impact from the combined effects of more than one project on the limited capacity of services such as wastewater treatment, water supply, and solid waste disposal. The project would require relatively minor work to connect to existing water and electrical supplies, and would not require a new water supply, or an expansion of supply lines or in the capacity of water or wastewater treatment facilities. The project would comply with the City's LID ordinance to reduce the volume of and capture stormwater flows such that they would not exceed the capacity of the existing stormwater drainage system. The project would generate solid waste in the form of excavated material during construction. However, this would be temporary and would represent a very small volume both in terms of daily throughput and current remaining capacity of area landfills. Therefore, the project would represent a less than cumulatively considerable incremental contribution to any combined effect on utilities and service systems potentially created by other related projects.

The proposed project would create less than significant impacts related to wildfire, including to the exposure of people to the uncontrolled spread of wildfire, wildfire-created pollutants, and wildfire-associated flooding or landslides and the installation of wildfire-related infrastructure improvements. However, given the character of HWSG, including flat terrain, relative absence of fire-prone vegetation, and the surrounding uses, including Forest Lawn Memorial Park and Mount Sinai Memorial Park to the south and the Los Angeles River and SR-134 to the north, the proposed project would not exacerbate the ignition or uncontrolled spread of wildfire and would, therefore, not make a cumulatively considerable contribute to a potential combined effect of closely related projects.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant Impact with Mitigation Incorporated. Numerous factors discussed in the environmental impact analyses presented throughout Chapter 3 pertain to the quality of the human environment. Based on the analysis contained in the IS/MND, the environmental impacts created by the proposed project in relation to most of these factors would be absent or less than significant. However, as discussed in Section 3.8(a), project construction activities could generate a temporary increase in ambient noise levels in excess of applicable standards established in the local ordinances. Therefore, mitigation measures NOI-1 through NOI-5 would be required. With the incorporation of these mitigation measures, the project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly. Impacts would be less than significant with mitigation incorporated.

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Initial Study/Mitigated Negative Declaration Appendices

Headworks Site Development Project

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April 2024

APPENDIX A

Air Quality Impact Study

HEADWORKS SITE DEVELOPMENT PROJECT

Air Quality Impact Study

Prepared for:
Michael Baker International

Prepared by:
Terry A. Hayes Associates Inc.

January 2024

taha
environmental planners

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1.0 SUMMARY OF FINDINGS

Terry A. Hayes Associates Inc. (TAHA) completed an Air Quality Impact Study (Study) for the Headworks Site Development Project (proposed project) located in the City of Los Angeles (City). This Study addresses potential environmental impacts associated with air pollutant emissions generated by the construction and operation of the proposed project in accordance with South Coast Air Quality Management District (SCAQMD) guidance methodologies. Conclusions that address significance determinations under the California Environmental Quality Act (CEQA) Environmental Checklist criteria are shown in **Table 1-1**. The Study concludes that the proposed project would result in less-than-significant impacts related to construction and operational emissions.

TABLE 1-1: SUMMARY OF IMPACT STATEMENTS

Impact Statement	Proposed Project Level of Significance	Applicable Mitigation Measures
Would the proposed project conflict with or obstruct implementation of the applicable air quality plan?	Less-Than-Significant Impact	None
Would the proposed project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?	Less-Than-Significant Impact	None
Would the proposed project expose sensitive receptors to substantial pollutant concentrations?	Less-Than-Significant Impact	None
Would the proposed project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Less-Than-Significant Impact	None

SOURCE: TAHA, 2024.

2.0 INTRODUCTION

2.1 STUDY PURPOSE

The purpose of this Study is to evaluate the potential significance of environmental impacts related to air quality resulting from implementation of the proposed project. Consistent with SCAQMD guidance, potential impacts to air quality are characterized by comparing daily emissions of air pollutants that would be generated during construction and operation of the proposed project to the applicable Air Quality Significance Thresholds, at both regional and localized scales.

2.2 PROJECT DESCRIPTION

The proposed water quality lab (WQL) would include approximately 100,000 gross square feet of floor space; surface parking for 12 visitor vehicles, 102 staff vehicles, and 20 Los Angeles Department of Water and Power (LADWP) fleet vehicles; a mobile laboratory trailer; landscaping; and other site improvements. It would be located to the east of the proposed Direct Potable Reuse (DPR) Demonstration Facility at the Headworks Spreading Grounds (HWSG) property. The facility would also be designed to meet Mayor Garcetti's Resilience by Design Directive by obtaining Leadership in Energy and Environmental Design (LEED) gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The facility would also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater. The building would achieve energy efficiency by implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency heating, ventilation, and air conditioning (HVAC) systems. The proposed project would include EV charging stations in compliance with Los Angeles Department of Building and Safety (LADBS) Electric Vehicle Charging Stations (EVCS) requirements. It would incorporate recycled material in all aspects of the building construction to promote a sustainable supply chain. All lighting and lighting controls for the facility would comply with the latest version of the Building Energy Efficiency Standard (Title 24) and the California Green Building Standard Code.

The DPR Demonstration Facility would be an advanced water purification facility (AWPF). The AWPF and support facilities and areas would be approximately 20,000 square feet, with an additional 20,000 square feet for a surrounding vehicle access road. A visitor center and a parking lot would also be provided. The visitor center would be approximately 5,000 square feet, and a parking lot would require approximately 16,500 square feet to accommodate staff and visitors. The DPR Demonstration Facility and visitor center would be located at the west end of the HWSG property.

The centerpiece of Headworks Park would be the West Reservoir Gardens, constructed on top of the approximately eight-acre West Reservoir, which will have been covered with several feet of soil to enable planting. Surrounding the reservoir garden and extending into other portions of the HWSG property would be a series of pedestrian, bicycle, and equestrian pathways, including the Headworks segment of the Los Angeles River Trail. The park would be developed in the eastern portion of the property, atop the West Reservoir, with other park features, including parking, a pavilion building, trails and site landscaping, located in adjacent areas.

The primary vehicular access to the Headworks site for all the proposed project components would be from Forest Lawn Drive at Mount Sinai Drive. Secondary access for employee, service, and maintenance vehicles would be provided from Forest Lawn Drive at the west end of the Headworks site. Public access to the Headworks site, would be limited to dawn to dusk.

Figure 2-1 shows the regional location of the proposed project. **Figure 2-2** shows the site plan.



Source: AECOM, 2021.

Headworks Site Development Project
Air Quality Impact Study

TAHA 2021-041

MICHAEL BAKER INTERNATIONAL

FIGURE 2-1

REGIONAL LOCATION



Legend

1. Headworks Park (Proposed)
2. Headworks Park - Pavilion Gateway (Proposed)
3. Headworks Park - Parking Lot (Proposed)
4. LA River Trail Segment (Proposed)
5. Access Road (Proposed)
6. Equestrian Tunnel (Existing)
7. Connection to Griffith Park (Existing)
8. Water Quality Lab (Proposed)
9. DPR Demonstration Facility (Proposed)
10. DPR Demonstration Facility Visitor Center (Proposed)
11. East Reservoir (Existing)
12. Flow Control Station (In Construction)

Source: LADWP, 2024.

FIGURE 2-2

PROJECT LOCATION

2.3 CONSTRUCTION SCHEDULE

Construction of the proposed project is anticipated to begin in the fourth quarter of 2024 with the Headworks Restoration Park, which would take approximately 3.3 years to complete, concluding in the first quarter of 2028. The construction of the proposed WQL would begin in the second quarter of 2027, overlapping the last phases of the park construction by approximately nine months. The proposed WQL construction would take approximately 2.5 years to complete, concluding in the first quarter of 2030. Construction of the proposed DPR Demonstration Facility would follow in succession, starting in the second quarter of 2030 and ending in the fourth quarter of 2031, a period of approximately 1.5 years. Accounting for overlaps in the construction periods for the project components, the total construction time for the proposed project would be approximately seven years, from late 2024 to late 2031. Construction activities would typically occur Monday through Friday during the daytime hours, beginning no earlier than 7:00 a.m. and generally ending by 5:00 p.m. Saturday construction may also be required at times.

3.0 AIR QUALITY

This section evaluates the proposed project's potential impacts on air quality. This section estimates the air pollutant emissions generated by the proposed project and whether emissions would conflict with or obstruct implementation of the applicable air quality plan; result in a cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment under an applicable federal or State ambient air quality standard; expose sensitive receptors to substantial pollutant concentrations; or result in other emissions, such as those leading to odors, affecting a substantial number of people.

3.1 AIR QUALITY BACKGROUND

3.1.1 Air Quality and Public Health

Certain air pollutants have been recognized to cause notable health problems and consequential damage to the environment either directly or in reaction with other pollutants, due to their presence in elevated concentrations in the atmosphere. Such pollutants have been identified and regulated as part of an overall endeavor to prevent further deterioration and to facilitate improvement in air quality. The National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been set at levels considered safe to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly with a margin of safety, and to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.[1] As the scientific methods for the study of air pollution health effects have progressed over the past decades, adverse effects have been shown to occur at lower levels of exposure. For some pollutants, no clear thresholds for effects have been demonstrated. New findings over time have, in turn, led to the revision and lowering of NAAQS which, in the judgment of the United States Environmental Protection Agency (USEPA), are necessary to protect public health. The NAAQS and CAAQS are listed in **Table 3-1**.

The SCAQMD is the regulatory agency responsible for improving air quality for large areas of Los Angeles, Orange County, Riverside and San Bernardino Counties, including the Coachella Valley.[2] The City of Los Angeles is located within the South Coast Air Basin (Air Basin) which is a distinct geographic subarea within the SCAQMD's jurisdiction. The SCAQMD, together with the Southern California Association of Governments (SCAG), has the responsibility for ensuring that national and State ambient air quality standards are achieved and maintained for the Air Basin. Failure to comply with these standards puts State and local agencies at risk for penalties in the form of lawsuits, fines, a federal takeover of State implementation plans, and a loss of funds from federal agencies.

To meet the air quality standards, regional plans are developed, including the SCAQMD's Air Quality Management Plan (AQMP), which incorporates regional demographic projections and integrated regional land use and transportation strategies from SCAG's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). These plans work together to examine multiple pollutants, cumulative effects, and transport issues related to attaining healthful air quality in the region. In addition, a host of regulatory standards at the federal, State, regional, and local level function to identify and limit exposure of air pollutants and toxic air contaminants.

[1]USEPA, *NAAQS Table*, https://www.epa.gov/criteria-air-pollutants/naaqs-table, accessed January 18, 2024.
[2]SCAQMD, *Map of Jurisdiction*, http://www.aqmd.gov/docs/default-source/default-document-library/map-of-jurisdiction.pdf, accessed January 18, 2024.

3.1.2 Local Air Quality and Air Pollution Sources

As mentioned above, the City of Los Angeles is located within the Air Basin, which is an approximately 6,745-square-mile area bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east; and San Diego County to the south. The Air Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the Coachella Valley area in Riverside County. The regional climate within the Air Basin is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. The air quality within the Air Basin is primarily influenced by meteorology and a wide range of emissions sources, such as dense population centers, heavy vehicular traffic, and industry.

The Air Basin experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed in mid to late afternoons on hot summer days. Winter inversions frequently break by midmorning.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino counties. In the winter, the greatest pollution problem is the accumulation of carbon monoxide (CO) and nitrogen oxides (NO_X) due to low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

Air pollutant emissions within the Air Basin are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat. Area sources are widely distributed and include such sources as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment. Air pollutants can also be generated by the natural environment, such as when high winds suspend fine dust particles.

3.1.3 Air Pollutant Types

3.1.3.1 Criteria Pollutants

The six principal pollutants for which national and State criteria and standards have been promulgated, known as “criteria pollutants,” and which are most relevant to current air quality planning and regulation in the Air Basin include: ozone (O_3), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$, respectively), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). These pollutants are referred to as “criteria air pollutants” as a result of the specific standards, or criteria, which have been adopted for them.

i. *Ozone (O_3)*

O_3 is a gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO_X) - both byproducts of internal combustion engine exhaust - undergo slow photochemical reactions in the presence of sunlight. O_3 concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable. An elevated level of O_3 irritates the lungs and breathing passages, causing coughing and pain in the chest and throat, thereby increasing susceptibility to respiratory infections and reducing the ability to exercise. Effects are more severe in people with asthma and other respiratory ailments. Long-term exposure may lead to scarring of lung tissue and may lower lung efficiency.

ii. *Particulate Matter (PM_{10} and $PM_{2.5}$)*

Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. Respirable and fine particulate matter, PM_{10} and $PM_{2.5}$, consist of extremely small, suspended particles or droplets 10 microns and 2.5 microns or smaller in diameter, respectively. Some sources of particulate matter, like pollen and windstorms, are naturally occurring. However, in areas like the City of Los Angeles, most particulate matter is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities. The human body naturally prevents the entry of larger particles into the body. However, small particles can enter the body and become trapped in the nose, throat, and upper respiratory tract. These small particulates can potentially aggravate existing heart and lung diseases, change the body's defenses against inhaled materials, and damage lung tissue. The elderly, children, and those with chronic lung or heart disease are most sensitive to PM_{10} and $PM_{2.5}$. Lung impairment can persist for two to three weeks after exposure to high levels of particulate matter. Some types of particulates can become toxic after inhalation due to the presence of certain chemicals and their reaction with internal body fluids.

iii. *Carbon Monoxide (CO)*

CO is a colorless, odorless gas primarily emitted from combustion processes and motor vehicles due to incomplete combustion of carbon-containing fuels such as gasoline or wood. In urban areas, such as the City of Los Angeles, automobile exhaust accounts for the majority of CO emissions. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike O_3, motor vehicles operating at slow speeds are the primary source of CO in the Air Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections. Elevated concentrations of CO weaken the heart's contractions and lower the amount of oxygen carried by the blood. It is especially dangerous for people with chronic heart disease. Inhalation of CO can cause nausea, dizziness, and headaches at moderate concentrations and can be fatal at high concentrations.

iv. *Nitrogen Dioxide (NO_2)*

Nitrogen dioxide is a nitrogen oxide compound that is produced by the combustion of fossil fuels, such as in internal combustion engines (both gasoline and diesel powered), as well as point sources, especially power plants. Of the seven types of NO_X compounds, NO_2 is the most abundant in the atmosphere. As ambient concentrations of NO_2 are related to traffic density, commuters in heavy traffic areas, such as urban areas like the City of Los Angeles, may be exposed to higher concentrations of NO_2 than those indicated by regional monitors. NO_2 absorbs blue light and results in a brownish-red cast to the atmosphere and reduced visibility. NO_2 also contributes to the formation

of PM_{10}. Nitrogen oxides irritate the nose and throat, and increase one's susceptibility to respiratory infections, especially in people with asthma. The principal concern of NO_X is as a precursor to the formation of O_3.

v. Sulfur Dioxide (SO_2)

Sulfur oxides (SO_X) are compounds of sulfur and oxygen molecules. SO_2 is the predominant form found in the lower atmosphere and is a product of burning sulfur or burning materials that contain sulfur. Major sources of SO_2 include power plants, large industrial facilities, diesel vehicles, and oil-burning residential heaters. Generally, the highest levels of SO_2 are found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. Emissions of SO_2 aggravate lung diseases, especially bronchitis. It also constricts the breathing passages, especially in asthmatics and people involved in moderate to heavy exercise. SO_2 potentially causes wheezing, shortness of breath, and coughing. High levels of particulates appear to worsen the effect of SO_2, and long-term exposures to both pollutants leads to higher rates of respiratory illness.

vi. Lead (Pb)

Pb is a metal found naturally in the environment as well as in manufactured products. The highest levels of lead in air are usually found near lead smelters. The major sources of lead emissions to the air are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline. Pb is also emitted from the sanding or removal of old lead-based paint. Pb emissions are primarily a regional pollutant. Pb affects the brain and other parts of the body's nervous system. Exposure to Pb in very young children impairs the development of the nervous system, kidneys, and blood forming processes in the body.

3.1.3.2 Additional Criteria Pollutants (California Only)

In addition to the national standards, the State of California regulates State-identified criteria pollutants, including sulfates (SO_4^2), hydrogen sulfide (H_2S), visibility-reducing particles, and vinyl chloride. With respect to the State-identified criteria pollutants, most land use development projects either do not emit them (i.e., H_2S [nuisance odor] and vinyl chloride), or otherwise account for these pollutants (i.e., SO_4^2 and visibility reducing particles) through other criteria pollutants. For example, SO_4^2 are associated with SO_X emissions, and visibility-reducing particles are associated with particulate matter emissions. A description of the health effects of the State-identified criteria air pollutants is provided below.

i. Sulfates (SO_4^{2-})

SO_4^{2-} are the fully oxidized ionic form of sulfur. SO_4^{2-} occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized during the combustion process and subsequently converted to sulfate compounds in the atmosphere. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. SO_4^{2-} are particularly effective in degrading visibility, and, due to the fact that they are usually acidic, can harm ecosystems and damage materials and property.

ii. Hydrogen Sulfide (H_2S)

H_2S is a colorless gas with the odor of rotten eggs. The most common sources of H_2S emissions are oil and natural gas extraction and processing, and natural emissions from geothermal fields. Industrial sources of H_2S include petrochemical plants and kraft paper mills. H_2S is also formed during bacterial decomposition of human and animal wastes, and is present in emissions from sewage treatment facilities and landfills.[3] Exposure to H_2S can induce tearing of the eyes and symptoms related to overstimulation of the sense of smell, including headache, nausea, or vomiting; additional health effects of eye irritation have only been reported with exposures greater than 50 parts per million (ppm), which is considerably higher than the odor threshold.[4] H_2S is regulated as a nuisance based on its odor detection level; if the standard were based on adverse health effects, it would be set at a much higher level.[5]

iii. Visibility Reducing Particles

Visibility-reducing particles come from a variety of natural and manmade sources and can vary greatly in shape, size and chemical composition. Visibility reduction is caused by the absorption and scattering of light by the particles in the atmosphere before it reaches the observer. Certain visibility-reducing particles are directly emitted to the air, such as windblown dust and soot, while others are formed in the atmosphere through chemical transformations of gaseous pollutants (e.g., SO_4^{2-}, nitrates, organic carbon particles) which are the major constituents of particulate matter. As the number of visibility-reducing particles increases, more light is absorbed and scattered, resulting in less clarity, color, and visual range.[6] Exposure to some haze-causing pollutants have been linked to adverse health impacts similar to PM_{10} and $PM_{2.5,}$ as discussed above.[7]

iv. Vinyl Chloride

Vinyl chloride is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products and is generally emitted from industrial processes. Other major sources of vinyl chloride have been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.[8] Short-term health of effects of exposure to high levels of vinyl chloride in the air include central nervous system effects, such as dizziness, drowsiness, and headaches while long-term exposure to vinyl chloride through inhalation and oral exposure causes liver damage and has been shown to increase the risk of angiosarcoma, a rare form of liver cancer in humans.[9] Most health data on vinyl chloride relate to carcinogenicity; thus, the people most at risk are those who have long-term exposure to elevated levels, which is more likely to occur in occupational or industrial settings; however, control methodologies applied to industrial facilities generally prevent emissions to the ambient air.[10]

CARB, *Hydrogen Sulfide & Health*, https://ww2.arb.ca.gov/resources/hydrogen-sulfide-and-health, accessed July 12, 2022.

[4]*Ibid*.

[5]*Ibid*.

[6]CARB, *Visibility-Reducing Particles & Health*, https://www.arb.ca.gov/research/aaqs/common-pollutants/vrp/vrp.htm, accessed July 12, 2022.

[7]*Ibid*.

[8]CARB, *Vinyl Chloride & Health*, https://ww2.arb.ca.gov/resources/vinyl-chloride-and-health, accessed July 12, 2022.

[9]*Ibid*.

[10]*Ibid*.

3.1.3.3 Volatile Organic Compounds (VOCs) and Toxic Air Contaminants (TACs)

Although the SCAQMD's primary mandate is attaining the NAAQS and the CAAQS for criteria pollutants within the district, SCAQMD also has a general responsibility to control emissions of air contaminants and prevent endangerment to public health. As a result, the SCAQMD has regulated pollutants other than criteria pollutants such as VOCs, TACs, greenhouse gases, and stratospheric ozone-depleting compounds.

i. Volatile Organic Compounds (VOCs)

VOCs are organic chemical compounds of carbon and are not "criteria" pollutants themselves; however, VOCs are a prime component (along with NO_X) of the photochemical processes by which such criteria pollutants as O_3, nitrogen dioxide, and certain fine particles are formed. They are therefore regulated as "precursors" to formation of these criteria pollutants. Some are also identified as TACs and have adverse health effects. VOCs are typically formed from combustion of fuels and/or released through evaporation of organic liquids, internal combustion associated with motor vehicle usage, and consumer products (e.g., architectural coatings, etc.).

ii. Toxic Air Contaminants (TACs)

TACs is a term used to describe airborne pollutants that may be expected to result in an increase in mortality or serious illness or which may pose a present or potential hazard to human health and include both carcinogens and non-carcinogens. The California Air Resources Board (CARB) and the California Office of Environmental Health Hazard Assessment (OEHHA) determine if a substance should be formally identified, or "listed," as a TAC in California. CARB has listed approximately 200 toxic substances, including those identified by the USEPA, which are identified on the California Air Toxics Program's TAC List. TACs are also not classified as "criteria" air pollutants. The greatest potential for TAC emissions during construction is related to diesel particulate matter (DPM) emissions associated with heavy-duty equipment. During long-term operations, sources of DPM may include heavy duty diesel-fueled delivery trucks and stationary emergency generators. The effects of TACs can be diverse and their health impacts tend to be local rather than regional; consequently, ambient air quality standards for these pollutants have not been established, and analysis of health effects is instead based on cancer risk and exposure levels.

3.2 REGULATORY FRAMEWORK

There are several plans, regulations, and programs that include policies, requirements, and guidelines regarding Air Quality at the federal, State, regional, and local levels. As described below, these plans, guidelines, and laws include the following:

- Federal Clean Air Act (CCA)
  - National Ambient Air Quality Standards (NAAQS)
- California Clean Air Act (CCAA)
  - California Ambient Air Quality Standards (CAAQS)
- California Code of Regulations (CCR)
- State Programs for Toxic Air Contaminants
- Diesel Risk Reduction Program

- South Coast Air Quality Management District (SCAQMD)
    - Air Quality Management Plan (AQMP) and RTP/SCS
    - Air Quality Guidance Documents
    - Rules and Regulations
- City of Los Angeles Air Quality Element
- City of Los Angeles Plan for a Healthy LA

3.2.1 Federal

3.2.1.1 Federal Clean Air Act (CAA)

The CAA was enacted in 1970 and has been amended numerous times in subsequent years, with the most recent amendments occurring in 1990.[11] The CAA is the comprehensive federal law that regulates air emissions in order to protect public health and welfare.[12] The USEPA is responsible for the implementation and enforcement of the CAA, which establishes federal NAAQS, specifies future dates for achieving compliance, and requires the USEPA to designate areas as attainment, nonattainment, or maintenance. The CAA also mandates that each state submit and implement a State Implementation Plan (SIP) for each criteria pollutant for which the state has not achieved the applicable NAAQS. The SIP includes pollution control measures that demonstrate how the standards for those pollutants will be met. The sections of the CAA most applicable to land use development projects include Title I (Nonattainment Provisions) and Title II (Mobile Source Provisions).[13]

Title I requirements are implemented for the purpose of attaining NAAQS for criteria air pollutants. **Table 3-1**, *Ambient Air Quality Standards*, shows the NAAQS currently in effect for each criteria pollutant. The Air Basin fails to meet national standards for O_3 and $PM_{2.5}$ and, therefore, is considered a federal "non-attainment" area for these pollutants.

Title II pertains to mobile sources, which includes on-road vehicles (e.g., cars, buses, motorcycles) and non-road vehicles (e.g., aircraft, trains, construction equipment). Reformulated gasoline and automobile pollution control devices are examples of the mechanisms the USEPA uses to regulate mobile air emission sources. The provisions of Title II have resulted in tailpipe emission standards for vehicles, which have been strengthened in recent years to improve air quality. For example, the standards for NO_X emissions have been lowered substantially and the specification requirements for cleaner burning gasoline are more stringent.

The NAAQS, and the CAAQS for the California criteria air pollutants (discussed below), have been set at levels considered safe to protect public health, including the health of sensitive populations and to protect public welfare.

[11] 42 United States Code §7401 et seq. (1970).

[12] USEPA, *Summary of the Clean Air Act*, https://www.epa.gov/laws-regulations/summary-clean-air-act, accessed July 12, 2022.

[13] USEPA, *Clean Air Act Overview, Clean Air Act Table of Contents by Title*, https://www.epa.gov/clean-air-act-overview/clean-air-act-text, accessed July 12, 2022.

TABLE 3-1: AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Period	Federal Standard /a,b/	California Standard /a,b/	South Coast Air Basin Attainment Status/c/	
				Federal Standard /d/	California Standard /d/
Ozone (O_3)	1-hour	—	0.09 ppm (180 µg/m^3)	—	Non-Attainment
	8-hour	0.070 ppm (137 µg/m^3)	0.07 ppm (137 µg/m^3)	Non-Attainment (Extreme)	Non-Attainment
Respirable Particulate Matter (PM_{10})	24-hour	150 µg/m^3	50 µg/m^3	Attainment	Non-Attainment
	Annual	—	20 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24-hour	35 µg/m^3	—	Non-Attainment (Serious)	Non-Attainment
	Annual	12 µg/m^3	12 µg/m^3		
Carbon Monoxide (CO)	1-hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)	Attainment	Attainment
	8-hour	9 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)		
Nitrogen Dioxide (NO_2)	1-hour	0.10 ppm (188 µg/m^3)	0.18 ppm (339 µg/m^3)	Unclassified/ Attainment	Attainment
	Annual	0.053 ppm (100 µg/m^3)	0.030 ppm (57 µg/m^3)		
Sulfur Dioxide (SO_2)	1-hour	0.075 ppm (196 µg/m^3)	0.25 ppm (655 µg/m^3)	Unclassified/ Attainment	Attainment
	3-hour	0.5 ppm (1,300 µg/m^3)	—		
	24-hour	0.14 ppm (365 µg/m^3)	0.04 ppm (105 µg/m^3)		
	Annual	0.03 ppm (80 µg/m^3)	—		
Lead (Pb)	30-day average	—	1.5 µg/m^3	Partial Non-Attainment /e/	Attainment
	Rolling 3-month average	0.15 µg/m^3	—		
Sulfates	24-hour	—	25 µg/m^3	—	Attainment
Hydrogen Sulfide (H_2S)	1-hour	—	0.03 ppm (42 µg/m^3)	—	Unclassified

Note: ppm = parts per million by volume; µg/m^3 = micrograms per cubic meter
/a/ An ambient air quality standard is a concentration level expressed in either parts per million or micrograms per cubic meter and averaged over a specific time period (e.g., 1 hour). The different averaging times and concentrations are meant to protect against different exposure effects. Some ambient air quality standards are expressed as a concentration that is not to be exceeded. Others are expressed as a concentration that is not to be equaled or exceeded.
/b/ Ambient Air Quality Standards obtained from the CARB and USEPA.
/c/ "Attainment" means that the regulatory agency has determined based on established criteria, that the Air Basin meets the identified standard. "Non-attainment" means that the regulatory agency has determined that the Air Basin does not meet the standard. "Unclassified" means there is insufficient data to designate an area, or designations have yet to be made.
/d/ California and Federal standard attainment status based on = updates from the CARB and USEPA. https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations.
/e/ An attainment re-designation request is pending.
SOURCE: USEPA, *NAAQS Table*, https://www.epa.gov/criteria-air-pollutants/naaqs-table, accessed January 18, 2024;
CARB, *Ambient Air Quality Standards*, May 4, 2016, https://ww3.arb.ca.gov/research/aaqs/aaqs2.pdf, accessed January 18, 2024.

3.2.2 State

3.2.2.1 California Clean Air Act (CCAA)

The CCAA, signed into law in 1988, requires all areas of the State to achieve and maintain the CAAQS by the earliest practicable date. CARB, a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both State and federal air pollution control programs within California. In this capacity, CARB conducts research, sets the CAAQS, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products, and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. **Table 3-1** includes the CAAQS currently in effect for each of the criteria pollutants, as well as other pollutants recognized by the State. As shown in **Table 3-1**, the CAAQS include more stringent standards than the NAAQS. The Air Basin fails to meet State standards for O_3, PM_{10}, and $PM_{2.5}$ and, therefore, is considered "non-attainment" for these pollutants.

3.2.2.2 California Code of Regulations (CCR)

The CCR is the official compilation and publication of regulations adopted, amended or repealed by the State agencies pursuant to the Administrative Procedure Act. The CCR includes regulations that pertain to air quality emissions. Specifically, Section 2485 in Title 13 of the CCR states that the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds) during construction shall be limited to five minutes of any location. In addition, Section 93115 in Title 17 of the CCR states that operation of any stationary, diesel-fueled, compression-ignition engines shall meet specified fuel and fuel additive requirements and emission standards.

3.2.2.3 State Programs for Toxic Air Contaminants

The California Air Toxics Program is an established two-step process of risk identification and risk management to address potential health effects from exposure to toxic substances in the air. In the risk identification step, CARB and OEHHA determine if a substance should be formally identified, or "listed," as a TAC in California. In the risk management step, CARB reviews emission sources of an identified TAC to determine whether regulatory action is needed to reduce risk. Based on results of that review, CARB has promulgated a number of Airborne Toxic Control Measures (ATCMs), both for stationary and mobile sources, including On-Road and Off-Road Vehicle Rules. These ATCMs include measures such as limits on heavy-duty diesel motor vehicle idling and emission standards for off-road diesel construction equipment in order to reduce public exposure to DPM and other TACs.

These actions are also supplemented by the Assembly Bill (AB) 2588 Air Toxics "Hot Spots" program and Senate Bill (SB) 1731, which require facilities to report their air toxics emissions, assess health risks, notify nearby residents and workers of significant risks if present, and reduce their risk through implementation of a risk management plan. SCAQMD has further adopted two rules to limit cancer and non-cancer health risks from facilities located within its jurisdiction. Rule 1401 (New Source Review of Toxic Air Contaminants) regulates new or modified facilities, and Rule 1402 (Control of Toxic Air Contaminants from Existing Sources) regulates facilities that are already operating. Rule 1402 incorporates requirements of the AB 2588 program, including implementation of risk reduction plans for significant risk facilities.

3.2.2.4 Diesel Risk Reduction Program

CARB identified particulate emissions from diesel-fueled engines as TACs in August 1998. Following the identification process, the CARB was required by law to determine if there is a need for further control, which moved us into the risk management phase of the program. CARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines* and the *Vehicles and the Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines*. The Diesel Advisory Committee approved these documents on September 28, 2000, paving the way for the next step in the regulatory process: the control measure phase. During the control measure phase, specific statewide regulations designed to further reduce DPM emissions from diesel-fueled engines and vehicles have and continue to be evaluated and developed. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce DPM emissions.

3.2.3 Regional

3.2.3.1 South Coast Air Quality Management District (SCAQMD)

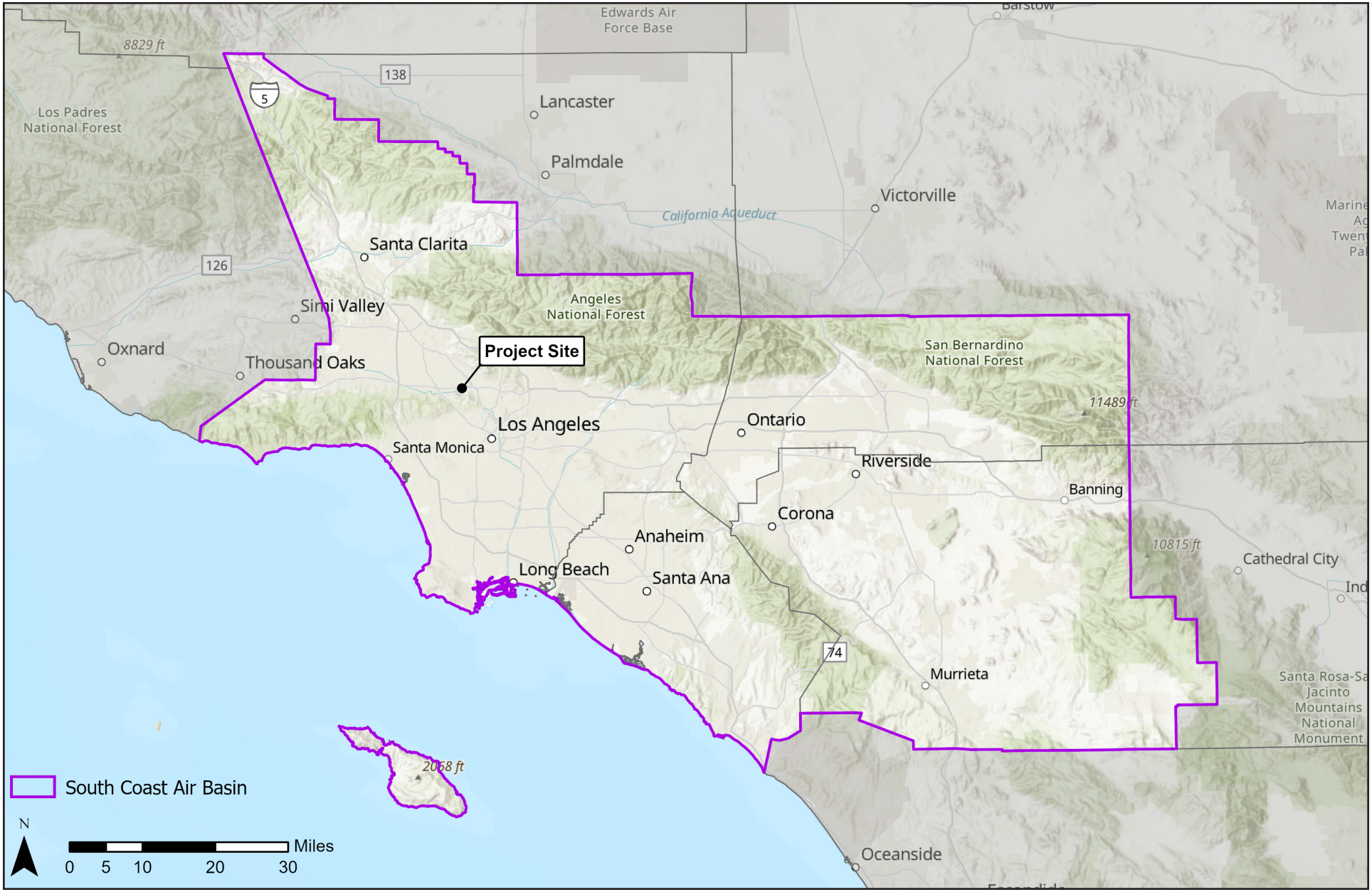
The SCAQMD is primarily responsible for planning, implementing, and enforcing air quality standards for the Air Basin. The Air Basin is a subregion within the western portion of the SCAQMD jurisdiction, as the SCAQMD also regulates portions of the Salton Sea Air Basin and Mojave Desert Air Basin within Riverside County. The Air Basin and proposed project location are shown on **Figure 3-1**.

3.2.3.2 Air Quality Management Plan (AQMP) and Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)

To meet the NAAQS and CAAQS, the SCAQMD has adopted a series of AQMPs, which serve as a regional blueprint to develop and implement an emission reduction strategy that will bring the area into attainment with the standards in a timely manner. The 2022 AQMP is focused on attaining the 2015 8-hour O_3 standard of 70 parts per billion. The 2022 AQMP builds upon measures already in place from previous AQMPs and includes a variety of additional strategies such as regulation, accelerated development of available clean technologies, incentives and other CAA measures to achieve this standard. The most significant air quality challenge in the Air Basin is to reduce NO_X emissions15 sufficiently to meet the 2015 O_3 standard which should lead to sufficient NO_X emission reductions. Since NO_X emissions also lead to the formation of $PM_{2.5}$, the NO_X reductions needed to meet the O_3 standards will likewise lead to improvement of $PM_{2.5}$ levels and attainment of $PM_{2.5}$ standards.[14]

SCAQMD's strategy to meet the NAAQS and CAAQS distributes the responsibility for emission reductions across federal, state, and local levels and industries. The 2022 AQMP is composed of stationary and mobile source emission reductions from traditional regulatory control measures, incentive-based programs, co-benefits from climate programs, mobile source strategies, and reductions from federal sources, which include aircraft, locomotives and ocean-going vessels. These strategies are to be implemented in partnership with the CARB and USEPA. The 2022 AQMP also incorporates the transportation strategy and transportation control measures from SCAG's 2020-2045 RTP/SCS Plan. SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, the economy, community development and the environment. SCAG coordinates with various air quality and transportation stakeholders in Southern California to ensure compliance with the federal and state air quality requirements.

[14]SCAQMD, *2022 AQMP*, December 2022.



Source: TAHA, 2022.

taha environmental planners
TAHA 2021-041

Headworks Site Development Project
Air Quality Impact Study

MICHAEL BAKER INTERNATIONAL

FIGURE 3-1

SOUTH COAST AIR BASIN

Pursuant to California Health and Safety Code Section 40460, SCAG has the responsibility of preparing and approving the portions of the AQMP relating to the regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. SCAG is required by law to ensure that transportation activities "conform" to, and are supportive of, the goals of regional and state air quality plans to attain the NAAQS. The RTP/SCS includes transportation programs, measures, and strategies generally designed to reduce vehicle miles traveled (VMT), which are contained in the AQMP. The SCAQMD combines its portion of the AQMP with those prepared by SCAG. The RTP/SCS and Transportation Control Measures, included as Appendix IV-C of the 2022 AQMP, are based on SCAG's 2020-2045 RTP/SCS.[15]

The 2022 AQMP forecasts the 2037 emissions inventories ''with growth'' based on SCAG's 2020-2045 RTP/SCS. The region is projected to see a 12 percent growth in population, 17 percent growth in housing units, 11 percent growth in employment, and 5 percent growth in VMT between 2018 and 2037. Despite regional growth in the past, air quality has improved substantially over the years, primarily due to the effects of air quality control programs at the local, State and federal levels.and emissions reductions. The most recent publication is the 2022 AQMP, which is intended to serve as a regional blueprint for achieving the federal air quality standards and healthful air. The AQMP includes strategies to ensure that attainment deadlines are met, that public health is protected to the maximum extent feasible, and that the region is not faced with burdensome sanctions if the air quality standards are not met by the established date.

i. SCAQMD Air Quality Guidance Documents

The SCAQMD published the *CEQA Air Quality Handbook* (approved by the AQMD Governing Board in 1993) to provide local governments with guidance for analyzing and mitigating project-specific air quality impacts.[16] The *CEQA Air Quality Handbook* provides standards, methodologies, and procedures for conducting air quality analyses. However, the SCAQMD is currently in the process of replacing the *CEQA Air Quality Handbook* with the *Air Quality Analysis Guidance Handbook*. While this process is underway, the SCAQMD has provided supplemental guidance on the SCAQMD website.[17]

The SCAQMD has also adopted land use planning guidelines in its *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*, which considers impacts to sensitive receptors from facilities that emit TAC emissions.[18] SCAQMD's siting distance recommendations are the same as those provided by CARB (e.g., a 500-foot siting distance for sensitive land uses proposed in proximity to freeways and high-traffic roads, and the same siting criteria for distribution centers and dry cleaning facilities). The SCAQMD's document introduces land use-related policies that rely on design and distance parameters to minimize emissions and lower potential health risk. SCAQMDs guidelines are voluntary initiatives recommended for consideration by local planning agencies.

The SCAQMD has published a guidance document called the *Final Localized Significance Threshold Methodology* for CEQA evaluations that is intended to provide guidance when evaluating the localized effects from mass emissions during construction or operation of a project.[19] The SCAQMD adopted additional guidance regarding $PM_{2.5}$ emissions in a document called *Final Methodology to Calculate Particulate Matter (PM)$_{2.5}$ and PM$_{2.5}$ Significance Thresholds*.[20] The latter document has

[15]SCAG, *2020-2045 RTP/SCS*, May 2020.
[16]SCAQMD, *CEQA Air Quality Handbook*, 1993.
[17]SCAQMD, *Air Quality Analysis Guidance*, http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook#, accessed January 18, 2024.
[18]SCAQMD, *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*, 2005.
[19]SCAQMD, *Final Localized Significance Threshold Methodology*, 2008.
[20]SCAQMD, *Final Methodology to Calculate Particulate Matter (PM)$_{2.5}$ and PM$_{2.5}$ Significance Thresholds*, 2006.

been incorporated by the SCAQMD into its CEQA significance thresholds and *Final Localized Significance Threshold Methodology*.

ii. SCAQMD Rules and Regulations

The SCAQMD has adopted several rules and regulations to regulate sources of air pollution in the Air Basin and to help achieve air quality standards for land use development projects, which include, but are not limited to the following:

Regulation IV – Prohibitions: This regulation sets forth the restrictions for visible emissions, odor nuisance, fugitive dust, various air emissions, fuel contaminants, start-up/shutdown exemptions and breakdown events. The following is a list of rules which apply to the proposed project:

- **Rule 401 – Visible Emissions:** This rule states that a person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade as that designated No. 1 on the Ringelmann Chart or of such opacity as to obscure an observer's view.
- **Rule 402 – Nuisance:** This rule states that 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.
- **Rule 403 – Fugitive Dust:** This rule requires projects to prevent, reduce or mitigate fugitive dust emissions from a site. Rule 403 restricts visible fugitive dust to the project property line, restricts the net PM_{10} emissions to less than 50 micrograms per cubic meter (µg/m3) and restricts the tracking out of bulk materials onto public roads. Additionally, projects must utilize one or more of the best available control measures (identified in the tables within the rule). Mitigation measures may include adding freeboard to haul vehicles, covering loose material on haul vehicles, watering, using chemical stabilizers and/or ceasing all activities. Finally, a contingency plan may be required if determined to be warranted by the USEPA.

Regulation XI – Source Specific Standards: Regulation XI sets emissions standards for specific sources. The following is a list of rules which may apply to the proposed project:

- **Rule 1113 – Architectural Coatings:** This rule requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.
- **Rule 1146.2 – Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters:** This rule requires manufacturers, distributors, retailers, re-furbishers, installers, and operators of new and existing units to reduce NO_X emissions from natural gas-fired water heaters, boilers, and process heaters as defined in this rule.

Regulation XIII – New Source Review (NSR): Regulation XIII sets requirements for preconstruction review required under both federal and State statutes for new and modified sources located in areas that do not meet the Clean Air Act standards ("non-attainment" areas). NSR applies to both individual permits and entire facilities. Any permit that has a net increase in emissions is required to apply Best Available Control Technology (BACT). Facilities with a net increase in emissions are required to offset the emission increase by use of Emission Reduction Credits (ERCs). The regulation provides for the application, eligibility, registration, use and transfer of ERCs. For low emitting facilities, the SCAQMD maintains an internal bank that can be used to provide the required offsets. In addition,

certain facilities are subject to provisions that require public notice and modeling analysis to determine the downwind impact prior to permit issuance.

Regulation XIV – Toxics and Other Non-Criteria Pollutants: Regulation XIV sets requirements for new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants or other non-criteria pollutants. The following is a list of rules which may apply to the Project:

- **Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities:** This rule requires owners and operators of any demolition or renovation activity and the associated disturbance of asbestos-containing materials, any asbestos storage facility, or any active waste disposal site to implement work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials.

3.2.4 Local

3.2.4.1 City of Los Angeles General Plan

i. Air Quality Element

Local jurisdictions, such as the City, have the authority and responsibility to reduce air pollution through their land use decision-making authority. Specifically, the City is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. In general, the City of Los Angeles' General Plan (including the Framework, Air Quality, Mobility 2035, and Health and Wellness Elements) and the City of Los Angeles' Green New Deal (Sustainable pLAn 2019) contain policies and programs for the protection of the environment and health through improved air quality. These serve to provide additional critical guidance for the betterment of public health for the region and City.

The most directly-related of those plans, the City's General Plan Air Quality Element, was adopted on November 24, 1992, and sets forth the goals, objectives, and policies which guide the City in its implementation of its air quality improvement programs and strategies. A number of these goals, objectives, and policies are relevant to land use development, and relate to traffic mobility, minimizing particulate emissions from construction activities, discouraging single-occupancy vehicle trips, managing traffic congestion during peak hours, and increasing energy efficiency in City facilities and private developments.

The Air Quality Element establishes six goals:

- Good air quality in an environment of continued population growth and healthy economic structure;
- Less reliance on single-occupant vehicles with fewer commute and non-work trips;
- Efficient management of transportation facilities and system infrastructure using cost-effective system management and innovative demand-management techniques;
- Minimal impacts of existing land use patterns and future land use development on air quality by addressing the relationship between land use, transportation and air quality;
- Energy efficiency through land use and transportation planning, the use of renewable resources and less-polluting fuels and the implementation of conservation measures including passive measures such as site orientation and tree planting; and
- Citizen awareness of the linkages between personal behavior and air pollution and participation in efforts to reduce air pollution.

The City is also responsible for the implementation of transportation control measures as outlined in the AQMP. Through capital improvement programs, the City can fund infrastructure that contributes to improved air quality by requiring such improvements as bus turnouts as appropriate, installation of energy-efficient streetlights, and synchronization of traffic signals. In accordance with CEQA requirements and the CEQA review process, the City assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation measures.

ii. Plan for a Healthy Los Angeles

The Plan for a Healthy Los Angeles, adopted by the City Council on March 31, 2015, lays the foundation to create healthier communities for all residents in the City. As an element of the General Plan, it provides high-level policy vision, along with measurable objectives and implementation programs, to elevate health as a priority for the City's future growth and development. With a focus on public health and safety, the Plan for a Healthy Los Angeles provides a roadmap for addressing the most basic and essential quality-of-life issues: safe neighborhoods, a clean environment (i.e., improved ambient and indoor air quality), the opportunity to thrive, and access to health services, affordable housing, and healthy and sustainably produced food.

3.3 EXISTING SETTING

3.3.1 Regional Air Quality

The Southern California region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the Air Basin is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors, such as wind, sunlight, temperature, humidity, rainfall, and topography, affect the accumulation and dispersion of pollutants throughout the Air Basin, making it an area of high pollution potential.

The greatest air pollution throughout the Air Basin occurs from June through September. This condition is generally attributed to the large amount of pollutant emissions, light winds, and shallow vertical atmospheric mixing. This frequently reduces pollutant dispersion, thus causing elevated air pollution levels. Pollutant concentrations in the Air Basin vary with location, season, and time of day. O_3 concentrations, for example, tend to be lower along the coast, higher in the near inland valleys, and lower in the far inland areas of the Air Basin and adjacent desert. Over the past 30 years, substantial progress has been made in reducing air pollution levels in Southern California. However, the Air Basin still fails to meet the national standards for O_3 and $PM_{2.5}$. In addition, Los Angeles County still fails to meet the national standard for lead.

SCAQMD has released the Multiple Air Toxics Exposure Study (MATES-V). The MATES-V Study was aimed at estimating the cancer risk from toxic air emissions throughout the Air Basin by conducting a comprehensive monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to fully characterize health risks for those living in the Air Basin. The MATES-V Study concluded that the average carcinogenic risk from air pollution in the Air Basin is approximately 455 in one million over a 70-year duration. Mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributors. The majority of the risk is attributed to diesel particulate emissions, followed by other toxics associated with mobile sources (including benzene, butadiene, and carbonyls), and then stationary sources (which include large industrial operations,

such as refineries and metal processing facilities, as well as smaller businesses, such as gas stations and chrome plating).[21]

As part of the MATES-V Study, SCAQMD prepared a series of maps that shows regional trends in estimated outdoor inhalation cancer risk from toxic emissions, as part of an ongoing effort to provide insight into relative risks. The maps' estimates represent the number of potential cancers per million people associated with a lifetime of breathing air toxics (24 hours per day outdoors for 70 years) in parts of the area. The MATES-V map is the most recently available map to represent existing conditions near the proposed project.

3.3.2 Local Air Quality

Air pollutant emissions are generated in the local vicinity by stationary and area-wide sources, such as commercial and industrial activity, space and water heating, landscape maintenance, consumer products, and mobile sources primarily consisting of automobile traffic. Motor vehicles are the primary source of pollutants in the local vicinity.

3.3.2.1 Existing Pollutant Levels at Nearby Monitoring Stations

SCAQMD maintains a network of air quality monitoring stations located throughout the Air Basin and has divided the Air Basin into 38 source receptor areas (SRAs) in which 31 monitoring stations operate. Each monitoring station measures concentrations of air pollutants that are considered representative of the air quality in the respective SRA. The proposed project is located in SRA 7 (East San Fernando Valley) on the boundary with SRA 1 (Central LA County). The SRA 7 monitoring station was discontinued and taken offline in 2004, and the closest active monitoring station is the SRA 1 Los Angeles-North Main Street (LA-NMS) monitoring station located at 1630 North Main Street in the City of Los Angeles.[22] **Figure 3-1** includes the location of the monitoring station. **Table 3-2** on the ensuing page displays measured pollutant concentrations at the two monitoring stations, the State and federal standards, and the frequency of concentrations recorded above the standards during the three-year period from 2020 to 2022.[23] Neither SCAQMD nor CARB has posted audited and certified air quality data from 2023. The SCAQMD has suspended monitoring of SO_2 and CO at most locations throughout the Air Basin due to continued demonstration of attainment in recent years. As shown in **Table 3-2**, concentrations of O_3, PM_{10}, and $PM_{2.5}$ exceeded applicable standards at various times throughout the most recent three-year period. Particulate matter concentrations are substantially lower along the coastal region than in the urban center of Los Angeles. The concentrations measured at these monitors are consistent with the attainment status designations for the Air Basin.

3.3.2.2 Existing Health Risk in the Surrounding Area

Based on the MATES-V model, the estimated background carcinogenic risk near the proposed project is approximately 489 in one million.[24] The cancer risk is predominantly attributed to sources of diesel particulate matter (e.g., Highway 101).

[21]SCAQMD, *Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES V) Final Report*, August 2021.
[22]CARB, *$PM_{2.5}$ Monitoring Sites in California,* Appendix A, https://www.arb.ca.gov/aqd/pm25/pmfmon.htm, accessed on January 18, 2024.
[23]CARB, *Air Quality Data Statistics, Top 4 Summary*, http://www.arb.ca.gov/adam/topfour/topfour1.php, accessed on January 18, 2024.
[24] SCAQMD, *Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES-V), MATES-V Interactive Carcinogenicity Map*, 2021.

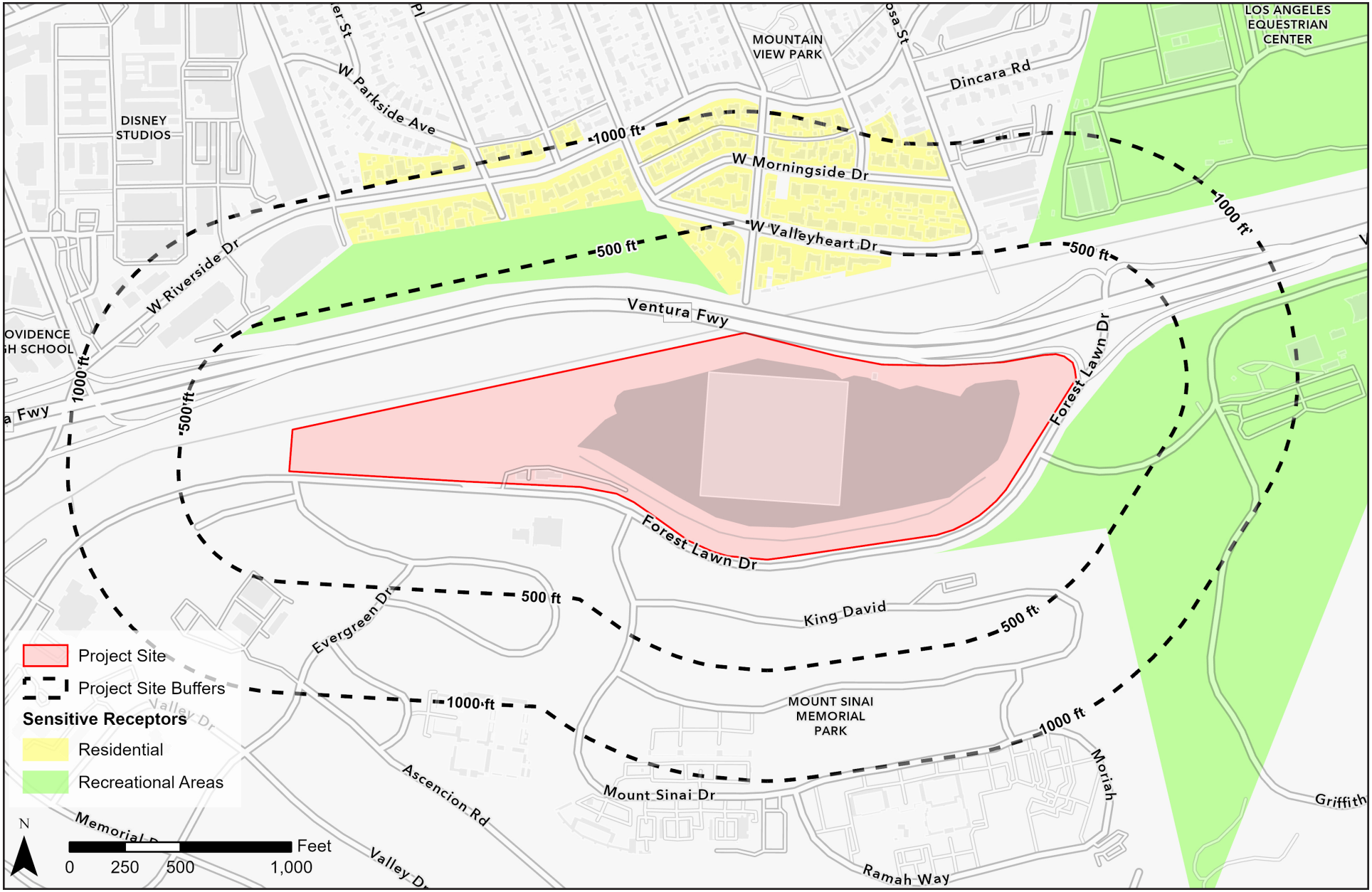
TABLE 3-2: MONITORED AMBIENT AIR QUALITY DATA

Pollutant	Data Statistics and Air Quality Standards	Maximum Annual Concentrations and Frequencies of Exceeded Standards		
		2020	2021	2022
Ozone (O_3)	Maximum 1-hr Concentration (ppm)	0.185	0.099	0.138
	Days > 0.09 ppm (State 1-hr standard)	22	1	1
	Maximum 8-hr Concentration (ppm)	0.118	0.085	0.090
	Days > 0.070 ppm (State 8-hr standard)	14	2	6
	Days > 0.070 ppm (National 8-hr standard)	22	2	6
Nitrogen Dioxide (NO_2)	Maximum 1-hr Concentration (ppm)	0.075	0.078	0.751
	Days > 0.18 ppm (State 1-hr standard)	0	0	0
	Days > 0.100 ppm (National 1-hr standard)	0	0	0
Carbon Monoxide (CO)	Maximum 1-hr Concentration (ppm)	1.9	Not Monitored	Not Monitored
	Days > 20.0 ppm (State 1-hr standard)	0		
	Days > 35 ppm (National 1-hr standard)	0		
	Maximum 8-hr Concentration (ppm)	1.5		
	Days > 9.0 ppm (State 1-hr standard)	0		
	Days > 9 ppm (National 1-hr standard)	0		
Respirable Particulate Matter (PM_{10})	Maximum 24-hr Concentration (µg/m^3)	77	139	44
	Days > 50 µg/m^3 (State 24-hr standard)	24	17	0
	Days > 150 µg/m^3 (Federal 24-hr standard)	0	0	0
	Annual Concentration (µg/m^3)	23	31	24
	Exceed State Annual Standard (20 µg/m^3)?	Yes	Yes	Yes
Fine Particulate Matter ($PM_{2.5}$)	Maximum 24-hr Concentration (µg/m^3)	47	61	34
	Days > 35 µg/m^3 (National 24-hr standard)	2	13	0
	Annual Concentration (µg/m^3)	12	15	11
	Exceed State Annual Standard (12 µg/m^3)?	Yes	Yes	No
	Exceed Federal Annual Standard (12.0 µg/m^3)?	Yes	Yes	No

SOURCE: CARB, *Air Quality Data Statistics*, *Top 4 Summary*, http://www.arb.ca.gov/adam/topfour/topfour1.php, accessed on January 18, 2024.

3.3.3 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The CARB has identified the following groups who are most likely to be affected by air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors are land uses where populations that are more susceptible to the adverse effects of air pollution exposure are likely to spend considerable amounts of time. The SCAQMD and CARB guidance recommend that sensitive receptor locations to be taken into consideration include residences, schools, playgrounds, child-care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Sensitive receptors, as shown in **Figure 3-2**, include residences located approximately 325 feet to the north and the Los Angeles Equestrian Center located approximately 1,150 feet to the northeast.



Source: TAHA, 2022.

Headworks Site Development Project
Air Quality Impact Study

TAHA 2021-041

MICHAEL BAKER INTERNATIONAL

FIGURE 3-2

SENSITIVE RECEPTORS

Figure 3-2 Sensitive Receptors locations

3.4 PROJECT IMPACTS

This section describes the applicable thresholds of significance and the methodological approach and analyzes potential impacts related to air quality.

3.4.1 Thresholds of Significance

This Assessment was undertaken to determine whether construction or operation of the proposed project would have the potential to result in significant environmental impacts related to air quality in the context of the Appendix G Environmental Checklist criteria of the CEQA Statute and Guidelines. Implementation of the proposed project may result in a significant environmental impact related to air quality if the proposed project would:

[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 nonattainment under an applicable federal or state ambient air quality standard;

[c] Expose sensitive receptors to substantial pollutant concentrations; and/or

[d] Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

For this analysis, the Appendix G Thresholds listed above are relied upon. The analysis utilizes factors and considerations identified in the City's *L.A. CEQA Thresholds Guide*, as appropriate, to assist in answering the Appendix G Threshold Questions. The *L.A. CEQA Thresholds Guide* identifies the following factors to evaluate air quality impacts:

(1) Construction

a. Combustion Emissions from Construction Equipment

- Type, number of pieces and daily usage for each type of equipment;
- Estimated fuel usage and type of fuel (diesel, natural gas) for each type of equipment; and
- Emission factors for each type of equipment.

b. Fugitive Dust – Grading, Excavation, and Hauling

- Amount of soil to be disturbed on-site or moved off-site;
- Emission factors for disturbed soil;
- Duration of grading, excavation, and hauling activities;
- Type and number of pieces of equipment to be used; and,
- Projected haul route.

c. Fugitive Dust – Heavy-Duty Equipment Travel on Unpaved Roads

- Length and type of road;
- Type, number of pieces, weight and usage of equipment; and
- Type of soil.

d. Other Mobile Source Emissions

- Number and average length of construction worker trips per day; and
- Duration of construction activities.

(2) Operation

- Operational emissions exceed 10 tons per year of volatile organic gases or any of the daily thresholds presented below (as reproduced from the SCAQMD CEQA Air Quality Handbook):
  - ROG: 55 pounds per day
  - NOX: 55 pounds per day
  - CO: 550 pounds per day
  - PM_{10}: 150 pounds per day
  - SO_X: 150 pounds per day
- Either of the following conditions would occur at an intersection or roadway within one-quarter mile of a sensitive receptor:
  - The proposed project causes or contributes to an exceedance of the California 1-hour or 8-hour CO standards of 20 or nine parts per million (ppm), respectively; or
  - The incremental increase due to the project is equal to or greater than one ppm for the California 1-hour CO standard, or 0.45 ppm for the 8-hour CO standard.
- The project creates an objectionable odor at the nearest sensitive receptor.

(3) Toxic Air Contaminants

The determination of significance shall be made on a case-by-case basis considering the following factors:

- The regulatory framework for the toxic materials(s) and process(es) involved;
- The proximity of the TACs to sensitive receptors;
- The quantity, volume, and toxicity of the contaminants expected to be emitted;
- The likelihood and potential level of exposure; and,
- The degree to which project design will reduce the risk of exposure.

(4) SCAQMD CEQA Air Quality Handbook

To assist in addressing the Appendix G Environmental Checklist Threshold questions and factors identified in the City's *L.A. CEQA Thresholds Guide* for purposes of this analysis, the City of Los Angeles utilizes the thresholds of significance contained in SCAQMD's *CEQA Air Quality Handbook*, as identified below in **Table 3-3**, to assess the significance of the estimated air quality impacts.

TABLE 3-3: SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS		
MASS DAILY THRESHOLDS/a/		
Pollutant	**Construction (lbs./day)/b/**	**Operation (lbs./day)/c/**
Volatile Organic Compounds (VOC)	75	55
Nitrogen Oxides (NO_X)	100	55
Carbon Monoxide (CO)	550	550
Sulfur Oxides (SO_X)	150	150
Particulates (PM_{10})	150	150
Fine Particulates ($PM_{2.5}$)	55	55
Lead (Pb)	3	3
TOXIC AIR CONTAMINANTS (TACS), ODOR, AND GHG THRESHOLDS		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million (1×10^{-5}) Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million (1×10^{-4}) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS/d/		
NO_2 1-hour average Annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour average Annual arithmetic mean	 10.4 µg/m^3 (construction)/e/ & 2.5 µg/m^3 (operation) 1.0 µg/m^3	
$PM_{2.5}$ 24-hour average	 10.4 µg/m^3 (construction) & 2.5 µg/m^3 (operation)	
SO_2 1-hour average 24-hour average	 0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	 25 µg/m^3 (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day average Rolling 3-month average	 1.5 µg/m^3 (state) 0.15 µg/m^3 (federal)	

Note: lbs./day = pounds per day; ppm = parts per million; µg/m^3 = micrograms per cubic meter
/a/ SCAQMD, *CEQA Handbook* (SCAQMD, 1993).
/b/ Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).
/c/ For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.
/d/ Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
/e/ Ambient air quality threshold based on SCAQMD Rule 403.
SOURCE: SCAQMD, 2024.

(a) Construction

Based on the criteria set forth in SCAQMD's *CEQA Air Quality Handbook*, the proposed project would have a significant impact if the estimated construction emissions would cause any of the following to occur:[25]

- Emissions from direct and indirect sources would exceed any of the SCAQMD significance threshold levels identified in **Table 3-3**;
- Maximum on-site daily localized emissions exceed the localized significance thresholds (LST), resulting in predicted ambient concentrations in the vicinity of the project site greater than the most stringent ambient air quality standards for CO (20 ppm [23,000 µgm/^{3}] over a 1-hour period or 9.0 ppm [10,350 µg/m^3] averaged over an 8-hour period) and NO_2 (0.18 ppm [338.4 µg/m^3] over a 1-hour period, 0.1 ppm [188 µg/m^3] over a three-year average of the 98th percentile of the daily maximum 1-hour average, or 0.03 ppm [56.4 µg/m^3] averaged over an annual period); and
- Maximum on-site localized PM_{10} or $PM_{2.5}$ emissions during construction exceed the applicable LSTs, resulting in predicted ambient concentrations in the vicinity of the project site to exceed the incremental 24-hour threshold of 10.4 µg/m^3 or 1.0 µg/m^3 PM_{10} averaged over an annual period.

(b) Operation

Based on the criteria set forth in SCAQMD's *CEQA Air Quality Handbook*, the proposed project would have a significant impact if the estimated operational emissions would cause any of the following to occur:[26]

- Emissions from direct and indirect sources would exceed any of the SCAQMD significance threshold levels identified in **Table 3-3**;
- Maximum on-site daily localized emissions exceed the LST, resulting in predicted ambient concentrations in the vicinity of the project site greater than the most stringent ambient air quality standards for CO (20 ppm over a 1-hour period or 9.0 ppm averaged over an 8-hour period) and NO_2 (0.18 ppm over a 1-hour period, 0.1 ppm over a 3-year average of the 98th percentile of the daily maximum 1-hour average, or 0.03 ppm averaged over an annual period);
- Maximum on-site localized operational PM_{10} and $PM_{2.5}$ emissions exceed the incremental 24-hour threshold of 2.5 µg/m^3 or 1.0 µg/m^3 PM_{10} averaged over an annual period;
- The project causes or contributes to an exceedance of the California 1-hour or 8-hour CO standards of 20 or 9.0 ppm, respectively; or
- The project creates an odor nuisance pursuant to SCAQMD Rule 402 (i.e., objectionable odor at the nearest sensitive receptor).

(c) Toxic Air Contaminants

Based on the criteria set forth in SCAQMD's *CEQA Air Quality Handbook*, the proposed project would have a significant TAC impact if:

- The proposed project emits carcinogenic or TACs that exceed the maximum incremental chronic and acute cancer risk as provided in **Table 3-3**.

[25]SCAQMD, *CEQA Air Quality Handbook*, 1993.
[26]*Ibid.*

In assessing impacts related to TACs in this section, the City will use Appendix G Threshold [c] as the threshold of significance. The criteria identified above from the *L.A. CEQA Thresholds Guide* will be used where applicable and relevant to assist in analyzing the Appendix G thresholds. In addition, the following criteria set forth in SCAQMD's *CEQA Air Quality Handbook* serve as quantitative air quality standards to be used to evaluate project impacts under Appendix G thresholds.

- The proposed project results in the exposure of sensitive receptors to carcinogenic or toxic air contaminants that exceed the maximum incremental cancer risk of 10 per million (1×10^{-5}) or an acute or chronic hazard index of 1.0. For projects with a maximum incremental cancer risk between one per million and 10 per million, a project would result in a significant impact if the cancer burden exceeded 0.5 excess cancer cases.

(d) Consistency with Applicable Air Quality Plans

Section 15125 of the State CEQA Guidelines requires an analysis of project consistency with applicable governmental plans and policies. In accordance with SCAQMD's *CEQA Air Quality Handbook*, the following criteria are used to evaluate consistency with SCAQMD's AQMP:

- Criterion 1: Whether the proposed project will:
  1. Result in an increase in the frequency or severity of existing air quality violations;
  2. Cause or contribute to new air quality violations; and/or,
  3. Delay timely attainment of air quality standards or interim emission reductions specified in the AQMP.
- Criterion 2: Whether the proposed project will exceed the assumptions in the AQMP in the horizon year or increments based on the year of project build-out and phase; for residential projects:
  1. Is the proposed project consistent with population, housing, and employment growth projections upon which the AQMP regional emission inventory forecast is based?
  2. Does the proposed project incorporate mitigation measures to reduce potentially significant impacts?
  3. Is the proposed project consistent with AQMP land use policies and control measures?

The proposed project impacts with respect to these criteria are discussed to assess the consistency with the SCAQMD's AQMP. In addition, consistency with the City of Los Angeles General Plan Air Quality Element is also discussed.

(e) Cumulative Impacts

Based on SCAQMD guidance, individual CEQA projects that exceed SCAQMD's recommended daily thresholds for project-specific impacts would also cause a cumulatively considerable increase in emissions for those pollutants that the Air Basin is currently designated as non-attainment of an air quality standard. As discussed in SCAQMD's *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution*:[27]

> *Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.*

[27]SCAQMD, *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution,* August 2003.

Furthermore,

> *As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR… 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 thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.*

In accordance with the cumulative impact assessment approach promulgated by the SCAQMD, the cumulative analysis for considers emissions that would be generated during construction and operation in the context of the CEQA project-specific thresholds of significance presented in **Table 3-3**.

3.4.2 Methodology

This analysis focuses on the potential changes in the air quality environment due to implementation of the proposed project. Air pollutant emissions would result from both construction and operational activities. Specific methodologies used to evaluate these emissions are discussed below.

Although SCAQMD is responsible for regional air quality planning efforts, it does not have the authority to directly regulate the air quality issues associated with new development projects within the Air Basin. Instead, SCAQMD published the CEQA Air Quality Handbook in November 1993 to assist lead agencies, as well as consultants, project proponents, and other interested parties, in evaluating potential air quality impacts of projects proposed in the Air Basin. The CEQA Air Quality Handbook provides standards, methodologies, and procedures for conducting air quality analyses in EIRs and was used extensively in the preparation of this analysis. SCAQMD is currently in the process of replacing the CEQA Air Quality Handbook with the Air Quality Analysis Guidance Handbook.[28]

In order to assist the CEQA practitioner in conducting an air quality analysis in the interim while the replacement Air Quality Analysis Guidance Handbook is being prepared, supplemental guidance/information is provided on the SCAQMD website and includes:[29] (1) Emission Factors (EMFAC) model on-road vehicle emission factors; (2) background CO concentrations; (3) localized significance thresholds; (4) mitigation measures and control efficiencies; (5) mobile source toxics analysis; (6) off-road mobile source emission factors; (7) $PM_{2.5}$ significance thresholds and calculation methodology; and (8) updated SCAQMD Air Quality Significance Thresholds. SCAQMD also recommends using approved models to calculate emissions from land use projects, such as the California Emissions Estimator Model (CalEEMod). These recommendations were followed in the preparation of this analysis.

SCAQMD has also adopted land use planning guidelines in the *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*, May 6, 2005, which considers impacts to sensitive receptors from facilities that emit TAC emissions.[30] SCAQMD's siting distance recommendations are the same as those provided by CARB (e.g., a 500-foot siting distance for sensitive land uses proposed in proximity of freeways and high-traffic roads, and the same siting criteria for distribution centers and dry cleaning facilities). SCAQMD's document introduces land use-related policies that rely on design and distance parameters to minimize emissions and lower

[28]SCAQMD, *Air Quality Analysis Handbook*, www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook, accessed January 18, 2024.
[29]*Ibid*.
[30]SCAQMD, *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*, May 2005.

potential health risk. SCAQMD's guidelines are voluntary initiatives recommended for consideration by local planning agencies.

The assessment of potential impacts to regional and local air quality as a result of proposed project implementation addresses both temporary emissions associated with construction activities as well as long-term operational emissions. Emissions are generally quantified on a daily basis and expressed in terms of pounds per day (lbs./day). Detailed emissions modeling files can be found in the Appendix. Specific methodologies used to evaluate these emissions are discussed below.

Construction

a. Regional Emissions

Daily regional emissions during construction are estimated by assuming a conservative estimate of construction activities (i.e., assuming all construction occurs at the earliest feasible date) and applying mobile source and fugitive dust emissions factors. The emissions are estimated using CalEEMod (Version 2022.1.1.21) software, an emissions inventory software program recommended by SCAQMD.[31] The CalEEMod model was developed for the California Air Pollution Control Officers Association (CAPCOA) in collaboration with SCAQMD and received input from other California air districts and is currently used by numerous lead agencies in the Los Angeles area and within the state for quantifying the emissions associated with development projects undergoing environmental review, including by the City of Los Angeles. CalEEMod is based on outputs from Off-Road Emissions Inventory Program model (OFFROAD) and EMission FACtor model (EMFAC), which are emissions estimation models developed by CARB, and used to calculate emissions from construction activities, including off- and on-road vehicles, respectively. CalEEMod also relies upon known emissions data associated with certain activities or equipment (often referred to as "default" data, values or factors) that can be used if site-specific information is not available.[32] CalEEMod contains default values to use in each specific local air district region. Appropriate statewide default values can be used if regional default values are not defined.

The input values used in this analysis were adjusted to be project-specific based on equipment types and the construction schedule. These values were then applied to the construction phasing assumptions used in the criteria pollutant analysis to generate criteria pollutant emissions values for each construction activity. Detailed construction equipment lists, construction scheduling, and emissions calculations are provided in the **Appendix**.

b. Localized Emissions

The localized effects from the on-site portion of daily emissions were evaluated at sensitive receptor locations potentially impacted by the proposed project according to SCAQMD's LST methodology, which uses on-site mass emissions rate look-up tables and project-specific modeling, where appropriate, to assess whether local emissions would exceed SCAQMD's significance thresholds, as described above.[33] SCAQMD provides LSTs applicable to the following criteria pollutants: NO_X, CO, PM_{10}, and $PM_{2.5}$.[34] SCAQMD does not provide an LST for SO_2 since land use development projects typically result in negligible construction and long-term operation emissions of this pollutant. Since VOCs are not a criteria pollutant, there is no ambient standard or SCAQMD LST for VOCs.

[31]CAPCOA, *California Emissions Estimator Model Version 2022.1.1.21 User's Guide*, April 2022.
[32]*Ibid.*
[33]SCAQMD, *Final Localized Significance Threshold Methodology*, July 2008.
[34]SCAQMD, *Final Localized Significance Threshold Methodology: Appendix C – Localized Significance Threshold Screening Tables*, October 2009.

Due to the role VOCs play in O_3 formation, it is classified as a precursor pollutant, and only a regional emissions threshold has been established.

LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or State ambient air quality standard and are developed based on the ambient concentrations of that pollutant for each SRA and distance to the nearest sensitive receptor. SCAQMD developed mass rate look-up tables for each source receptor area and to determine whether or not a project may generate significant adverse localized air quality impacts. The appropriate LST values were selected using the SCAQMD guidance document *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*.[35] The proposed project is located in SRA 7 and the maximum active construction area is anticipated to be two acres. As identified above, sensitive receptors are within approximately 165 feet of the proposed project.

c. Emissions Calculations

Construction activities would generate emissions from off-road equipment usage, on-road vehicle travel (truck hauling, vendor deliveries, and workers commuting), architectural coating, and paving. Each of these source types is discussed in more detail below. Construction emissions were calculated using the SCAQMD recommended CalEEMod (Version 2022.1.1.21).

Table 3-5 provides an overview of the sources of air pollutant emissions that are accounted for in CalEEMod during construction. CalEEMod default values were used for equipment and vehicle emission factors, equipment load factors, and vehicle trip lengths. Maximum daily emissions calculated in CalEEMod represent conservative estimates of the worst-case daily emissions in each phase of construction based on continuous equipment activity.

TABLE 3-4: CONSTRUCTION EMISSIONS SOURCES

Phase(s)	Activity	Source(s)	Pollutants
All Phases	Off-Road Equipment Use	Engine Exhaust	VOC, NO_X, CO, SO_X, PM_{10}, $PM_{2.5}$
All Phases	On-Road Vehicle Trips	Engine Exhaust	VOC, NO_X, CO, SO_X, PM_{10}, $PM_{2.5}$
All Phases	On-Road Vehicle Trips	Engine Evaporative Losses	VOC
All Phases	On-Road Vehicle Trips	Brake & Tire Wear	PM_{10}, $PM_{2.5}$
All Phases	On-Road Vehicle Trips	Re-Entrained Road Dust	PM_{10}, $PM_{2.5}$
Site Clearing, Grading	Truck Loading	Fugitive Dust	PM_{10}, $PM_{2.5}$
Site Clearing, Grading	Ground Disturbance	Fugitive Dust (Dozers/Graders)	PM_{10}, $PM_{2.5}$
Building Construction	Architectural Coating	Off-Gassing (Evaporation)	VOC
Building Construction	Paving	Off-Gassing (Evaporation)	VOC

SOURCE: CAPCOA, 2022.

[35]SCAQMD, *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*, 2013.

Construction Equipment Exhaust Emissions

Since the majority of off-road equipment used for construction projects are diesel-fueled, CalEEMod assumes all of the equipment operates on diesel fuel. CalEEMod employs the following equation to estimate daily emissions of VOC, NO_X, CO, SO_2, PM_{10}, and $PM_{2.5}$ from diesel-fueled off-road construction equipment exhaust:

$$Emission_{DieselEx}[grams] = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$$

Where:

EF_i	=	Emission factor in grams per horsepower-hour [g/hp-hr.] from OFFROAD2017
Pop_i	=	Population, or number of pieces of equipment
$AvgHP_i$	=	Maximum rated average horsepower [HP]
$Load_i$	=	Load factor (average ratio of actual output to the maximum output, unitless)
$Activity_i$	=	Daily hours of operation
I	=	Equipment type

The OFFROAD model is the statewide emissions inventory for off-road equipment compiled by the CARB; factors from OFFROAD are built into the CalEEMod software based on the project location. CalEEMod provides options for specifying equipment types, horsepower ratings, load factors, and operational hours per day during each activity. Construction equipment inventories were provided by the Applicant for ease phase of construction, and default average equipment horsepower and default load factors derived from the statewide inventory for each type of equipment were relied upon to estimate daily emissions. Daily emissions from construction equipment during each phase were estimated using the equation above and converted from grams to pounds dividing by 453.592 grams per pound.

CalEEMod also estimates fugitive dust emissions associated with construction equipment use in grading activities, demolition debris truck loading, and excavated soil truck loading. As recommended by the SCAQMD, the fugitive dust emissions (PM_{10} and $PM_{2.5}$) from grading and leveling activities are calculating using the methodology described in USEPA AP-42. The CalEEMod software assumes that graders and bulldozers will disturb 0.5 acres per day of ground cover during eight hours of use. Detailed equations used to estimate fugitive dust emissions associated with various equipment types—as well as demolition dust and haul truck loading of debris and excavated soil—can be found in Section 4.3 and Section 4.4 of the technical calculation appendix to the CalEEMod User's Guide.[36]

On-Road Vehicle Trips Mobile Source Emissions

Additionally, construction activities generate air pollutant emissions from on-road vehicle exhaust and evaporative and dust emissions from personal vehicles for worker commuting, vendor deliveries of equipment and materials, and trucks for soil and debris hauling. These emissions are based on the number of trips and the VMT, along with emission factors from EMFAC2020, the CARB on-road mobile source emissions model. CalEEMod estimates running exhaust emissions, running evaporative loss VOC emissions, and PM emissions from tire and brake wear as well as entrained

[36]California Air Pollution Control Officers Association (CAPCOA), *California Emissions Estimator Model (CalEEMod) Version 2022.1.1.21 User's Guide Appendix A Calculation Details for CalEEMod*, April 2022.

road dust. Running exhaust emissions of VOC, NO_X, CO, SO_2, PM_{10}, and $PM_{2.5}$ are estimated in CalEEMod using the following equation:

$$Emissions_{Pollutant} = VMT \times EF_{running,pollutant}$$

Where:

$Emissions_{pollutant}$	=	Emissions from vehicle running for each pollutant [grams]
VMT	=	Vehicle miles traveled
$EF_{running,pollutant}$	=	Emission factor for running exhaust emissions in grams per mile [g/mi]

The CalEEMod program contains default trip lengths for workers, vendors, and material hauling based on regional survey data. The EMFAC2020 mobile source emission rates are built into the program as well. Running exhaust is the primary mobile source of VOC, NO_X, CO, and SO_2 emissions associated with vehicle travel. Vehicle trip PM_{10} and $PM_{2.5}$ emissions are predominantly attributed to particulate matter generated by degradation of brakes and tires on the road surface, with running exhaust being a secondary contributor to total mobile source emissions. Detailed equations used for calculating PM_{10} and $PM_{2.5}$ emissions associated with brake and tire wear—as well as re-entrained dust from paved road travel—can be found in the CalEEMod technical appendix.[37]

Architectural Coating Emissions

CalEEMod estimates emissions of VOC off-gassing from the application of architectural surface coatings containing solvents. The CalEEMod program uses the following equation to estimate evaporative emissions during architectural coating activities:

$$Emissions_{VOC}[lbs] = EF_{VOC,coating} \times A_{Paint} \times F$$

Where:

$Emissions_{VOC}$	=	Emissions of VOC in pounds [lbs]
$EF_{VOC\text{-}coating}$	=	Emission factor in pounds VOC per square foot [lbs/sq. ft]
A_{Paint}	=	Building Surface Area [square footage]
F	=	Fraction of surface area [%] CalEEMod Default Values: Interior Surfaces = 75% of Building Surface Area Exterior Shell = 25% of Building Surface Area Parking Surfaces = 6% of Parking Area

CalEEMod assumes the total surface area for painting equals 2.7 times the building floor area square footage for residential uses and twice the building floor area square footage for non-residential uses. Based on preliminary design renderings, it is anticipated that no more than approximately 25 percent of the exterior surface area and 75 percent of the interior surface area will require the application of architectural coatings. A majority of the materials for building construction will arrive with coatings

[37] *Ibid.*

pre-applied. CalEEMod assigns the appropriate surface coating emission factor ($EF_{VOC\text{-}coating}$) to interior and exterior surfaces and parking surfaces. CalEEMod calculates the surface coating emission factor using the following equation:

$$EF_{VOC,coating}\left[{}^{lb}/_{sq.ft}\right] = \frac{C_{VOC}}{453.592\ {}^{g}/_{lb}} \times \frac{3.785\ {}^{L}/_{Gal}}{180\ sq.\ ft}$$

Where:

$EF_{VOC\text{-}coating}$	=	Emission factor in pounds VOC per square foot [lbs./sq-ft]
C_{VOC}	=	VOC content of coating in grams per liter [g/L]; SCAQMD Limit 50 g/L

The emission factors for coating categories are calculated using the equation above based on default VOC content provided by the air districts or CARB's statewide limits. Project-specific VOC contents for architectural coatings can be entered into CalEEMod if included as a design feature. The SCAQMD has a building envelope coating limit of 50 g/L for all new structures within its jurisdiction beginning in 2019. Construction would only utilize building envelope coatings with a VOC content of less than or equal to 50 g/L for all structural applications in accordance with SCAQMD Rule 1113 (Architectural Coatings).

Paving Emissions

CalEEMod estimates VOC off-gassing emissions from asphalt paving of parking lots using the following equation based on the acreage of the parking lot entered on the land use input screen:

$$E_{VOC,paving}\ [lbs] = EF_{paving} \times A_{parking}$$

Where:

$E_{VOC\text{-}paving}$	=	Emissions of VOC in pounds
EF_{paving}	=	Emission factor in pounds per acre [lbs./acre]; Default = 2.62 lbs./acre
$A_{parking}$	=	Area of the parking lot [acres]

Operations

a. Regional Emissions

Analysis of the proposed project impact on regional air quality during long-term operations (i.e., after construction is complete) takes into consideration four types of sources: (1) area; (2) energy; (3) mobile; and (4) stationary. Area source emissions are generated by, among other things, landscape equipment, fireplaces, and the use of consumer products. Energy source emissions are generated as a result of activities in buildings for which natural gas is used (e.g., natural gas for heat or cooking). Mobile source emissions are generated by the increase in motor vehicle trips. Stationary source emissions are generated from proposed emergency generators during routine maintenance/testing.

Criteria pollutants are emitted during the generation of electricity at fossil fuel power plants. When electricity is used in buildings, the electricity generation typically takes place at off-site power plants, the majority of which burn fossil fuels. Because power plants are existing stationary sources permitted by air districts and/or the USEPA, criteria pollutant emissions are generally associated with

the power plants themselves and not individual buildings or electricity users. Additionally, criteria pollutant emissions from power plants are subject to local, State, and federal control measures, which can be considered to be the maximum feasible level of mitigation for stack emissions. CalEEMod, therefore, does not calculate criteria pollutant emissions from regional power plants associated with building electricity use.

SCAQMD's CalEEMod model was used to estimate emissions during operation. Mobile-source emissions were calculated using CalEEMod. However, CalEEMod default VMT was bypassed to account for the project-related VMT. CalEEMod calculates mobile-source emissions using the VMT, trip generation, and emission factors based on EMFAC2021.[38] Area source emissions are based on natural gas (building heating and water heaters), landscaping equipment, and consumer product usage (including paints) rates provided in CalEEMod. Natural gas usage factors in CalEEMod are based on the California Energy Commission *California Commercial End Use Survey* data set, which provides energy demand by building type and climate zone.

To determine if a significant air quality impact would occur, the net increase in regional operational emissions was compared against SCAQMD's significance thresholds presented in **Table 3-3**.[39] Refer to the **Appendix** for detailed operational modeling data.

b. Localized Emissions

i) On-Site Emissions

Localized impacts from operations include calculation of on-site emissions (e.g., combustion from natural gas usage) using SCAQMD's recommended CalEEMod and evaluation of these emissions consistent with SCAQMD's LST methodology discussed above.

ii) Off-Site Emissions

Potential localized CO concentrations from induced traffic at nearby intersections are also addressed, consistent with the methodologies and assumptions used in the consistency analysis provided in the 2003 AQMP.[40] It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections.[41,42] Accordingly, vehicle emissions standards have become increasingly more stringent. Before the first vehicle emission regulations, cars in the 1950s were typically emitting about 87 grams of CO per mile.[43] Currently, the CO standard in California is a maximum of 3.4 grams/mile for passenger cars (with provisions for certain cars to emit even less).[44] With the turnover of older vehicles, introduction of cleaner fuels and implementation of control technology on industrial facilities, CO concentrations in the Air Basin have steadily declined.

The analysis prepared for CO attainment in the Air Basin by SCAQMD can be used to assist in evaluating the potential for CO exceedances in the Air Basin. CO attainment was thoroughly analyzed as part of SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan).[45] As discussed in the 1992 CO Plan, peak carbon monoxide

[38]CAPCOA, *California Emissions Estimator Model (CalEEMod) Version 2022.1.1.21 User's Guide Appendix A Calculation Details for CalEEMod*, April 2022.
[39]SCAQMD, *South Coast AQMD Air Quality Significance Thresholds*, April 2019.
[40]SCAQMD, *Air Quality Management Plan*, 2003.
[41]USEPA, *Air Quality Criteria for Carbon Monoxide [EPA 600/P-099/001F]*, 2000.
[42]SCAQMD, *CEQA Air Quality Handbook*, 1993.
[43]USEPA, *Timeline of Major Accomplishments in Transportation, Air Pollution, and Climate Change*, accessed July 12, 2022.
[44]CARB, *California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles*, amended September 2010.
[45]SCAQMD, *Federal Attainment Plan for Carbon Monoxide*, 1992.

concentrations in the Air Basin are due to unusual meteorological and topographical conditions, and not due to the impact of particular intersections. Considering the region's unique meteorological conditions and the increasingly stringent CO emissions standards, CO modeling was performed as part of the 1992 CO Plan and subsequent plan updates and air quality management plans.

In the 1992 CO Plan, a CO hot spot analysis was conducted for four busy intersections in Los Angeles at the peak morning and afternoon time periods. The intersections evaluated included: Long Beach Boulevard and Imperial Highway (Lynwood); Wilshire Boulevard and Veteran Avenue (Westwood); Sunset Boulevard and Highland Avenue (Hollywood); and La Cienega Boulevard and Century Boulevard (Inglewood). These analyses did not predict a violation of CO standards. The busiest intersection evaluated was that at Wilshire Boulevard and Veteran Avenue, which had a daily traffic volume of approximately 100,000 vehicles per day. The 2003 AQMP estimated that the 1-hour concentration for this intersection was 4.6 ppm, which indicates that the most stringent 1-hour CO standard (20.0 ppm) would likely not be exceeded until the daily traffic at the intersection exceeded more than 400,000 vehicles per day.[46] The AQMP CO hotspots modeling also accounted for worst-case meteorological conditions and background CO concentrations.

The Los Angeles County Metropolitan Transportation Authority (Metro) evaluated the level of service (LOS) in the vicinity of the Wilshire Boulevard/Veteran Avenue intersection and found it to be Level E at peak morning traffic and Level F at peak afternoon traffic.[47,48] As an initial screening step, if a project intersection does not exceed 400,000 vehicles per day, then the project does not need to prepare a detailed CO hot spot analysis. If a project would potentially result in a CO hotspot based on the initial screening, detailed modeling may be performed using California LINE Source Dispersion Model, version 4 (CALINE4), which is a model used to assess air quality impacts near transportation facilities (i.e., roadways, intersections, street canyons, and parking facilities). Given that fleet-average CO emission rates have decreased substantially since publication of the 2003 AQMP and that growth in the City has not quadrupled traffic volumes, the likelihood of CO hot spots occurring from a single project's contribution to nearby intersection volumes is extremely low.

c. Emissions Calculations

Operations would generate emissions of air pollutants from a variety of sources, including mobile source on-road vehicle trips, and area sources including natural gas combustion from water heaters, landscaping equipment, and the use of consumer products. Periodic re-application of architectural coatings would generate VOC off-gassing emissions on a recurring yet infrequent basis; CalEEMod assumes the re-application rate is once every ten years. CalEEMod estimates emissions from these sources based on the land use type and size, as well as default or project -specific trip generation data. Area source emissions are based on natural gas combustion rates for building heating, water heaters and cooking, landscape equipment fuel combustion, and consumer products usage (including paints) rates built into the CalEEMod program. Natural gas usage factors in CalEEMod are based on the California Energy Commission (CEC) Commercial End Use Survey data set, which provides energy demand by building type and climate zone. The following discussions provide a succinct overview of the operational emissions sources and processes that are accounted for in the CalEEMod program.

[46]Based on extrapolation of the ratio of the CO standard (20.0 ppm) and the modeled value (4.6 ppm).

[47]Metro measured traffic volumes and calculated the LOS for the intersection of Wilshire Boulevard/Sepulveda Avenue, which is a block west along Wilshire Boulevard and east of Interstate 405.

[48]LACMTA, *Congestion Management Plan for Los Angeles County*, 2004.

On-Road Vehicle Trips Mobile Source Emissions

CalEEMod calculates the emissions associated with on-road mobile sources once a project is fully operational. A detailed VMT analysis was completed for the proposed project.[49] The City of has developed screening criteria to identify when a detailed analysis is required for projects. The City's guidelines state that public services (e.g., police, fire stations, public utilities, public parks) do not generally generate substantial VMT. Instead, these land uses are often built-in response to development from other land uses (e.g., office and residential). Therefore, these land uses can be presumed to have less-than-significant impacts on VMT. The proposed project includes a public park and a drinking water treatment facility, which are public services that are presumed to have a less than significant VMT impact. Therefore, these components of the project are screened out from analysis. The WQL, although an LADWP function, would not meet the definition of a public service since it would serve as a laboratory and administrative facility that would generate daily employee trips in excess of the VMT daily threshold. Therefore, the WQL is subject to a VMT analysis. The VMT for the proposed project is anticipated to be 2,133 miles for 172 employees. The net change in VMT is 1,051 miles, which results in a net VMT of 6.11 miles per employee.

The vehicle fleet mix is regionally determined based on the CARB statewide EMFAC emission inventory for on-road vehicle travel. Mobile source emissions (excluding evaporative losses and vehicle-start emissions) from operational vehicle trips are estimated using the following equation for each trip type and the aggregate CARB EMFAC inventory emission factor based on the distribution of vehicle types within the fleet mix:

$$Emission_{exhaust,brake/tire\ wear}[lbs] = \frac{\sum_i \left(EF_i \times Pop_i \times ADT_i \times D_{trip,i}\right)}{453.592\ {}^{g}/_{lb}}$$

Where:

EF_i	=	Vehicle-specific emission factor in grams per mile [g/mi] from EMFAC2014
Pop_i	=	Population, or number of vehicles of each type
ADT_i	=	Average daily trip rate for each vehicle type and trip type
$D_{trip,i}$	=	Trip distance
I	=	Vehicle type

Emissions from motor vehicles are dependent on model years and the specific types of vehicles. The emissions were calculated using a representative motor vehicle fleet mix provided by CalEEMod for a project in the Los Angeles County portion of the Air Basin.

Area Source Emissions

Area source emissions were calculated using CalEEMod default assumptions for the multi-family residential (mid-rise apartments) land uses. Area sources include VOC off-gassing from consumer products use and architectural coatings, as well as emissions from landscape maintenance equipment. Consumer products are chemically formulated products used by household and institutional consumers—such as detergents, cleaning compounds, polishes, floor finishes, personal care products, disinfectants, and sanitizers—but does not include other paint products, furniture coatings, or architectural coatings. The SCAQMD conducted an evaluation of consumer products use as it correlated with the total square footage of buildings using data from the CARB consumer

[49]Translutions, *Headworks-VMT Memorandum*, June 13, 2022.

product emissions inventory and determined a VOC emission rate for consumer products within the SCAQMD jurisdiction.[50]

CalEEMod uses the following equation to calculate daily VOC emissions from consumer products use:

$$E_{VOC,consumer\ products}\ [lbs]\ =\ EF_{VOC,consumer\ products}\ \left[{}^{lbs}/_{sq.ft}\right] \times\ A_{building}\ [sq.ft]$$

Where:

$E_{VOC,\ consumer\ products}$	=	Emissions of VOC in pounds per day
$EF_{VOC,\ consumer\ products}$	=	Emission factor in pounds per square foot of building area per day SCAQMD Default Value: 2.04 x 10^{-5} lbs./sq. ft/day
$A_{building}$	=	Total square footage (floor area) of all buildings

In addition to consumer products use, CalEEMod estimates daily and annual VOC emissions from operational application of architectural coatings. Operational architectural coating VOC emissions are estimated using the same equation presented above under construction sources assuming an average reapplication rate of once every ten years.

Landscape Equipment

Operational emissions associated with landscape maintenance equipment are also estimated in CalEEMod, which include fuel combustion emissions from equipment such as lawn mowers, roto tillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers. The emissions associated with landscape equipment use were processed using OFFROAD and the CARB *Technical Memo: Change in Population and Activity Factors for Land and Garden Equipment*.[51] The CARB used the results of the inventory-wide emissions processing to derive two landscaping emissions factors: one for commercial landscape equipment in terms of grams per square foot of non-residential building space per day, and a second for residential landscape equipment in terms of grams per dwelling unit per day. These emission factors are multiplied by the number of operational days per year to estimate annual emissions within CalEEMod. Annual operating days are 250 for non-residential projects.

Building Energy Use

The consumption of fossil fuels to generate electricity and to provide heating and hot water generates criteria pollutants. Future fuel consumption rates are estimated based on the specific square footage of the multi-family residences and the ancillary facilities and amenities included in the Project. Energy use (off-site electricity generation and on-site natural gas combustion) for the Project is calculated within CalEEMod using the CEC Commercial End-Use Survey (CEUS) data set.[52] This data set provides energy intensities of different land uses throughout the state and in different climate zones. Since the data contained in the CEUS is from 2002, the CalEEMod software incorporates correction factors to reflect compliance with the Title 24 Building Standards Code. CalEEMod defaults are the 2013 Title 24 energy efficiency standards. The Title 24 energy efficiency standards are updated every three years. All new construction associated with the proposed project will be subject to the

[50]CAPCOA, *CalEEMod User's Guide Appendix E Technical Source Documentation*, April 2022.
[51]CARB, *OFFROAD Modeling Change Technical Memo: Change in Population and Activity Factors for Lawn and Garden Equipment*, revised June 2003.
[52]CEC, *Commercial End-Use Survey*.

requirements of the 2022 Title 24 energy efficiency standards, which went into effect in January 2023. Therefore, electricity and natural gas consumption estimated using CalEEMod represent conservative approximations of future operational building energy use.

In addition, the facility would also be designed to meet Mayor Garcetti's Resilience by Design Directive by obtaining LEED gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The proposed project would also feature on-site renewable energy facilities through the installation of photovoltaic solar panels. The facility would also include a green roof, which would be covered with vegetation to reduce heat and associated energy use.

Toxic Air Contaminants – Construction & Operations

Potential TAC impacts are initially evaluated by conducting a qualitative analysis consistent with the CARB Handbook and SCAQMD guidance, both of which are discussed in detail below. The qualitative analysis consists of reviewing the proposed project to identify any new or modified TAC emissions sources and evaluating the potential for such sources to cause significant TAC impacts. If the qualitative evaluation determines the potential for significant impacts from a new TAC source, or modification of an existing TAC emissions source, a more detailed dispersion analysis is conducted to evaluate estimated TAC emissions against the applicable SCAQMD significance thresholds based on downwind sensitive receptor locations.

a. State Guidance

CARB published the *Air Quality and Land Use Handbook* (CARB Handbook) on April 28, 2005, to serve as a general guide for considering health effects associated with siting sensitive receptors proximate to sources of TAC emissions.[53] The recommendations provided therein are voluntary and do not constitute a requirement or mandate for either land use agencies or local air districts. The goal of the guidance document is to protect sensitive receptors, such as children, the elderly, acutely ill, and chronically ill persons, from exposure to TAC emissions. Some examples of CARB's siting recommendations include the following: (1) avoid siting sensitive receptors within 500 feet of a freeway, urban road with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day; (2) avoid siting sensitive receptors within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units per day, or where transport refrigeration unit operations exceed 300 hours per week); and (3) avoid siting sensitive receptors within 300 feet of any dry cleaning operation using perchloroethylene and within 500 feet of operations with two or more machines.

CARB published a supplemental technical advisory entitled *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways* as a follow-up to the *Handbook*. It is intended to provide planners and other stakeholders involved in land use planning and decision-making with information on scientifically based strategies (e.g., solid barriers, vegetation buffers for pollutant dispersion, and indoor high efficiency filtration) to reduce exposure to traffic emissions near high-volume roadways in order to protect public health and promote equity and environmental justice.

b. Regional Guidance

SCAQMD has also adopted land use planning guidelines in the *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*, which considers impacts to sensitive receptors from facilities that emit TAC emissions.[54] SCAQMD's siting distance recommendations are the same as those provided by CARB (e.g., a 500-foot siting distance for sensitive land uses

[53]CARB, *Air Quality and Land Use Handbook: A Community Health Perspective*, April 2005.
[54]SCAQMD, *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*, May 2005.

proposed in proximity of freeways and high-traffic roads, and the same siting criteria for distribution centers and dry cleaning facilities). SCAQMD's document introduces land use-related policies that rely on design and distance parameters to minimize emissions and lower potential health risk. SCAQMD's guidelines are voluntary initiatives recommended for consideration by local planning agencies.

SCAQMD has adopted two rules to limit cancer and non-cancer health risks from facilities located within its jurisdiction. Rule 1401 (New Source Review of Toxic Air Contaminants) regulates new or modified facilities, and Rule 1402 (Control of Toxic Air Contaminants from Existing Sources) regulates facilities that are already operating. Rule 1402 incorporates requirements of the AB 2588 program, including implementation of risk reduction plans for significant risk facilities. Significant risk facilities are those facilities which have an increased cancer risk exceeding 10 in 1 million or a total hazard index exceeding 1.0. Examples include landfills, paint booths, refineries and oil production facilities, among others.

3.4.3 Analysis of Project Impacts

[a] Would the proposed project conflict with or obstruct implementation of the applicable air quality plan? (*Less-Than-Significant Impact*)

Impact Analysis

A. SCAQMD CEQA Air Quality Handbook Policy Analysis

The following analysis addresses consistency with applicable SCAQMD and SCAG policies, inclusive of regulatory compliance. In accordance with the procedures established in SCAQMD's *CEQA Air Quality Handbook*, the impact discussion addresses the following criteria to determine whether the proposed project is consistent with applicable SCAQMD and SCAG planning objectives:

1) Would the proposed project create any impacts related to air quality violations, such as:
   - An increase in the frequency or severity of existing air quality violations;
   - Causing or contributing to new air quality violations; or,
   - Delaying timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
2) Would the proposed project exceed the assumptions utilized in preparing the AQMP:
   - Is the proposed project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;
   - Does the proposed project incorporate mitigation measures to reduce potentially significant impacts; and/or
   - To what extent is proposed project development consistent with the AQMP land use policies and control measures?

Air quality violations occur when facilities are out of compliance with applicable SCAQMD rule requirements, permit conditions or legal requirements, or with applicable state or federal air pollution regulations. The regional and localized air quality significance thresholds were designed as a screening tool to avoid the potential occurrence and exacerbation of air quality violations resulting from construction and operation of individual CEQA projects based on the designation of emissions sources warranting advanced permitting and regulation. The second indicator of AQMP consistency is assessed by determining potential effects of permanent facility operations on population, housing, and employment assumptions that were used in the development of the AQMP and the RTP/SCS. If implementation of the proposed project would render the assumptions invalid by introducing growth

within the SCAQMD jurisdiction that exceeds projections incorporated into the AQMP, a significant air quality impact may occur.

I. Criterion 1

With respect to the first criterion, as discussed under the analysis for **Threshold [c]**, below, localized emissions of NO_X (as a surrogate for NO_2), CO, PM_{10}, and $PM_{2.5}$ have been analyzed for the proposed project. SO_2 emissions would be negligible during construction and long-term operations and, therefore, would not have the potential to cause or affect a violation of the SO_2 ambient air quality standard. Since VOCs are not a criteria pollutant, there is no ambient standard or localized threshold for VOCs. Due to the role VOCs play in O_3 formation, it is classified as a precursor pollutant and only a regional emissions threshold has been established.

a) Construction

The SCAQMD localized emissions analysis serves as a screening method for evaluating whether further assessment of potential air quality violations is warranted. As shown in **Table 3-5**, the increases in PM_{10} and $PM_{2.5}$ emissions during construction would not exceed the SCAQMD-recommended LST values corresponding to the daily disturbance area and proximity of sensitive receptors. Additionally, the maximum potential daily NO_X and CO emissions during construction were analyzed to ascertain potential effects on localized concentrations and to determine if there is a potential for such emissions to cause or affect a violation of an applicable ambient air quality standard. Localized unmitigated emissions of NO_X and CO would not exceed the SCAQMD-recommended localized significance thresholds. Therefore, construction activities would not result in a significant impact with regard to localized air quality.

b) Operations

Because the proposed project would not introduce any substantial stationary sources of emissions (e.g., gasoline stations, dry cleaners, chrome plating operations), CO is the preferred benchmark pollutant for assessing local area air quality impacts from postconstruction motor vehicle operations. As indicated below, under the analysis for **Threshold [c]**, no intersections would require a CO hotspot analysis, and impacts would be less than significant. Therefore, the proposed project would not increase the frequency or severity of an existing CO violation or cause or contribute to new CO violations.

II. Criterion 2

To determine consistency with the 2022 AQMP growth assumptions, the projections in the 2022 AQMP for achieving air quality goals are based on assumptions in SCAG's 2020-2045 RTP/SCS regarding population, housing, and growth trends. The emphasis of this criterion is to ensure that the analyses conducted for the Project are based on the same forecasts as the AQMP. The 2020-2045 RTP/SCS includes chapters on: the challenges in a changing region, creating a plan for our future, and the road to greater mobility and sustainable growth. These chapters currently respond directly to federal and state requirements placed on SCAG. Local governments are required to use these as the basis of their plans for purposes of consistency with applicable regional plans under CEQA. For this Project, the City of Los Angeles Land Use Plan defines the assumptions that are represented in the AQMP,

- Is the proposed project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based?

A Project is consistent with the AQMP, in part, if it is consistent with the population, housing, and employment assumptions that were used in the development of the AQMP. In the case of the 2022

AQMP, two sources of data form the basis for projections of air pollutant emissions: the City's General Plan and SCAG's 2020-2045 RTP/SCS.

a) Construction

Construction of the proposed project would result in increased employment opportunities in the construction industry. However, it is not likely that construction workers would relocate their households as a result of their employment associated with construction. The construction industry differs from other employment sectors in that many construction workers are highly specialized and move from job site to job site as dictated by the demand for their skills, and they remain at a job site for only the timeframe in which their specific skills are needed to complete a particular phase of the construction process. Furthermore, it is likely that the construction workers employed for construction would be taken from the labor pool currently residing in the City. Thus, the construction phase of the proposed project would be temporary and would not create permanent growth in population, housing, or employment within the City or within SCAQMD jurisdiction. Therefore, construction of the proposed project would have no impact on regional growth projections accounted for in SCAQMD and SCAG plans.

b) Operations

The proposed project would not include housing resulting in a new population. The purpose of the WQL is to replace the existing obsolete LADWP laboratory facility. to 6 p.m. On weekdays, 172 personnel would report to the facility in staggered shifts. Of this total, 67 personnel would be transferred from the existing laboratory building in Pasadena and the Rinaldi Yard in Granada Hills, where the water quality mobile laboratory and support trailers are currently located. A total of approximately five personnel would be present on weekday at the DPR facility. The number of employees would be small compared to the City of Los Angeles subregion employment. There is no potential for the proposed project to interfere with employment projections. The proposed project would be consistent with the projections in the AQMP.

- Does the proposed project incorporate mitigation measures to reduce potentially significant impacts?

The proposed project would comply with all applicable regulatory standards (e.g., SCAQMD Rule 403, etc.) as required by SCAQMD, as summarized above. The proposed project also would incorporate project design features to support and promote environmental sustainability. While these features are designed primarily to reduce GHG emissions, they would also serve to reduce the criteria air pollutants.

- To what extent is proposed project development consistent with the AQMP land use policies and control measures?

Connect SoCal builds upon and expands land use and transportation strategies established over several prior planning cycles to increase mobility options and achieve a more sustainable growth pattern. *Connect SoCal* includes strategies and tools consistent with local jurisdictions' land use policies that incorporate best practices for achieving the state-mandated reductions in pollutant emissions at the regional level through reduced VMT. The proposed project would be consistent with the following land use strategies that were developed to support the SCS:

- Emphasize land use patterns that facilitate multimodal access to work, educational and other destinations.
- Focus on a regional jobs/housing balance to reduce commute times and distances.
- Prioritize infill and redevelopment of underutilized land to accommodate new growth, increase amenities and connectivity in existing neighborhoods.

B. City of Los Angeles Policy Analysis

As discussed above, the Air Quality Element of the City's General Plan was adopted on November 24, 1992, and sets forth the goals, objectives, and policies, which guide the City in the implementation of its air quality improvement programs and strategies. The Air Quality Element acknowledges the interrelationships among transportation and land use planning in meeting the City's mobility and air quality goals. To achieve the goals of the Air Quality Element, performance-based standards have been adopted to provide flexibility in implementation of its policies and objectives. The proposed project would promote the City of Los Angeles General Plan Air Quality Element goals, objectives and policies discussed above in the regulatory framework. The proposed project represents an infill development project within an existing urbanized area that would concentrate multiple LADWP facilities in one location. The proposed project would also provide active transportation options. Surrounding the reservoir garden and extending into other portions of the HWSG property would be a series of pedestrian, bicycle, and equestrian pathways, including the Headworks segment of the Los Angeles River Trail, which would interconnect with Griffith Park and the existing river trail system via tunnels beneath Forest Lawn Drive and State Route 134 at the east end of the HWSG property.

The proposed project would be designed and constructed to meet 2022 Title 24 standards. The facility would also be designed to meet Mayor Garcetti's Resilience by Design Directive by obtaining LEED gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The facility would also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater. The facility would have a photovoltaic array on the roof tops of the building. It would also include an internal landscaped courtyard and green roof to conserve water through stormwater capture and treatment. The building would achieve energy efficiency by implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency HVAC systems. The proposed project is consistent with applicable policies of the City of Los Angeles Air Quality Element.

C. Conclusion

In conclusion, analysis of **Threshold [a]** was based on consistency with the AQMP, as well as the City of Los Angeles plans and policies. The determination of AQMP consistency is primarily concerned with the long-term influence of the proposed project on air quality in the Air Basin. As discussed above, the proposed project would not increase the frequency or severity of an existing air quality violation or cause or contribute to new violations for these pollutants. As the proposed project would not exceed any of the State and federal standards, the proposed project would also not delay the timely attainment of air quality standards or interim emission reductions specified in the AQMP. In addition, because the proposed project is consistent with growth projections that form the basis of the 2022 AQMP, the proposed project would be consistent with the emissions forecasts in the AQMP. Furthermore, while the proposed project does not implement any air quality mitigation measures, the proposed project would comply with all applicable regulatory standards and would incorporate the project design features that would serve to reduce the criteria air pollutants discussed herein. Thus, the proposed project would not conflict with or obstruct implementation of the AQMP. With regard to City policies, as discussed above, the proposed project would serve to implement applicable policies of the City pertaining to air quality. Based on the above, impacts to **Threshold [a]** would be less than significant.

Mitigation Measures

Impacts would be less than significant; no mitigation measures are required.

[b] Would the proposed project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard? (*Less-Than-Significant Impact*)

Impact Analysis

The Los Angeles County portion of the Air Basin is presently designated as nonattainment of either the federal or state ambient air quality standards for O_3, PM_{10}, and $PM_{2.5}$. Therefore, there is an ongoing regional cumulative impact associated with these air pollutants. The SCAQMD published guidance addressing the evaluation of potential cumulative impacts for CEQA projects. The SCAQMD asserts that if construction or operation of a project would produce maximum daily emissions exceeding the applicable project-specific thresholds, those emissions would also be considered cumulatively significant. For this reason, the SCAQMD applies the same project-level thresholds to cumulative assessments. Conversely, if construction and operation of a project would not generate emissions of sufficient quantity to exceed any of the applicable mass daily thresholds, then that project and its associated emissions would be considered less than significant in the cumulative context.

A. Regional Analysis

I. Construction

Construction activities have the potential to create air quality impacts through emissions generated using heavy-duty construction equipment and through vehicle trips associated with construction worker commutes and haul and delivery vehicles traveling to and from the proposed project. Fugitive dust emissions would primarily result from site preparation (e.g., excavation and grading) activities. It is mandatory for all construction projects in the Air Basin to comply with SCAQMD Rule 403 for Fugitive Dust. Rule 403 control requirements include measures to prevent the generation of visible dust plumes. Measures include, but are not limited to, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system o, and maintaining effective cover over exposed areas. Compliance with Rule 403 would reduce fugitive $PM_{2.5}$ and PM_{10} emissions associated with construction activities by approximately 61 percent. NO_X emissions would predominantly result from the use of construction equipment and haul truck trips. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions.

The air quality analysis focuses on maximum daily emissions during construction activities. It is unlikely that the maximum number of daily haul truck loads would be required throughout the duration of each activity. Project-specific information was provided describing the schedule of construction activities and the equipment inventory required. Details pertaining to the schedule and equipment can be found in the California Emissions Estimator (CalEEMod, Version 2022.1.1.21) output files in the **Appendix**. The regional analysis in **Table 3-5** identifies the maximum daily emissions that would occur during construction of the proposed project and compares those emissions to the applicable SCAQMD regional mass daily threshold of significance. Daily construction activities would fluctuate throughout the seven-year construction period, and the maximum daily emissions identified in **Table 3-5** that are compared to the regional thresholds do not represent emissions that would be occurring every day of construction. Emissions would not exceed the SCAQMD significance thresholds. Construction activities would therefore result in a less than significant impact to air quality related to the creation or exacerbation of air quality violations within the SCAQMD jurisdiction.

TABLE 3-5: PROPOSED PROJECT CONSTRUCTION EMISSIONS						
Component & Construction Activity	**Maximum Daily Emissions (Pounds Per Day)**					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
PARK – SITE CLEARING						
On-Site Emissions	1.4	13.3	17.5	<0.1	3.9	0.8
Off-Site Emissions	0.3	1.0	4.3	<0.1	1.0	0.2
Total	**1.7**	**14.3**	**21.8**	**<0.1**	**4.9**	**1.0**
PARK – GRADING & UTILITIES						
On-Site Emissions	4.3	38.3	52.9	<0.1	9.5	2.2
Off-Site Emissions	0.5	1.3	8.0	<0.1	1.6	0.4
Total	**4.8**	**39.6**	**60.9**	**<0.1**	**11.1**	**2.6**
PARK – PAVILION & BRIDGES						
On-Site Emissions	2.4	20.2	30.7	<0.1	10.4	1.8
Off-Site Emissions	0.7	1.7	11.5	<0.1	2.3	0.6
Total	**3.1**	**21.9**	**42.3**	**<0.1**	**12.7**	**2.4**
PARK – PAVING & LANDSCAPING						
On-Site Emissions	1.2	10.8	15.7	<0.1	9.7	1.3
Off-Site Emissions	0.4	0.8	5.8	<0.1	1.4	0.3
Total	**1.6**	**11.5**	**21.6**	**<0.1**	**11.1**	**1.7**
WQL – SITE CLEARING						
On-Site Emissions	3.7	32.4	35.5	<0.1	7.8	2.9
Off-Site Emissions	0.1	1.0	2.2	<0.1	0.6	0.2
Total	**3.8**	**33.4**	**37.7**	**<0.1**	**8.5**	**3.0**
PARK – PAVING & LANDSCAPING + WQL – SITE CLEARING						
On-Site Emissions	5.0	43.2	51.3	0.1	17.5	4.2
Off-Site Emissions	0.5	1.8	8.0	<0.1	2.0	0.5
Total	**5.5**	**45.0**	**59.3**	**0.1**	**19.5**	**4.7**
WQL - GRADING						
On-Site Emissions	1.9	16.2	22.2	0.1	5.7	1.0
Off-Site Emissions	0.2	1.1	2.4	<0.1	0.7	0.2
Total	**2.1**	**17.3**	**24.6**	**0.1**	**6.4**	**1.2**
WQL – BUILDING CONSTRUCTION						
On-Site Emissions	0.9	11.2	14.0	<0.1	6.2	0.8
Off-Site Emissions	0.2	0.4	3.4	<0.1	0.8	0.2
Total	**1.1**	**11.6**	**17.4**	**<0.1**	**7.0**	**1.0**
WQL – PAVING & LANDSCAPING						
On-Site Emissions	11.7	16.9	21.7	<0.1	8.1	1.4
Off-Site Emissions	0.5	1.2	8.7	<0.1	2.3	0.6
Total	**12.2**	**18.1**	**30.3**	**<0.1**	**10.3**	**2.0**
DPR DEMO FACILITY – SITE PREPARATION						
On-Site Emissions	1.1	8.2	12.2	<0.1	5.3	0.8
Off-Site Emissions	<0.1	0.1	1.7	<0.1	0.1	<0.1
Total	**1.1**	**8.2**	**13.9**	**<0.1**	**5.4**	**0.8**
DPR DEMO FACILITY – GRADING & FOUNDATION						

TABLE 3-5: PROPOSED PROJECT CONSTRUCTION EMISSIONS

Component & Construction Activity	Maximum Daily Emissions (Pounds Per Day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
On-Site Emissions	2.7	21.8	29.9	<0.1	8.8	2.3
Off-Site Emissions	0.1	0.8	1.8	<0.1	0.6	0.2
Total	**2.8**	**22.5**	**31.6**	**<0.1**	**9.4**	**2.5**
DPR DEMO FACILITY – BUILDING CONSTRUCTION						
On-Site Emissions	1.2	12.1	17.6	<0.1	10.6	1.3
Off-Site Emissions	0.3	0.7	4.2	<0.1	1.2	0.3
Total	**1.5**	**12.8**	**21.8**	**<0.1**	**11.8**	**1.6**
DPR DEMO FACILITY – PAVING & LANDSCAPING						
On-Site Emissions	2.5	13.1	17.5	<0.1	9.7	1.3
Off-Site Emissions	0.5	0.7	7.3	<0.1	2.4	0.6
Total	**3.0**	**13.8**	**24.9**	**<0.1**	**12.1**	**1.9**
REGIONAL ANALYSIS						
Maximum Daily Emissions	**12.2**	**45.0**	**59.3**	**0.1**	**19.5**	**4.7**
Regional Significance Threshold	75	100	550	150	150	55
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum On-Site Emissions	**-**	**43.2**	**51.3**	**-**	**17.5**	**4.2**
LST Screening Value/a/	-	111	1,068	-	21	6
Exceed Threshold?	**-**	**No**	**No**	**-**	**No**	**No**

/a/ LST screening values correspond to a construction site in SRA 7 with a two-acre daily disturbance area and sensitive receptors within 50 meters.
Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2024.

II. Operations

The proposed project would generate regional operational emissions from vehicle trips, area sources, and energy use. As discussed above, CalEEMod was used to estimate daily operational air pollutant emissions using the project-specific trip and VMT, as well as land use data obtained from the site plans. A detailed VMT analysis was completed for the proposed project.[55] For identification of VMT impacts for a land use project, CEQA requires the identification of impacts based on whether the project conflicts or is inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)(1). The City of has developed screening criteria to identify when a detailed analysis is required for projects. The City's guidelines state that public services (e.g., police, fire stations, public utilities, public parks) do not generally generate substantial VMT. Instead, these land uses are often built-in response to development from other land uses (e.g., office and residential). Therefore, these land uses can be presumed to have less-than-significant impacts on VMT. The proposed project includes a public park and a water treatment facility, which are public services that are presumed to have a less than significant VMT impact. Therefore, these components of the project are screened out from analysis. The WQL, although an LADWP function, would not meet the definition of a public service since it would serve as a laboratory and administrative facility that would generate daily employee trips in excess of the VMT daily threshold. Therefore, the WQL is subject to a VMT analysis.

In order to evaluate the VMT per employee for the WQL, the net change per employee was calculated. The proposed project will replace the Pasadena and Rinaldi facilities. For this evaluation, the net VMT for the project was calculated by subtracting the total VMT per employee for the Pasadena and Rinaldi facilities from the VMT for the proposed project. The VMT per employee for employees that are expected to transfer to the WQL from LADWP facilities in downtown Los Angeles were not subtracted because it is anticipated that those positions would be backfilled at the current locations in the future, unlike the positions in Pasadena and Rinaldi. The Pasadena facility is in Traffic Analysis Zone (TAZ) 22121400 of the SCAG RTP Model. The VMT per employee for the TAZ is 16.3 miles per employee. The Rinaldi facility is included in the City of Los Angeles VMT Calculator, which shows a VMT per employee of 14.1 miles per employee. The VMT/Employee for the proposed project site is 12.4 miles/employee based on the VMT Calculator. The total VMT for existing and proposed facilities were calculated by multiplying the VMT per employee for the existing and proposed facilities. The reduction of 62 employees at the Pasadena location will result in a VMT reduction of 1,011 miles, and that of the Rinaldi facility will result in a reduction of 71 miles. The VMT for the proposed project is anticipated to be 2,133 miles for 172 employees. The net change in VMT is 1,051 miles, which results in a net VMT of 6.11 miles per employee. An additional 159 daily VMT would be attributed to the DPR Demonstration Facility, and 120 daily VMT would be attributed to the park use.

Table 3-6 presents the CalEEMod results for operational emissions estimates of the proposed project. Daily emissions of ozone precursors and criteria pollutants would be below the SCAQMD operational thresholds. Operational activities would not result in a new substantial source of air pollutant emissions. Operations would therefore result in a less than significant impact to air quality related to the creation or exacerbation of air quality violations within the SCAQMD jurisdiction.

[55]Translutions, *Headworks-VMT Memorandum*, June 13, 2022.

TABLE 3-6: PROPOSED PROJECT OPERATIONAL EMISSIONS						
Operational Activity	**Maximum Daily Emissions (Pounds Per Day)**					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
EMISSIONS ANALYSIS						
Area Sources	4.2	<0.1	5.4	<0.1	<0.1	<0.1
Energy Sources	<0.1	0.7	0.6	<0.1	<0.1	<0.1
Mobile Sources	1.4	0.6	5.7	<0.1	1.0	0.4
IMPACT ANALYSIS						
Maximum Daily Operational Emissions	**5.5**	**1.3**	**11.7**	**<0.1**	**1.1**	**1.2**
Regional Threshold	55	55	550	150	150	55
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2024.

B. Localized Analysis

As previously discussed, SCAQMD recommends the evaluation of localized air quality impacts to sensitive receptors in the immediate vicinity of the proposed project site. The SCAQMD localized thresholds and LST screening values are based on applicable short-term state and federal ambient air quality standards, as well as existing air quality at the time of the LST methodology development. Project-related localized construction impacts are evaluated based on the SCAQMD LST methodology which takes into account ambient pollutant concentrations. Based on SCAQMD guidance, localized emissions from on-site sources that exceed LST screening values would also be cumulatively considerable and could contribute to instances of the air quality standards being exceeded. As shown in **Table 3-5**, above, maximum daily localized emissions during construction activities would remain below the applicable SCAQMD LST screening values without mitigation. Therefore, construction emissions associated with proposed project implementation would not result in cumulatively considerable net increases of nonattainment pollutants at the localized level, and this impact would be less than significant.

Mitigation Measures

Impacts would be less than significant; no mitigation measures are required.

[c] Would the proposed project expose sensitive receptors to substantial pollutant concentrations? (*Less-Than-Significant Impact*)

Impact Analysis

I. Construction

a. On-Site Construction Activities (Criteria Pollutants)

As discussed above in the methodology subsection, the localized construction air quality analysis was conducted using the LST methodology promulgated by the SCAQMD. The SCAQMD published look-up tables with daily mass emissions screening values that correspond to a project's SRA, the area of maximum daily ground disturbance during construction, and the proximity of sensitive receptors to the project site. The LST screening values represent the maximum allowable emissions from a project that are not expected to cause or contribute to ambient air quality standards being exceeded. Maximum daily on-site unmitigated construction emissions were estimated in CalEEMod and are presented in **Table 3-5**, above. Also presented are the applicable LST screening values for a project with maximum

daily disturbance of two acres in SRA 7 that is within approximately 165 feet (50 meters) of sensitive receptors. Construction of the proposed project would not result in localized emissions exceeding any applicable SCAQMD LST screening value, even in the unmitigated condition. Therefore, emissions from on-site sources during construction would not have the potential to expose nearby sensitive receptors to substantial pollutant concentrations and this impact would be less than significant.

b. Off-Site Construction Activities (Toxic Air Contaminants)

The greatest potential for TAC emissions during construction would be from diesel particulate emissions associated with heavy equipment operations. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. The SCAQMD's CEQA guidance does not require a health risk assessment (HRA) for short-term construction emissions The proposed project would not result in a long-term (i.e., 70-year) source of TAC emissions given the short-term construction schedule of approximately seven years. Although the total construction duration would be seven years, periods of intense emissions from heavy equipment or truck activity would be intermittent and spread across the 43-acre property. Additionally, there are no receptors adjacent to construction activities with the nearest sensitive receptors being residences located approximately 325 feet to the north. It is, therefore, not necessary to evaluate long-term cancer impacts from construction activities, which occur over a relatively short duration. Construction activities, including generation of TACs, would not expose sensitive receptors to substantial pollutant concentrations. Project-related TAC impacts during construction would be less than significant.

II. Operation

a. On-Site Operational Activities (Criteria Pollutants)

Operation of the proposed project would not include any major new sources of air pollution. Emissions estimates for criteria air pollutants from on-site sources are presented in **Table 3-6**, above. Maximum on-site daily operational emissions were calculated using CalEEMod and compared to the applicable SCAQMD LSTs as defined above. Operational emissions of CO and NO_X as well as nonattainment pollutants PM_{10}, and $PM_{2.5}$ would remain below applicable SCAQMD thresholds. Therefore, long-term operations would result in a less than significant impact related to localized pollutant concentrations from on-site sources.

b. Off-Site Operational Activities (CO "Hot Spots" Analysis)

Consistent with the CO methodology presented above, if a subject intersection does not exceed 400,000 vehicles per day, then the project does not need to prepare a detailed CO hot spot analysis. There are no intersections near the proposed project that have volumes that exceed 400,000 vehicles per day. In addition, CO background concentrations within the vicinity of the modeled intersection have substantially decreased since preparation of the 2003 AQMP primarily due to ongoing fleet turnover of older light duty vehicles and production of higher fuel efficiency vehicles. Therefore, the proposed project does not trigger the need for a detailed CO hot spots analysis and would not have the potential to result in elevated CO concentrations at intersections near the proposed project. Off-site mobile source emissions would not exposure sensitive receptors to substantial pollutant concentrations, and this impact would be less than significant.

c. Toxic Air Contaminants

When considering potential air quality impacts under CEQA, consideration is given to the location of sensitive receptors within close proximity of land uses that emit TACs. CARB has published and adopted the *Air Quality and Land Use Handbook: A Community Health Perspective*, which provides recommendations regarding the siting of new sensitive land uses near potential sources of air toxic emissions (e.g., freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and gasoline dispensing facilities). SCAQMD adopted similar recommendations in its *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*. Together, CARB and SCAQMD guidelines recommend siting distances for both the development of sensitive land uses in proximity to TAC sources and the addition of new TAC sources in proximity to existing sensitive land uses. Sensitive land uses include those where users or occupants could be subject to chronic exposure if sited near TAC sources, such as schools, convalescent facilities, and hospitals. The proposed project does not include the development of sensitive land uses. As such, an assessment of siting distances from potential TAC sources is not required.

The primary source of potential air toxics associated with operations include DPM from delivery trucks (e.g., truck traffic on local streets and idling on adjacent streets) and, to a lesser extent, facility operations. However, these activities, and the land uses associated with the proposed project, are not considered land uses that generate substantial TAC emissions. It The SCAQMD recommends that HRAs be conducted for substantial individual sources of DPM (e.g., truck stops and warehouse distribution facilities that generate more than 100 trucks per or more than 40 trucks with operating transport refrigeration units) and has provided guidance for analyzing mobile source diesel emissions. The proposed project would not include these types of land uses and is not considered to be a substantial source of DPM since daily trucks would not exceed 100 trucks per day or more than 100 trucks per or more than 40 trucks with operating transport refrigeration units. In addition, the CARB-mandated ATCM limits diesel-fueled commercial vehicles (delivery trucks) to idle no more than five minutes at any given time, which would further limit diesel particulate emissions.

Typical sources of acutely and chronically hazardous TACs include industrial manufacturing processes (e.g., chrome plating, electrical manufacturing, petroleum refinery). The proposed project would not include these types of potential industrial manufacturing process sources. It is expected that the quantities of hazardous TACs generated on-site (e.g., cleaning solvents, paints, landscape pesticides, etc.) for the types of proposed land uses would be below thresholds warranting further study under the California Accidental Release Program. As such, the proposed project would not release substantial amounts of TACs, and impacts on human health would be less than significant.

In addition, the proposed project would only result in minimal emissions of TACs from the use of consumer products and landscape maintenance activities, among other things. As a result, toxic or carcinogenic air pollutants are not expected to occur in any meaningful amounts in conjunction with operation of the proposed project.

Mitigation Measures

Impacts would be less than significant; no mitigation measures are required.

[d] Would the proposed project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? (Less-Than-Significant Impact)

Impact Analysis

I. Construction

A significant impact would occur if construction activities would result in the creation of nuisance odors that would be noxious to a substantial number of people, or visible dust plumes. Potential sources that may produce objectionable odors include equipment exhaust, application of asphalt and architectural coatings, and other interior and exterior finishes. Odors from these sources would be localized and generally confined to the immediate area surrounding the proposed project and would be temporary in nature and would not persist beyond the termination of construction activities. The proposed project would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. All construction activities would be conducted in accordance with the best management practices set forth in SCAQMD Rule 403. In addition, as construction-related emissions dissipate away from the construction area, the odors associated with these emissions would also decrease and would be quickly diluted. Therefore, the proposed project would result in a less-than-significant impact related to construction odors.

II. Operations

According to the SCAQMD *CEQA Air Quality Handbook*, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies and fiberglass molding. The WQL and Headworks Park would not include significant sources of odors. The DPR Demonstration Facility would use recycled wastewater from LAGWRP. Recycled wastewater is not odorous, and the use of such water would not generate odors beyond existing conditions as LADWP currently utilizes the recycled water from LAGWRP primarily to provide irrigation of golf courses, cemeteries, and other sites located in and around Griffith Park, near the project site. Therefore, the proposed project would result in a less-than-significant impact related to operations odors.

Mitigation Measures

Impacts would be less than significant; no mitigation measures are required.

3.6 CUMULATIVE IMPACTS

Impact Analysis

Ambient air quality conditions and pollutant concentrations are generally influenced by the cumulative effect of air pollutant emissions from all sources within a particular region, and attainment dates and control strategies incorporated into air quality plans are contingent upon compliance with regulatory standards and enforcement at the administrative level as well as the facility and project level. The Los Angeles County portion of the Air Basin is presently designated as nonattainment of either the federal or state ambient air quality standards for O_3, PM_{10}, and $PM_{2.5}$. Therefore, there is an ongoing regionally significant cumulative impact associated with these air pollutants as an existing condition prior to implementation of the proposed project. The SCAQMD published guidance addressing the evaluation of potential cumulative impacts for CEQA projects. The SCAQMD asserts that if construction or operation of a project would produce maximum daily emissions exceeding the applicable project-specific thresholds, then those emissions would also be considered cumulatively significant. For this reason, the SCAQMD applies the same project-level thresholds to cumulative assessments. Conversely, if construction and operation of a project would not generate emissions of sufficient quantity to exceed any of the applicable mass daily thresholds, then that project and its associated emissions would be considered less than significant in the cumulative context despite the existing cumulatively significant conditions. Emissions that would be generated by construction and operation of the proposed project are addressed in accordance with the rationale established by the SCAQMD.

I. Construction

Construction of the proposed project would involve temporary emissions sources of air pollutants that include ozone precursors and particulate matter, for which there is an ongoing cumulative impact in the region. **Table 3-5**, above, presents the results of the construction emissions modeling. Construction emissions of ozone precursors VOC and NO_X as well as nonattainment pollutants PM_{10} and $PM_{2.5}$ would remain below applicable SCAQMD thresholds. Therefore, short-term operation of the proposed project would result in a less than significant cumulative impact related to emissions of nonattainment pollutants according to the SCAQMD guidance. Construction emissions would not significantly contribute to the existing cumulatively considerable impact.

II. Operations

Future operation of the proposed project would introduce permanent sources of air pollutants that include ozone precursors and particulate matter, for which there is an ongoing cumulative impact in the region. **Table 3-6**, above, presents the results of the operational emissions modeling. Operational emissions of ozone precursors VOC and NO_X as well as nonattainment pollutants PM_{10} and $PM_{2.5}$ would remain below applicable SCAQMD thresholds. Therefore, long-term operation of the proposed project would result in a less than significant cumulative impact related to emissions of nonattainment pollutants according to the SCAQMD guidance. Operational emissions would not significantly contribute to the existing cumulatively considerable impact.

Mitigation Measures

Impacts would be less-than-significant, and no mitigation measures are required.

Level of Significance After Mitigation

Impacts would be less than significant during both construction and operation of the proposed project.

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APPENDIX

CalEEMod Files

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- Headworks Water Quality Lab Construction Detailed Report
- Headworks DPR Demonstration Facility Detailed Report
- Headworks Project Operations Detailed Report

LADWP Headworks Project - Park Construction Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - Park Construction
Construction Start Date	11/14/2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.153231832974924, -118.31594338641173
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Parking Lot	3.00	Acre	3.00	0.00	13,000	13,000	—	Parking lot and paved access roads.

City Park	17.5	Acre	17.5	0.00	387,830	387,830	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-4*	Use Local and Sustainable Building Materials

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136
Mit.	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
Mit.	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
Mit.	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
Mit.	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136

2026	1.59	11.5	22.3	0.03	0.45	10.6	11.1	0.41	1.26	1.66	—	4,222	4,222	0.18	0.14	5.76	4,273
2027	1.52	10.8	21.8	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,187	4,187	0.18	0.13	5.24	4,237
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.67	14.2	21.8	0.03	0.47	4.38	4.86	0.44	0.57	1.01	—	4,351	4,351	0.19	0.14	0.13	4,396
2025	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
2026	2.87	20.1	39.9	0.05	0.83	11.7	12.5	0.76	1.49	2.25	—	8,098	8,098	0.34	0.25	0.25	8,181
2027	1.51	11.0	20.9	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,119	4,119	0.14	0.13	0.14	4,162
2028	1.45	10.4	20.6	0.03	0.35	10.6	11.0	0.32	1.26	1.58	—	4,087	4,087	0.13	0.13	0.12	4,130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.16	1.34	2.07	< 0.005	0.04	0.39	0.44	0.04	0.05	0.09	—	410	410	0.02	0.01	0.20	414
2025	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
2026	1.15	8.40	15.7	0.02	0.32	7.23	7.56	0.30	0.86	1.16	—	3,033	3,033	0.13	0.10	1.80	3,068
2027	1.08	7.82	15.1	0.02	0.28	7.22	7.50	0.26	0.86	1.12	—	2,955	2,955	0.10	0.10	1.61	2,988
2028	0.13	0.96	1.92	< 0.005	0.03	0.93	0.96	0.03	0.11	0.14	—	378	378	0.01	0.01	0.19	382
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.03	0.24	0.38	< 0.005	0.01	0.07	0.08	0.01	0.01	0.02	—	67.9	67.9	< 0.005	< 0.005	0.03	68.6
2025	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
2026	0.21	1.53	2.87	< 0.005	0.06	1.32	1.38	0.05	0.16	0.21	—	502	502	0.02	0.02	0.30	508
2027	0.20	1.43	2.76	< 0.005	0.05	1.32	1.37	0.05	0.16	0.20	—	489	489	0.02	0.02	0.27	495
2028	0.02	0.17	0.35	< 0.005	0.01	0.17	0.18	0.01	0.02	0.03	—	62.5	62.5	< 0.005	< 0.005	0.03	63.2

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136
2026	1.59	11.5	22.3	0.03	0.45	10.6	11.1	0.41	1.26	1.66	—	4,222	4,222	0.18	0.14	5.76	4,273
2027	1.52	10.8	21.8	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,187	4,187	0.18	0.13	5.24	4,237
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.67	14.2	21.8	0.03	0.47	4.38	4.86	0.44	0.57	1.01	—	4,351	4,351	0.19	0.14	0.13	4,396
2025	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
2026	2.87	20.1	39.9	0.05	0.83	11.7	12.5	0.76	1.49	2.25	—	8,098	8,098	0.34	0.25	0.25	8,181
2027	1.51	11.0	20.9	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,119	4,119	0.14	0.13	0.14	4,162
2028	1.45	10.4	20.6	0.03	0.35	10.6	11.0	0.32	1.26	1.58	—	4,087	4,087	0.13	0.13	0.12	4,130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.16	1.34	2.07	< 0.005	0.04	0.39	0.44	0.04	0.05	0.09	—	410	410	0.02	0.01	0.20	414
2025	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
2026	1.15	8.40	15.7	0.02	0.32	7.23	7.56	0.30	0.86	1.16	—	3,033	3,033	0.13	0.10	1.80	3,068
2027	1.08	7.82	15.1	0.02	0.28	7.22	7.50	0.26	0.86	1.12	—	2,955	2,955	0.10	0.10	1.61	2,988
2028	0.13	0.96	1.92	< 0.005	0.03	0.93	0.96	0.03	0.11	0.14	—	378	378	0.01	0.01	0.19	382
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.03	0.24	0.38	< 0.005	0.01	0.07	0.08	0.01	0.01	0.02	—	67.9	67.9	< 0.005	< 0.005	0.03	68.6
2025	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
2026	0.21	1.53	2.87	< 0.005	0.06	1.32	1.38	0.05	0.16	0.21	—	502	502	0.02	0.02	0.30	508
2027	0.20	1.43	2.76	< 0.005	0.05	1.32	1.37	0.05	0.16	0.20	—	489	489	0.02	0.02	0.27	495
2028	0.02	0.17	0.35	< 0.005	0.01	0.17	0.18	0.01	0.02	0.03	—	62.5	62.5	< 0.005	< 0.005	0.03	63.2

3. Construction Emissions Details

3.1. Site Preparation (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.37	13.2	17.4	0.03	0.47	—	0.47	0.43	—	0.43	—	2,965	2,965	0.12	0.02	—	2,975
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	53.3	53.3	< 0.005	0.01	< 0.005	55.6
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.24	1.64	< 0.005	0.04	—	0.04	0.04	—	0.04	—	279	279	0.01	< 0.005	—	279
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.30	0.30	< 0.005	0.03	0.03	—	5.00	5.00	< 0.005	< 0.005	0.01	5.22
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.23	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.1	46.1	< 0.005	< 0.005	—	46.3

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.86
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.36	4.08	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	856	856	0.04	0.03	0.09	867
Vendor	0.01	0.24	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	194	194	0.01	0.03	0.01	202
Hauling	0.01	0.37	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	282	282	0.02	0.05	0.02	296
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.40	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	81.6	81.6	< 0.005	< 0.005	0.14	82.8
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	18.2	18.2	< 0.005	< 0.005	0.02	19.0
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	26.5	26.5	< 0.005	< 0.005	0.03	27.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.5	13.5	< 0.005	< 0.005	0.02	13.7
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.01	3.01	< 0.005	< 0.005	< 0.005	3.14
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.39	4.39	< 0.005	< 0.005	< 0.005	4.61

3.2. Site Preparation (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.37	13.2	17.4	0.03	0.47	—	0.47	0.43	—	0.43	—	2,965	2,965	0.12	0.02	—	2,975
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	53.3	53.3	< 0.005	0.01	< 0.005	55.6
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.24	1.64	< 0.005	0.04	—	0.04	0.04	—	0.04	—	279	279	0.01	< 0.005	—	279
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.30	0.30	< 0.005	0.03	0.03	—	5.00	5.00	< 0.005	< 0.005	0.01	5.22
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.23	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.1	46.1	< 0.005	< 0.005	—	46.3
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.86
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.36	4.08	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	856	856	0.04	0.03	0.09	867
Vendor	0.01	0.24	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	194	194	0.01	0.03	0.01	202
Hauling	0.01	0.37	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	282	282	0.02	0.05	0.02	296
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.40	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	81.6	81.6	< 0.005	< 0.005	0.14	82.8
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	18.2	18.2	< 0.005	< 0.005	0.02	19.0
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	26.5	26.5	< 0.005	< 0.005	0.03	27.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.5	13.5	< 0.005	< 0.005	0.02	13.7
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.01	3.01	< 0.005	< 0.005	< 0.005	3.14
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.39	4.39	< 0.005	< 0.005	< 0.005	4.61

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	12.3	17.3	0.03	0.40	—	0.40	0.37	—	0.37	—	2,965	2,965	0.12	0.02	—	2,975

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	52.4	52.4	< 0.005	0.01	< 0.005	54.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.80	5.80	< 0.005	< 0.005	—	5.82
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.11
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.96	0.96	< 0.005	< 0.005	—	0.96
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.02	0.02	< 0.005	< 0.005	< 0.005	0.02
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.31	3.78	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	839	839	0.04	0.03	0.08	849
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	190	190	0.01	0.03	0.01	199
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.67	1.67	< 0.005	< 0.005	< 0.005	1.69
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.37	0.37	< 0.005	< 0.005	< 0.005	0.39
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.54	0.54	< 0.005	< 0.005	< 0.005	0.57
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.28	0.28	< 0.005	< 0.005	< 0.005	0.28
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.09	0.09	< 0.005	< 0.005	< 0.005	0.09

3.4. Site Preparation (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	12.3	17.3	0.03	0.40	—	0.40	0.37	—	0.37	—	2,965	2,965	0.12	0.02	—	2,975
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	52.4	52.4	< 0.005	0.01	< 0.005	54.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.80	5.80	< 0.005	< 0.005	—	5.82

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.11
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.96	0.96	< 0.005	< 0.005	—	0.96
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.02	0.02	< 0.005	< 0.005	< 0.005	0.02
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.31	3.78	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	839	839	0.04	0.03	0.08	849
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	190	190	0.01	0.03	0.01	199
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.67	1.67	< 0.005	< 0.005	< 0.005	1.69
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.37	0.37	< 0.005	< 0.005	< 0.005	0.39
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.54	0.54	< 0.005	< 0.005	< 0.005	0.57
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.28	0.28	< 0.005	< 0.005	< 0.005	0.28
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06

Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.09	0.09	< 0.005	< 0.005	< 0.005	0.09

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.31	123
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.01	123
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.77	6.78	9.40	0.02	0.27	—	0.27	0.25	—	0.25	—	1,570	1,570	0.06	0.01	—	1,575

Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.03	0.02	< 0.005	< 0.005	1.30	1.30	< 0.005	0.13	0.13	—	21.0	21.0	< 0.005	< 0.005	0.02	21.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	1.24	1.71	< 0.005	0.05	—	0.05	0.05	—	0.05	—	260	260	0.01	< 0.005	—	261
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	3.47	3.47	< 0.005	< 0.005	< 0.005	3.63
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.48	7.65	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,521	1,521	0.06	0.05	5.57	1,544
Vendor	0.01	0.36	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.87	332
Hauling	< 0.005	0.34	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.64	291
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.53	6.49	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,442	1,442	0.07	0.05	0.14	1,460
Vendor	0.01	0.38	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.02	331
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.10	1.21	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	261	261	0.01	0.01	0.43	264
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	56.5	56.5	< 0.005	0.01	0.07	59.0
Hauling	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	49.4	49.4	< 0.005	0.01	0.05	51.8

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	43.1	43.1	< 0.005	< 0.005	0.07	43.7
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.36	9.36	< 0.005	< 0.005	0.01	9.77
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.17	8.17	< 0.005	< 0.005	0.01	8.57

3.6. Grading (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.31	123
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.01	123
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.77	6.78	9.40	0.02	0.27	—	0.27	0.25	—	0.25	—	1,570	1,570	0.06	0.01	—	1,575
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.03	0.02	< 0.005	< 0.005	1.30	1.30	< 0.005	0.13	0.13	—	21.0	21.0	< 0.005	< 0.005	0.02	21.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	1.24	1.71	< 0.005	0.05	—	0.05	0.05	—	0.05	—	260	260	0.01	< 0.005	—	261
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	3.47	3.47	< 0.005	< 0.005	< 0.005	3.63
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.48	7.65	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,521	1,521	0.06	0.05	5.57	1,544
Vendor	0.01	0.36	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.87	332
Hauling	< 0.005	0.34	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.64	291
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.53	6.49	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,442	1,442	0.07	0.05	0.14	1,460
Vendor	0.01	0.38	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.02	331
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.10	1.21	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	261	261	0.01	0.01	0.43	264

Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	56.5	56.5	< 0.005	0.01	0.07	59.0
Hauling	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	49.4	49.4	< 0.005	0.01	0.05	51.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	43.1	43.1	< 0.005	< 0.005	0.07	43.7
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.36	9.36	< 0.005	< 0.005	0.01	9.77
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.17	8.17	< 0.005	< 0.005	0.01	8.57

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.37	151
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.23	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.01	150
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.29	10.7	16.3	0.03	0.50	—	0.50	0.46	—	0.46	—	2,746	2,746	0.11	0.02	—	2,756
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	4.75	4.75	< 0.005	0.48	0.48	—	76.9	76.9	< 0.005	0.01	0.09	80.4

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	1.95	2.98	< 0.005	0.09	—	0.09	0.08	—	0.08	—	455	455	0.02	< 0.005	—	456
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.87	0.87	< 0.005	0.09	0.09	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.69	0.69	11.1	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,212	2,212	0.09	0.08	8.10	2,245
Vendor	0.02	0.72	0.35	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	1.74	663
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.32	146
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.68	0.77	9.44	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,097	2,097	0.10	0.08	0.21	2,123
Vendor	0.02	0.75	0.36	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	0.05	662
Hauling	< 0.005	0.18	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.01	145
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.36	0.44	5.30	0.00	0.00	1.10	1.10	0.00	0.26	0.26	—	1,137	1,137	0.05	0.04	1.87	1,152
Vendor	0.01	0.40	0.19	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	339	339	0.01	0.05	0.40	354
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	74.0	74.0	< 0.005	0.01	0.07	77.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.97	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	188	188	0.01	0.01	0.31	191
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	56.1	56.1	< 0.005	0.01	0.07	58.6
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.3	12.3	< 0.005	< 0.005	0.01	12.9

3.8. Building Construction (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.37	151
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.23	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.01	150
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.29	10.7	16.3	0.03	0.50	—	0.50	0.46	—	0.46	—	2,746	2,746	0.11	0.02	—	2,756
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	4.75	4.75	< 0.005	0.48	0.48	—	76.9	76.9	< 0.005	0.01	0.09	80.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	1.95	2.98	< 0.005	0.09	—	0.09	0.08	—	0.08	—	455	455	0.02	< 0.005	—	456
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.87	0.87	< 0.005	0.09	0.09	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.69	0.69	11.1	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,212	2,212	0.09	0.08	8.10	2,245
Vendor	0.02	0.72	0.35	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	1.74	663

Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.32	146
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.68	0.77	9.44	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,097	2,097	0.10	0.08	0.21	2,123
Vendor	0.02	0.75	0.36	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	0.05	662
Hauling	< 0.005	0.18	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.01	145
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.36	0.44	5.30	0.00	0.00	1.10	1.10	0.00	0.26	0.26	—	1,137	1,137	0.05	0.04	1.87	1,152
Vendor	0.01	0.40	0.19	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	339	339	0.01	0.05	0.40	354
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	74.0	74.0	< 0.005	0.01	0.07	77.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.97	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	188	188	0.01	0.01	0.31	191
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	56.1	56.1	< 0.005	0.01	0.07	58.6
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.3	12.3	< 0.005	< 0.005	0.01	12.9

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.26	18.2	30.5	0.05	0.82	—	0.82	0.76	—	0.76	—	5,141	5,141	0.21	0.04	—	5,159

Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	142	142	0.01	0.02	0.01	148
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.25	0.42	< 0.005	0.01	—	0.01	0.01	—	0.01	—	70.4	70.4	< 0.005	< 0.005	—	70.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.94	1.94	< 0.005	< 0.005	< 0.005	2.03
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.7	11.7	< 0.005	< 0.005	—	11.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.59	0.70	8.82	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,055	2,055	0.09	0.08	0.19	2,080
Vendor	0.02	0.72	0.34	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	624	624	0.03	0.09	0.04	651
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	28.6	28.6	< 0.005	< 0.005	0.04	29.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.54	8.54	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.86	1.86	< 0.005	< 0.005	< 0.005	1.96
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.73	4.73	< 0.005	< 0.005	0.01	4.79
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.41	1.41	< 0.005	< 0.005	< 0.005	1.48
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.31	0.31	< 0.005	< 0.005	< 0.005	0.32

3.10. Building Construction (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.26	18.2	30.5	0.05	0.82	—	0.82	0.76	—	0.76	—	5,141	5,141	0.21	0.04	—	5,159
Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	142	142	0.01	0.02	0.01	148
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.25	0.42	< 0.005	0.01	—	0.01	0.01	—	0.01	—	70.4	70.4	< 0.005	< 0.005	—	70.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.94	1.94	< 0.005	< 0.005	< 0.005	2.03
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.7	11.7	< 0.005	< 0.005	—	11.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.59	0.70	8.82	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,055	2,055	0.09	0.08	0.19	2,080
Vendor	0.02	0.72	0.34	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	624	624	0.03	0.09	0.04	651
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	28.6	28.6	< 0.005	< 0.005	0.04	29.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.54	8.54	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.86	1.86	< 0.005	< 0.005	< 0.005	1.96
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.73	4.73	< 0.005	< 0.005	0.01	4.79
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.41	1.41	< 0.005	< 0.005	< 0.005	1.48
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.31	0.31	< 0.005	< 0.005	< 0.005	0.32

3.11. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.30	121

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.01	121
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.57	4.64	0.01	0.17	—	0.17	0.15	—	0.15	—	688	688	0.03	0.01	—	690
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	3.41	3.41	< 0.005	0.34	0.34	—	81.1	81.1	< 0.005	0.01	0.09	84.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.65	0.85	< 0.005	0.03	—	0.03	0.03	—	0.03	—	114	114	< 0.005	< 0.005	—	114
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.62	0.62	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.31	5.17	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,084	1,084	0.04	0.04	3.67	1,100
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.34	130
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.35	4.41	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,028	1,028	0.05	0.04	0.10	1,040
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.01	130
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.27	3.23	0.00	0.00	0.72	0.72	0.00	0.17	0.17	—	731	731	0.03	0.03	1.11	740
Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.3
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.59	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	0.01	< 0.005	0.18	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.12. Paving (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.30	121
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.01	121
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.57	4.64	0.01	0.17	—	0.17	0.15	—	0.15	—	688	688	0.03	0.01	—	690
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	3.41	3.41	< 0.005	0.34	0.34	—	81.1	81.1	< 0.005	0.01	0.09	84.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.65	0.85	< 0.005	0.03	—	0.03	0.03	—	0.03	—	114	114	< 0.005	< 0.005	—	114

Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.62	0.62	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.31	5.17	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,084	1,084	0.04	0.04	3.67	1,100
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.34	130
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.35	4.41	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,028	1,028	0.05	0.04	0.10	1,040
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.01	130
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.27	3.23	0.00	0.00	0.72	0.72	0.00	0.17	0.17	—	731	731	0.03	0.03	1.11	740
Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.3
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.59	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	0.01	< 0.005	0.18	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.13. Paving (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.28	119
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.01	119
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	3.45	4.73	0.01	0.16	—	0.16	0.14	—	0.14	—	701	701	0.03	0.01	—	704

Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	3.47	3.47	< 0.005	0.35	0.35	—	81.1	81.1	< 0.005	0.01	0.09	84.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.63	0.86	< 0.005	0.03	—	0.03	0.03	—	0.03	—	116	116	< 0.005	< 0.005	—	117
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.63	0.63	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.28	4.81	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,063	1,063	0.04	0.04	3.31	1,079
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.32	128
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.34	4.07	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,008	1,008	0.01	0.04	0.09	1,020
Vendor	< 0.005	0.14	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.01	128
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.25	3.06	0.00	0.00	0.74	0.74	0.00	0.17	0.17	—	731	731	0.01	0.03	1.02	740

Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.2
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.56	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	< 0.005	< 0.005	0.17	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.14. Paving (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.28	119
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—

Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.01	119
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	3.45	4.73	0.01	0.16	—	0.16	0.14	—	0.14	—	701	701	0.03	0.01	—	704
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	3.47	3.47	< 0.005	0.35	0.35	—	81.1	81.1	< 0.005	0.01	0.09	84.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.63	0.86	< 0.005	0.03	—	0.03	0.03	—	0.03	—	116	116	< 0.005	< 0.005	—	117
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.63	0.63	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.28	4.81	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,063	1,063	0.04	0.04	3.31	1,079
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.32	128
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.34	4.07	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,008	1,008	0.01	0.04	0.09	1,020
Vendor	< 0.005	0.14	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.01	128
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.25	3.06	0.00	0.00	0.74	0.74	0.00	0.17	0.17	—	731	731	0.01	0.03	1.02	740
Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.2
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.56	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	< 0.005	< 0.005	0.17	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.15. Paving (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56	4.57	6.62	0.01	0.19	—	0.19	0.18	—	0.18	—	982	982	0.04	0.01	—	986

Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	111	111	0.01	0.02	0.01	116
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.42	0.61	< 0.005	0.02	—	0.02	0.02	—	0.02	—	90.3	90.3	< 0.005	< 0.005	—	90.6
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.05	—	10.2	10.2	< 0.005	< 0.005	0.01	10.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.0	15.0	< 0.005	< 0.005	—	15.0
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.69	1.69	< 0.005	< 0.005	< 0.005	1.77
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.27	0.31	3.84	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	990	990	0.01	0.04	0.08	1,002
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.37	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	92.4	92.4	< 0.005	< 0.005	0.12	93.6
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.0	11.0	< 0.005	< 0.005	0.01	11.5
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.02	15.5
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.82	1.82	< 0.005	< 0.005	< 0.005	1.90
Hauling	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

3.16. Paving (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56	4.57	6.62	0.01	0.19	—	0.19	0.18	—	0.18	—	982	982	0.04	0.01	—	986
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	< 0.005	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	111	111	0.01	0.02	0.01	116
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.42	0.61	< 0.005	0.02	—	0.02	0.02	—	0.02	—	90.3	90.3	< 0.005	< 0.005	—	90.6
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.05	—	10.2	10.2	< 0.005	< 0.005	0.01	10.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.0	15.0	< 0.005	< 0.005	—	15.0
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.69	1.69	< 0.005	< 0.005	< 0.005	1.77
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.31	3.84	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	990	990	0.01	0.04	0.08	1,002
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.37	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	92.4	92.4	< 0.005	< 0.005	0.12	93.6
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.0	11.0	< 0.005	< 0.005	0.01	11.5
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.02	15.5
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.82	1.82	< 0.005	< 0.005	< 0.005	1.90
Hauling	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

3.17. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.0	90.0	0.01	0.01	0.23	94.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.1	90.1	0.01	0.01	0.01	94.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.40	3.77	6.26	0.01	0.14	—	0.14	0.13	—	0.13	—	994	994	0.04	0.01	—	997
Onsite truck	< 0.005	0.10	0.06	< 0.005	< 0.005	2.65	2.65	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	66.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.69	1.14	< 0.005	0.03	—	0.03	0.02	—	0.02	—	165	165	0.01	< 0.005	—	165
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.48	0.48	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.29	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	271	271	0.01	0.01	0.92	275
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.31	143
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.10	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	257	257	0.01	0.01	0.02	260
Vendor	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
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.07	0.81	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	0.01	0.01	0.28	185
Vendor	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
Hauling	< 0.005	0.12	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	0.01	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.05	30.6
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.02	16.6

3.18. Architectural Coating (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.0	90.0	0.01	0.01	0.23	94.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.1	90.1	0.01	0.01	0.01	94.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.40	3.77	6.26	0.01	0.14	—	0.14	0.13	—	0.13	—	994	994	0.04	0.01	—	997
Onsite truck	< 0.005	0.10	0.06	< 0.005	< 0.005	2.65	2.65	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	66.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.69	1.14	< 0.005	0.03	—	0.03	0.02	—	0.02	—	165	165	0.01	< 0.005	—	165
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.48	0.48	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.29	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	271	271	0.01	0.01	0.92	275
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.31	143
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.10	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	257	257	0.01	0.01	0.02	260
Vendor	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
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.07	0.81	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	0.01	0.01	0.28	185
Vendor	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
Hauling	< 0.005	0.12	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	0.01	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.05	30.6
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.02	16.6

3.19. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.3	88.3	0.01	0.01	0.22	92.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.4	88.4	0.01	0.01	0.01	92.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.39	3.63	6.37	0.01	0.12	—	0.12	0.11	—	0.11	—	1,014	1,014	0.04	0.01	—	1,017
Onsite truck	< 0.005	0.10	0.05	< 0.005	< 0.005	2.70	2.70	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	65.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.66	1.16	< 0.005	0.02	—	0.02	0.02	—	0.02	—	168	168	0.01	< 0.005	—	168
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.49	0.49	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	1.20	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	266	266	0.01	0.01	0.83	270
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.28	140
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.02	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	252	252	< 0.005	0.01	0.02	255

Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.01	140
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.76	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	< 0.005	0.01	0.25	185
Vendor	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
Hauling	< 0.005	0.12	0.04	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	< 0.005	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.04	30.6
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.01	16.6

3.20. Architectural Coating (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.3	88.3	0.01	0.01	0.22	92.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.4	88.4	0.01	0.01	0.01	92.2

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.39	3.63	6.37	0.01	0.12	—	0.12	0.11	—	0.11	—	1,014	1,014	0.04	0.01	—	1,017
Onsite truck	< 0.005	0.10	0.05	< 0.005	< 0.005	2.70	2.70	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	65.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.66	1.16	< 0.005	0.02	—	0.02	0.02	—	0.02	—	168	168	0.01	< 0.005	—	168
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.49	0.49	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	1.20	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	266	266	0.01	0.01	0.83	270
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.28	140
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.02	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	252	252	< 0.005	0.01	0.02	255
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.01	140
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.76	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	< 0.005	0.01	0.25	185
Vendor	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
Hauling	< 0.005	0.12	0.04	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	< 0.005	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.04	30.6

Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.01	16.6

3.21. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.52	4.86	8.93	0.01	0.15	—	0.15	0.14	—	0.14	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	86.4	86.4	< 0.005	0.01	0.01	90.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.45	0.82	< 0.005	0.01	—	0.01	0.01	—	0.01	—	131	131	0.01	< 0.005	—	131
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.35	0.35	< 0.005	0.03	0.04	—	7.94	7.94	< 0.005	< 0.005	0.01	8.30
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.6	21.6	< 0.005	< 0.005	—	21.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	1.31	1.31	< 0.005	< 0.005	< 0.005	1.37
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.96	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	247	247	< 0.005	0.01	0.02	250
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	130	130	0.01	0.02	0.01	137
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	23.1	23.1	< 0.005	< 0.005	0.03	23.4
Vendor	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
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.0	12.0	< 0.005	< 0.005	0.01	12.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.82	3.82	< 0.005	< 0.005	< 0.005	3.87
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.99	1.99	< 0.005	< 0.005	< 0.005	2.08

3.22. Architectural Coating (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.52	4.86	8.93	0.01	0.15	—	0.15	0.14	—	0.14	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	86.4	86.4	< 0.005	0.01	0.01	90.2

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.45	0.82	< 0.005	0.01	—	0.01	0.01	—	0.01	—	131	131	0.01	< 0.005	—	131
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.35	0.35	< 0.005	0.03	0.04	—	7.94	7.94	< 0.005	< 0.005	0.01	8.30
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.6	21.6	< 0.005	< 0.005	—	21.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	1.31	1.31	< 0.005	< 0.005	< 0.005	1.37
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.96	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	247	247	< 0.005	0.01	0.02	250
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	130	130	0.01	0.02	0.01	137
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	23.1	23.1	< 0.005	< 0.005	0.03	23.4
Vendor	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
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.0	12.0	< 0.005	< 0.005	0.01	12.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.82	3.82	< 0.005	< 0.005	< 0.005	3.87
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.99	1.99	< 0.005	< 0.005	< 0.005	2.08

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	11/14/2024	1/1/2025	5.00	35.0	site clearing
Grading	Grading	1/2/2025	4/2/2025	5.00	65.0	excavation and grading
Building Construction	Building Construction	4/3/2025	1/7/2026	5.00	200	installation of park canopies and structures
Paving	Paving	1/8/2026	2/16/2028	5.00	550	paving of parking lot and access roads/paths
Architectural Coating	Architectural Coating	1/8/2026	2/16/2028	5.00	550	landscaping & finishing on structures

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Site Preparation	Air Compressors	Diesel	Average	1.00	4.00	37.0	0.48
Site Preparation	Skid Steer Loaders	Diesel	Average	1.00	6.00	71.0	0.37
Site Preparation	Aerial Lifts	Diesel	Average	5.00	6.00	46.0	0.31
Site Preparation	Rubber Tired Loaders	Diesel	Average	2.00	6.00	150	0.36
Site Preparation	Welders	Diesel	Average	3.00	4.00	46.0	0.45
Site Preparation	Cranes	Diesel	Average	1.00	4.00	367	0.29
Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	1.00	6.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	6.00	7.00	84.0	0.37
Grading	Air Compressors	Diesel	Average	2.00	6.00	37.0	0.48
Grading	Rollers	Diesel	Average	1.00	6.00	36.0	0.38
Grading	Rubber Tired Loaders	Diesel	Average	5.00	7.00	150	0.36
Grading	Welders	Diesel	Average	3.00	7.00	46.0	0.45
Grading	Aerial Lifts	Diesel	Average	9.00	6.00	46.0	0.31
Grading	Generator Sets	Diesel	Average	2.00	6.00	14.0	0.74
Grading	Cranes	Diesel	Average	1.00	4.00	367	0.29
Grading	Forklifts	Diesel	Average	4.00	7.00	82.0	0.20
Grading	Pressure Washers	Diesel	Average	3.00	6.00	14.0	0.30
Grading	Trenchers	Diesel	Average	1.00	4.00	40.0	0.50
Grading	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
Building Construction	Forklifts	Diesel	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74

Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Rollers	Diesel	Average	2.00	7.00	36.0	0.38
Building Construction	Rubber Tired Loaders	Diesel	Average	4.00	7.00	150	0.36
Building Construction	Skid Steer Loaders	Diesel	Average	2.00	7.00	71.0	0.37
Building Construction	Graders	Diesel	Average	2.00	6.00	148	0.41
Building Construction	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
Building Construction	Off-Highway Tractors	Diesel	Average	1.00	6.00	38.0	0.44
Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Graders	Diesel	Average	1.00	6.00	148	0.41
Paving	Welders	Diesel	Average	1.00	6.00	46.0	0.45
Architectural Coating	Skid Steer Loaders	Diesel	Average	2.00	7.00	71.0	0.37
Architectural Coating	Forklifts	Diesel	Average	2.00	7.00	82.0	0.20
Architectural Coating	Aerial Lifts	Diesel	Average	1.00	7.00	46.0	0.31
Architectural Coating	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Site Preparation	Air Compressors	Diesel	Average	1.00	4.00	37.0	0.48
Site Preparation	Skid Steer Loaders	Diesel	Average	1.00	6.00	71.0	0.37
Site Preparation	Aerial Lifts	Diesel	Average	5.00	6.00	46.0	0.31
Site Preparation	Rubber Tired Loaders	Diesel	Average	2.00	6.00	150	0.36
Site Preparation	Welders	Diesel	Average	3.00	4.00	46.0	0.45
Site Preparation	Cranes	Diesel	Average	1.00	4.00	367	0.29

Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	1.00	6.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	6.00	7.00	84.0	0.37
Grading	Air Compressors	Diesel	Average	2.00	6.00	37.0	0.48
Grading	Rollers	Diesel	Average	1.00	6.00	36.0	0.38
Grading	Rubber Tired Loaders	Diesel	Average	5.00	7.00	150	0.36
Grading	Welders	Diesel	Average	3.00	7.00	46.0	0.45
Grading	Aerial Lifts	Diesel	Average	9.00	6.00	46.0	0.31
Grading	Generator Sets	Diesel	Average	2.00	6.00	14.0	0.74
Grading	Cranes	Diesel	Average	1.00	4.00	367	0.29
Grading	Forklifts	Diesel	Average	4.00	7.00	82.0	0.20
Grading	Pressure Washers	Diesel	Average	3.00	6.00	14.0	0.30
Grading	Trenchers	Diesel	Average	1.00	4.00	40.0	0.50
Grading	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
Building Construction	Forklifts	Diesel	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Rollers	Diesel	Average	2.00	7.00	36.0	0.38
Building Construction	Rubber Tired Loaders	Diesel	Average	4.00	7.00	150	0.36
Building Construction	Skid Steer Loaders	Diesel	Average	2.00	7.00	71.0	0.37
Building Construction	Graders	Diesel	Average	2.00	6.00	148	0.41
Building Construction	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
Building Construction	Off-Highway Tractors	Diesel	Average	1.00	6.00	38.0	0.44
Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Graders	Diesel	Average	1.00	6.00	148	0.41

Paving	Welders	Diesel	Average	1.00	6.00	46.0	0.45
Architectural Coating	Skid Steer Loaders	Diesel	Average	2.00	7.00	71.0	0.37
Architectural Coating	Forklifts	Diesel	Average	2.00	7.00	82.0	0.20
Architectural Coating	Aerial Lifts	Diesel	Average	1.00	7.00	46.0	0.31
Architectural Coating	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	64.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	6.00	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	110	18.5	LDA,LDT1,LDT2
Grading	Vendor	10.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	9.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	160	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	20.0	10.2	HHDT,MHDT
Building Construction	Hauling	2.00	20.0	HHDT
Building Construction	Onsite truck	11.0	4.00	HHDT,MHDT
Paving	—	—	—	—

Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	4.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	20.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	2.00	20.0	HHDT
Architectural Coating	Onsite truck	7.00	4.00	HHDT,MHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	64.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	6.00	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	110	18.5	LDA,LDT1,LDT2
Grading	Vendor	10.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	9.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	160	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	20.0	10.2	HHDT,MHDT
Building Construction	Hauling	2.00	20.0	HHDT
Building Construction	Onsite truck	11.0	4.00	HHDT,MHDT

Paving	—	—	—	—
Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	4.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	20.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	2.00	20.0	HHDT
Architectural Coating	Onsite truck	7.00	4.00	HHDT,MHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	57%	57%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	0.00	0.00	—

Grading	0.00	0.00	65.0	0.00	—
Paving	0.00	0.00	37.5	0.00	3.00

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Parking Lot	3.00	100%
City Park	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	690	0.05	0.01
2025	0.00	690	0.05	0.01
2026	0.00	690	0.05	0.01
2027	0.00	690	0.05	0.01
2028	0.00	690	0.05	0.01

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

6.4.1. Wildfire

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-14: Maintain Trails and Parks	Improved Public Health, Social Equity	—	1.00	1.00

6.4.2. Temperature and Extreme Heat

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
D-3: Install Drought Resistant Landscaping	Water Conservation	—	1.00	1.00

EH-9: Expand Urban Tree Canopy	Energy and Fuel Savings, Improved Air Quality, Improved Public Health, Social Equity	1.00	1.00	—
MH-14: Maintain Trails and Parks	Improved Public Health, Social Equity	—	1.00	1.00
MH-23: Landscape with Climate Considerations	Improved Ecosystem Health, Water Conservation	—	1.00	—
MH-41: Expand Urban Greening/Agriculture	Enhanced Food Security, Improved Air Quality, Improved Public Health, Social Equity, Water Conservation	1.00	1.00	1.00

6.4.3. Air Quality Degradation

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-41: Expand Urban Greening/Agriculture	Enhanced Food Security, Improved Air Quality, Improved Public Health, Social Equity, Water Conservation	1.00	1.00	1.00

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	69.6
AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0

Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8
Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—

High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0

Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0
Children	99.4
Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9

Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Park construction schedule obtained from PD dated 1-11-24.

Construction: Off-Road Equipment	Equipment inventory provided by LADWP.
Construction: Dust From Material Movement	Included all phases with earthmoving equipment (i.e., grader).
Construction: Trips and VMT	Personnel & vehicle inventories provided by LADWP.
Construction: On-Road Fugitive Dust	Vehicle speeds on unpaved areas limited to 15 mph = 57% dust reduction (SCAQMD Table XI-A)

LADWP Headworks Project - WQL Construction Detailed Report

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8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - WQL Construction
Construction Start Date	6/14/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.15313612290838, -118.3185549473283
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Research & Development	100	1000sqft	4.85	100,000	111,500	111,500	—	—

Parking Lot	2.15	Acre	2.15	0.00	15,625	15,625	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-4*	Use Local and Sustainable Building Materials

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12.2	33.3	37.7	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,448	9,448	0.39	0.22	6.64	9,521
Mit.	12.2	33.3	37.7	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,448	9,448	0.39	0.22	6.64	9,521
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12.2	33.4	37.5	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,428	9,428	0.38	0.22	0.17	9,497
Mit.	12.2	33.4	37.5	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,428	9,428	0.38	0.22	0.17	9,497
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	3.82	11.4	15.3	0.03	0.43	5.34	5.60	0.39	0.67	0.99	—	3,510	3,510	0.13	0.09	1.25	3,542
Mit.	3.82	11.4	15.3	0.03	0.43	5.34	5.60	0.39	0.67	0.99	—	3,510	3,510	0.13	0.09	1.25	3,542
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.70	2.09	2.80	0.01	0.08	0.97	1.02	0.07	0.12	0.18	—	581	581	0.02	0.02	0.21	586
Mit.	0.70	2.09	2.80	0.01	0.08	0.97	1.02	0.07	0.12	0.18	—	581	581	0.02	0.02	0.21	586
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86	33.3	37.7	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,448	9,448	0.39	0.20	3.21	9,521

2028	1.11	11.5	17.4	0.03	0.20	6.81	7.00	0.18	0.79	0.97	—	3,347	3,347	0.11	0.08	2.74	3,376
2029	12.2	18.0	30.3	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,656	7,656	0.26	0.22	6.64	7,734
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86	33.4	37.5	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,428	9,428	0.38	0.20	0.10	9,497
2028	1.97	16.3	24.4	0.05	0.48	6.81	7.00	0.44	0.79	1.14	—	5,910	5,910	0.23	0.18	0.09	5,969
2029	12.2	18.1	29.0	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,550	7,550	0.26	0.22	0.17	7,622
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.33	11.4	13.4	0.03	0.43	2.59	3.02	0.39	0.60	0.99	—	3,342	3,342	0.13	0.08	0.57	3,368
2028	0.87	8.70	12.8	0.02	0.17	4.52	4.69	0.15	0.53	0.68	—	2,613	2,613	0.09	0.06	0.87	2,635
2029	3.82	9.94	15.3	0.02	0.26	5.34	5.60	0.24	0.67	0.91	—	3,510	3,510	0.12	0.09	1.25	3,542
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.24	2.09	2.45	0.01	0.08	0.47	0.55	0.07	0.11	0.18	—	553	553	0.02	0.01	0.09	558
2028	0.16	1.59	2.34	< 0.005	0.03	0.83	0.86	0.03	0.10	0.12	—	433	433	0.02	0.01	0.14	436
2029	0.70	1.81	2.80	< 0.005	0.05	0.97	1.02	0.04	0.12	0.17	—	581	581	0.02	0.02	0.21	586

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86	33.3	37.7	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,448	9,448	0.39	0.20	3.21	9,521
2028	1.11	11.5	17.4	0.03	0.20	6.81	7.00	0.18	0.79	0.97	—	3,347	3,347	0.11	0.08	2.74	3,376
2029	12.2	18.0	30.3	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,656	7,656	0.26	0.22	6.64	7,734
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2027	3.86	33.4	37.5	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,428	9,428	0.38	0.20	0.10	9,497
2028	1.97	16.3	24.4	0.05	0.48	6.81	7.00	0.44	0.79	1.14	—	5,910	5,910	0.23	0.18	0.09	5,969
2029	12.2	18.1	29.0	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,550	7,550	0.26	0.22	0.17	7,622
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.33	11.4	13.4	0.03	0.43	2.59	3.02	0.39	0.60	0.99	—	3,342	3,342	0.13	0.08	0.57	3,368
2028	0.87	8.70	12.8	0.02	0.17	4.52	4.69	0.15	0.53	0.68	—	2,613	2,613	0.09	0.06	0.87	2,635
2029	3.82	9.94	15.3	0.02	0.26	5.34	5.60	0.24	0.67	0.91	—	3,510	3,510	0.12	0.09	1.25	3,542
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.24	2.09	2.45	0.01	0.08	0.47	0.55	0.07	0.11	0.18	—	553	553	0.02	0.01	0.09	558
2028	0.16	1.59	2.34	< 0.005	0.03	0.83	0.86	0.03	0.10	0.12	—	433	433	0.02	0.01	0.14	436
2029	0.70	1.81	2.80	< 0.005	0.05	0.97	1.02	0.04	0.12	0.17	—	581	581	0.02	0.02	0.21	586

3. Construction Emissions Details

3.1. Site Preparation (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272
Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	0.13	52.8

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272
Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	< 0.005	52.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.30	10.2	0.02	0.37	—	0.37	0.34	—	0.34	—	2,371	2,371	0.10	0.02	—	2,380
Dust From Material Movement	—	—	—	—	—	0.91	0.91	—	0.40	0.40	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.92	0.92	< 0.005	0.09	0.09	—	14.5	14.5	< 0.005	< 0.005	0.02	15.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	1.86	< 0.005	0.07	—	0.07	0.06	—	0.06	—	393	393	0.02	< 0.005	—	394
Dust From Material Movement	—	—	—	—	—	0.17	0.17	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.17	0.17	< 0.005	0.02	0.02	—	2.40	2.40	< 0.005	< 0.005	< 0.005	2.51
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	1.80	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	399	399	0.02	0.01	1.24	405

Vendor	0.01	0.53	0.25	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	1.28	511
Hauling	< 0.005	0.32	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.57	281
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.13	1.53	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	378	378	0.01	0.01	0.03	382
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.46	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	110	110	< 0.005	< 0.005	0.15	112
Vendor	< 0.005	0.16	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	141	141	0.01	0.02	0.16	147
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	76.7	76.7	< 0.005	0.01	0.07	80.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.3	18.3	< 0.005	< 0.005	0.03	18.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.3	23.3	< 0.005	< 0.005	0.03	24.3
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3

3.2. Site Preparation (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272

Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	0.13	52.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272
Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	< 0.005	52.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.30	10.2	0.02	0.37	—	0.37	0.34	—	0.34	—	2,371	2,371	0.10	0.02	—	2,380
Dust From Material Movement	—	—	—	—	—	0.91	0.91	—	0.40	0.40	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.92	0.92	< 0.005	0.09	0.09	—	14.5	14.5	< 0.005	< 0.005	0.02	15.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	1.86	< 0.005	0.07	—	0.07	0.06	—	0.06	—	393	393	0.02	< 0.005	—	394
Dust From Material Movement	—	—	—	—	—	0.17	0.17	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.17	0.17	< 0.005	0.02	0.02	—	2.40	2.40	< 0.005	< 0.005	< 0.005	2.51

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	1.80	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	399	399	0.02	0.01	1.24	405
Vendor	0.01	0.53	0.25	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	1.28	511
Hauling	< 0.005	0.32	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.57	281
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.13	1.53	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	378	378	0.01	0.01	0.03	382
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.46	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	110	110	< 0.005	< 0.005	0.15	112
Vendor	< 0.005	0.16	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	141	141	0.01	0.02	0.16	147
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	76.7	76.7	< 0.005	0.01	0.07	80.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.3	18.3	< 0.005	< 0.005	0.03	18.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.3	23.3	< 0.005	< 0.005	0.03	24.3
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3

3.3. Grading (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.89	16.1	22.1	0.05	0.53	—	0.53	0.49	—	0.49	—	4,601	4,601	0.19	0.04	—	4,616
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	75.8	75.8	< 0.005	0.01	< 0.005	79.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	2.34	< 0.005	0.06	—	0.06	0.05	—	0.05	—	486	486	0.02	< 0.005	—	488
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.51	0.51	< 0.005	0.05	0.05	—	8.00	8.00	< 0.005	< 0.005	0.01	8.36
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.31	0.43	< 0.005	0.01	—	0.01	0.01	—	0.01	—	80.5	80.5	< 0.005	< 0.005	—	80.8
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.09	0.09	< 0.005	0.01	0.01	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.38
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.17	2.04	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	504	504	0.01	0.02	0.04	510
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.23	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	54.0	54.0	< 0.005	< 0.005	0.08	54.7
Vendor	< 0.005	0.06	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	51.7	51.7	< 0.005	0.01	0.06	53.9
Hauling	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	28.2	28.2	< 0.005	< 0.005	0.03	29.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.95	8.95	< 0.005	< 0.005	0.01	9.06
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.56	8.56	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.67	4.67	< 0.005	< 0.005	< 0.005	4.90

3.4. Grading (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.89	16.1	22.1	0.05	0.53	—	0.53	0.49	—	0.49	—	4,601	4,601	0.19	0.04	—	4,616

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	75.8	75.8	< 0.005	0.01	< 0.005	79.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	2.34	< 0.005	0.06	—	0.06	0.05	—	0.05	—	486	486	0.02	< 0.005	—	488
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.51	0.51	< 0.005	0.05	0.05	—	8.00	8.00	< 0.005	< 0.005	0.01	8.36
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.31	0.43	< 0.005	0.01	—	0.01	0.01	—	0.01	—	80.5	80.5	< 0.005	< 0.005	—	80.8
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.09	0.09	< 0.005	0.01	0.01	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.38
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.17	2.04	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	504	504	0.01	0.02	0.04	510
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.23	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	54.0	54.0	< 0.005	< 0.005	0.08	54.7
Vendor	< 0.005	0.06	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	51.7	51.7	< 0.005	0.01	0.06	53.9
Hauling	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	28.2	28.2	< 0.005	< 0.005	0.03	29.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.95	8.95	< 0.005	< 0.005	0.01	9.06
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.56	8.56	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.67	4.67	< 0.005	< 0.005	< 0.005	4.90

3.5. Grading (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.81	15.2	22.1	0.05	0.47	—	0.47	0.44	—	0.44	—	4,602	4,602	0.19	0.04	—	4,618
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.11	0.06	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	74.1	74.1	< 0.005	0.01	< 0.005	77.3
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	1.46	2.12	< 0.005	0.05	—	0.05	0.04	—	0.04	—	441	441	0.02	< 0.005	—	443

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.47	0.47	< 0.005	0.05	0.05	—	7.10	7.10	< 0.005	< 0.005	0.01	7.42
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.27	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	73.1	73.1	< 0.005	< 0.005	—	73.3
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.18	1.18	< 0.005	< 0.005	< 0.005	1.23
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.16	1.92	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	495	495	0.01	0.02	0.04	501
Vendor	0.01	0.52	0.24	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	478	478	0.02	0.07	0.03	499
Hauling	< 0.005	0.32	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	261	261	0.01	0.04	0.01	274
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	48.2	48.2	< 0.005	< 0.005	0.06	48.8
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	45.8	45.8	< 0.005	0.01	0.05	47.8
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.0	25.0	< 0.005	< 0.005	0.02	26.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.97	7.97	< 0.005	< 0.005	0.01	8.08
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.59	7.59	< 0.005	< 0.005	0.01	7.92

Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.14	4.14	< 0.005	< 0.005	< 0.005	4.35

3.6. Grading (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.81	15.2	22.1	0.05	0.47	—	0.47	0.44	—	0.44	—	4,602	4,602	0.19	0.04	—	4,618
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.11	0.06	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	74.1	74.1	< 0.005	0.01	< 0.005	77.3
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	1.46	2.12	< 0.005	0.05	—	0.05	0.04	—	0.04	—	441	441	0.02	< 0.005	—	443
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.47	0.47	< 0.005	0.05	0.05	—	7.10	7.10	< 0.005	< 0.005	0.01	7.42
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.27	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	73.1	73.1	< 0.005	< 0.005	—	73.3

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.18	1.18	< 0.005	< 0.005	< 0.005	1.23
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.16	1.92	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	495	495	0.01	0.02	0.04	501
Vendor	0.01	0.52	0.24	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	478	478	0.02	0.07	0.03	499
Hauling	< 0.005	0.32	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	261	261	0.01	0.04	0.01	274
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	48.2	48.2	< 0.005	< 0.005	0.06	48.8
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	45.8	45.8	< 0.005	0.01	0.05	47.8
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.0	25.0	< 0.005	< 0.005	0.02	26.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.97	7.97	< 0.005	< 0.005	0.01	8.08
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.59	7.59	< 0.005	< 0.005	0.01	7.92
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.14	4.14	< 0.005	< 0.005	< 0.005	4.35

3.7. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.3	86.3	< 0.005	0.01	0.21	90.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.4	86.4	< 0.005	0.01	0.01	90.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.55	6.84	8.55	0.01	0.12	—	0.12	0.11	—	0.11	—	1,454	1,454	0.06	0.01	—	1,459
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.49	3.49	< 0.005	0.35	0.35	—	53.2	53.2	< 0.005	0.01	0.05	55.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	1.25	1.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	241	241	0.01	< 0.005	—	241
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.64	0.64	< 0.005	0.06	0.06	—	8.81	8.81	< 0.005	< 0.005	0.01	9.21
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.20	3.38	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	783	783	0.01	0.03	2.23	794
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	119	119	< 0.005	0.02	0.30	125
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.23	2.88	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	742	742	0.01	0.03	0.06	751
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.14	1.85	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	464	464	0.01	0.02	0.60	470
Vendor	< 0.005	0.08	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	73.6	73.6	< 0.005	0.01	0.08	76.9
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.34	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	76.9	76.9	< 0.005	< 0.005	0.10	77.9
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.2	12.2	< 0.005	< 0.005	0.01	12.7
Hauling	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

3.8. Building Construction (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.3	86.3	< 0.005	0.01	0.21	90.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.4	86.4	< 0.005	0.01	0.01	90.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.55	6.84	8.55	0.01	0.12	—	0.12	0.11	—	0.11	—	1,454	1,454	0.06	0.01	—	1,459
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.49	3.49	< 0.005	0.35	0.35	—	53.2	53.2	< 0.005	0.01	0.05	55.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	1.25	1.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	241	241	0.01	< 0.005	—	241
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.64	0.64	< 0.005	0.06	0.06	—	8.81	8.81	< 0.005	< 0.005	0.01	9.21
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.20	3.38	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	783	783	0.01	0.03	2.23	794
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	119	119	< 0.005	0.02	0.30	125
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.23	2.88	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	742	742	0.01	0.03	0.06	751
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.14	1.85	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	464	464	0.01	0.02	0.60	470
Vendor	< 0.005	0.08	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	73.6	73.6	< 0.005	0.01	0.08	76.9

Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.34	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	76.9	76.9	< 0.005	< 0.005	0.10	77.9
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.2	12.2	< 0.005	< 0.005	0.01	12.7
Hauling	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

3.9. Building Construction (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.1	84.1	< 0.005	0.01	0.20	88.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.2	84.2	< 0.005	0.01	0.01	88.0
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38	4.77	6.02	0.01	0.08	—	0.08	0.07	—	0.07	—	1,024	1,024	0.04	0.01	—	1,028
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	2.46	2.46	< 0.005	0.25	0.25	—	36.6	36.6	< 0.005	0.01	0.04	38.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.07	0.87	1.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	170	170	0.01	< 0.005	—	170
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.04	—	6.05	6.05	< 0.005	< 0.005	0.01	6.33
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	3.16	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	770	770	0.01	0.03	2.00	780
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.28	122
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.21	2.68	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	730	730	0.01	0.03	0.05	739
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.01	122
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.09	1.22	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	322	322	< 0.005	0.01	0.38	326
Vendor	< 0.005	0.05	0.03	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	50.5	50.5	< 0.005	0.01	0.05	52.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	53.3	53.3	< 0.005	< 0.005	0.06	54.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.37	8.37	< 0.005	< 0.005	0.01	8.74
Hauling	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

3.10. Building Construction (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.1	84.1	< 0.005	0.01	0.20	88.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.2	84.2	< 0.005	0.01	0.01	88.0
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38	4.77	6.02	0.01	0.08	—	0.08	0.07	—	0.07	—	1,024	1,024	0.04	0.01	—	1,028
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	2.46	2.46	< 0.005	0.25	0.25	—	36.6	36.6	< 0.005	0.01	0.04	38.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.87	1.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	170	170	0.01	< 0.005	—	170
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.04	—	6.05	6.05	< 0.005	< 0.005	0.01	6.33
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	3.16	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	770	770	0.01	0.03	2.00	780
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.28	122
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.21	2.68	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	730	730	0.01	0.03	0.05	739
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.01	122
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.09	1.22	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	322	322	< 0.005	0.01	0.38	326
Vendor	< 0.005	0.05	0.03	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	50.5	50.5	< 0.005	0.01	0.05	52.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	53.3	53.3	< 0.005	< 0.005	0.06	54.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.37	8.37	< 0.005	< 0.005	0.01	8.74
Hauling	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

3.11. Paving (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.25	113

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.01	113
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.11	< 0.005	0.03	—	0.03	0.03	—	0.03	—	164	164	0.01	< 0.005	—	165
Paving	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.04	0.03	< 0.005	< 0.005	1.33	1.33	< 0.005	0.13	0.13	—	29.6	29.6	< 0.005	< 0.005	0.03	31.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	27.2	27.2	< 0.005	< 0.005	—	27.3
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	4.91	4.91	< 0.005	< 0.005	< 0.005	5.13
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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
Hauling	0.01	0.59	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.98	534
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985

Vendor	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
Hauling	0.01	0.61	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.03	534
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.12	146
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.1	23.1	< 0.005	< 0.005	0.02	24.2

3.12. Paving (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.25	113
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.01	113
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.11	< 0.005	0.03	—	0.03	0.03	—	0.03	—	164	164	0.01	< 0.005	—	165
Paving	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.04	0.03	< 0.005	< 0.005	1.33	1.33	< 0.005	0.13	0.13	—	29.6	29.6	< 0.005	< 0.005	0.03	31.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	27.2	27.2	< 0.005	< 0.005	—	27.3
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	4.91	4.91	< 0.005	< 0.005	< 0.005	5.13
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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
Hauling	0.01	0.59	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.98	534
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985
Vendor	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
Hauling	0.01	0.61	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.03	534
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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

Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.12	146
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.1	23.1	< 0.005	< 0.005	0.02	24.2

3.13. Architectural Coating (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—
Architectural Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.0	36.0	< 0.005	0.01	0.08	37.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—

Architectu Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.1	36.1	< 0.005	0.01	< 0.005	37.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	3.76	4.79	0.01	0.15	—	0.15	0.14	—	0.14	—	1,192	1,192	0.05	0.01	—	1,196
Dust From Material Movement	—	—	—	—	—	0.15	0.15	—	0.02	0.02	—	—	—	—	—	—	—
Architectu ral Coatings	2.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.44	0.44	< 0.005	0.04	0.04	—	9.88	9.88	< 0.005	< 0.005	0.01	10.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.69	0.87	< 0.005	0.03	—	0.03	0.02	—	0.02	—	197	197	0.01	< 0.005	—	198
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Architectu ral Coatings	0.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.64	1.64	< 0.005	< 0.005	< 0.005	1.71
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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

Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	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

3.14. Architectural Coating (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—

Architectu Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.0	36.0	< 0.005	0.01	0.08	37.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—
Architectu ral Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.1	36.1	< 0.005	0.01	< 0.005	37.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	3.76	4.79	0.01	0.15	—	0.15	0.14	—	0.14	—	1,192	1,192	0.05	0.01	—	1,196
Dust From Material Movement	—	—	—	—	—	0.15	0.15	—	0.02	0.02	—	—	—	—	—	—	—
Architectu ral Coatings	2.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.44	0.44	< 0.005	0.04	0.04	—	9.88	9.88	< 0.005	< 0.005	0.01	10.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.69	0.87	< 0.005	0.03	—	0.03	0.02	—	0.02	—	197	197	0.01	< 0.005	—	198

Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Architectural Coatings	0.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.64	1.64	< 0.005	< 0.005	< 0.005	1.71
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	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

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	6/14/2027	11/5/2027	5.00	105	—
Grading	Grading	11/8/2027	2/18/2028	5.00	75.0	—
Building Construction	Building Construction	2/21/2028	8/10/2029	5.00	385	—
Paving	Paving	8/13/2029	12/28/2029	5.00	100	—
Architectural Coating	Architectural Coating	8/13/2029	12/28/2029	5.00	100	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

Site Preparation	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Site Preparation	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Site Preparation	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Site Preparation	Scrapers	Diesel	Average	3.00	6.00	423	0.48
Site Preparation	Off-Highway Tractors	Diesel	Average	2.00	6.00	38.0	0.44
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Grading	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Grading	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Pressure Washers	Diesel	Average	2.00	6.00	14.0	0.30
Grading	Cranes	Diesel	Average	2.00	6.00	367	0.29
Grading	Welders	Diesel	Average	4.00	6.00	46.0	0.45
Building Construction	Forklifts	Electric	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Aerial Lifts	Diesel	Average	8.00	8.00	46.0	0.31
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Forklifts	Electric	Average	1.00	8.00	82.0	0.20
Architectural Coating	Graders	Diesel	Average	1.00	8.00	148	0.41
Architectural Coating	Scrapers	Diesel	Average	2.00	6.00	423	0.48

Architectural Coating	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Architectural Coating	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Site Preparation	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Site Preparation	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Site Preparation	Scrapers	Diesel	Average	3.00	6.00	423	0.48
Site Preparation	Off-Highway Tractors	Diesel	Average	2.00	6.00	38.0	0.44
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Grading	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Grading	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Pressure Washers	Diesel	Average	2.00	6.00	14.0	0.30
Grading	Cranes	Diesel	Average	2.00	6.00	367	0.29
Grading	Welders	Diesel	Average	4.00	6.00	46.0	0.45
Building Construction	Forklifts	Electric	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37

Building Construction	Aerial Lifts	Diesel	Average	8.00	8.00	46.0	0.31
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Forklifts	Electric	Average	1.00	8.00	82.0	0.20
Architectural Coating	Graders	Diesel	Average	1.00	8.00	148	0.41
Architectural Coating	Scrapers	Diesel	Average	2.00	6.00	423	0.48
Architectural Coating	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Architectural Coating	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	16.0	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	40.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	16.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	6.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	60.0	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	4.00	10.2	HHDT,MHDT

Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	7.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	0.00	10.2	HHDT,MHDT
Paving	Hauling	8.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	80.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	3.00	4.00	HHDT,MHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	16.0	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	40.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	16.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	6.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	60.0	18.5	LDA,LDT1,LDT2

Building Construction	Vendor	4.00	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	7.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	0.00	10.2	HHDT,MHDT
Paving	Hauling	8.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	80.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	3.00	4.00	HHDT,MHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	57%	57%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	150,000	50,000	5,619

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	315	0.00	—
Grading	0.00	0.00	0.00	0.00	—
Paving	0.00	0.00	0.00	0.00	2.15
Architectural Coating	0.00	0.00	200	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Research & Development	0.00	0%
Parking Lot	2.15	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00	690	0.05	0.01
2028	196	690	0.05	0.01
2029	294	690	0.05	0.01

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	69.6

AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0
Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8
Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract

Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—

Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0
Children	99.4

Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9
Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land uses based off PD and updated site plan.
Construction: Construction Phases	Schedule provided by LADWP.
Construction: Off-Road Equipment	Equipment inventory provided by LADWP.
Construction: Dust From Material Movement	All earthwork balanced on-site.
Construction: Trips and VMT	Personnel & vehicle inventories provided by LADWP.
Construction: On-Road Fugitive Dust	Limit vehicle speeds on unpaved areas to 15 mph.

LADWP Headworks Project - DPR Demo Construction Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - DPR Demo Construction
Construction Start Date	5/1/2030
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.15343780699328, -118.31929069851039
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Parking Lot	0.85	Acre	0.85	0.00	0.00	0.00	—	—

Research & Development	25.0	1000sqft	1.37	25,000	34,500	34,500	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-4*	Use Local and Sustainable Building Materials

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
Mit.	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
Mit.	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.14	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.62	2,310
Mit.	1.14	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.62	2,310
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.21	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.10	382
Mit.	0.21	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.10	382
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
2031	1.67	5.49	7.81	0.01	0.12	3.64	3.76	0.11	0.47	0.58	—	1,684	1,684	0.05	0.02	1.70	1,692
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	1.71	12.8	21.1	0.04	0.26	11.4	11.7	0.24	1.31	1.54	—	4,877	4,877	0.17	0.14	0.09	4,924
2031	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.83	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.50	2,310
2031	1.14	4.19	6.38	0.01	0.10	2.91	3.01	0.09	0.38	0.47	—	1,456	1,456	0.04	0.04	0.62	1,470
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.15	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.08	382
2031	0.21	0.76	1.16	< 0.005	0.02	0.53	0.55	0.02	0.07	0.09	—	241	241	0.01	0.01	0.10	243

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
2031	1.67	5.49	7.81	0.01	0.12	3.64	3.76	0.11	0.47	0.58	—	1,684	1,684	0.05	0.02	1.70	1,692
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	1.71	12.8	21.1	0.04	0.26	11.4	11.7	0.24	1.31	1.54	—	4,877	4,877	0.17	0.14	0.09	4,924

2031	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.83	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.50	2,310
2031	1.14	4.19	6.38	0.01	0.10	2.91	3.01	0.09	0.38	0.47	—	1,456	1,456	0.04	0.04	0.62	1,470
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.15	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.08	382
2031	0.21	0.76	1.16	< 0.005	0.02	0.53	0.55	0.02	0.07	0.09	—	241	241	0.01	0.01	0.10	243

3. Construction Emissions Details

3.1. Site Preparation (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.06	8.08	12.2	0.03	0.33	—	0.33	0.31	—	0.31	—	2,969	2,969	0.12	0.02	—	2,979
Dust From Material Movement	—	—	—	—	—	0.41	0.41	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	4.56	4.56	< 0.005	0.46	0.46	—	46.7	46.7	< 0.005	0.01	0.11	48.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.13	1.00	1.51	< 0.005	0.04	—	0.04	0.04	—	0.04	—	366	366	0.01	< 0.005	—	367
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.53	0.53	< 0.005	0.05	0.05	—	5.76	5.76	< 0.005	< 0.005	0.01	6.02
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.18	0.28	< 0.005	0.01	—	0.01	0.01	—	0.01	—	60.6	60.6	< 0.005	< 0.005	—	60.8
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.10	0.10	< 0.005	0.01	0.01	—	0.95	0.95	< 0.005	< 0.005	< 0.005	1.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	226	226	0.01	0.03	0.54	236
Hauling	< 0.005	0.14	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	124	124	0.01	0.02	0.23	130
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.01	16.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.53	2.53	< 0.005	< 0.005	< 0.005	2.66

3.2. Site Preparation (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.06	8.08	12.2	0.03	0.33	—	0.33	0.31	—	0.31	—	2,969	2,969	0.12	0.02	—	2,979
Dust From Material Movement	—	—	—	—	—	0.41	0.41	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	4.56	4.56	< 0.005	0.46	0.46	—	46.7	46.7	< 0.005	0.01	0.11	48.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.00	1.51	< 0.005	0.04	—	0.04	0.04	—	0.04	—	366	366	0.01	< 0.005	—	367
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.53	0.53	< 0.005	0.05	0.05	—	5.76	5.76	< 0.005	< 0.005	0.01	6.02
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02	0.18	0.28	< 0.005	0.01	—	0.01	0.01	—	0.01	—	60.6	60.6	< 0.005	< 0.005	—	60.8
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.10	0.10	< 0.005	0.01	0.01	—	0.95	0.95	< 0.005	< 0.005	< 0.005	1.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	226	226	0.01	0.03	0.54	236
Hauling	< 0.005	0.14	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	124	124	0.01	0.02	0.23	130
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.01	16.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.53	2.53	< 0.005	< 0.005	< 0.005	2.66

3.3. Grading (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.74	21.7	29.8	0.06	0.87	—	0.87	0.80	—	0.80	—	6,484	6,484	0.26	0.05	—	6,507
Dust From Material Movement	—	—	—	—	—	2.26	2.26	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	5.70	5.70	< 0.005	0.57	0.57	—	58.3	58.3	< 0.005	0.01	0.13	61.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34	2.67	3.67	0.01	0.11	—	0.11	0.10	—	0.10	—	799	799	0.03	0.01	—	802
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.66	0.66	< 0.005	0.07	0.07	—	7.20	7.20	< 0.005	< 0.005	0.01	7.52
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.49	0.67	< 0.005	0.02	—	0.02	0.02	—	0.02	—	132	132	0.01	< 0.005	—	133
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.19	1.19	< 0.005	< 0.005	< 0.005	1.24
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	< 0.005	0.11	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	113	113	< 0.005	0.02	0.27	118
Hauling	0.01	0.57	0.23	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	497	497	0.02	0.08	0.90	522
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.9	13.9	< 0.005	< 0.005	0.01	14.5
Hauling	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	61.2	61.2	< 0.005	0.01	0.05	64.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.30	2.30	< 0.005	< 0.005	< 0.005	2.41
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.1	10.1	< 0.005	< 0.005	0.01	10.6

3.4. Grading (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.74	21.7	29.8	0.06	0.87	—	0.87	0.80	—	0.80	—	6,484	6,484	0.26	0.05	—	6,507

Dust From Material Movement	—	—	—	—	—	2.26	2.26	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	5.70	5.70	< 0.005	0.57	0.57	—	58.3	58.3	< 0.005	0.01	0.13	61.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34	2.67	3.67	0.01	0.11	—	0.11	0.10	—	0.10	—	799	799	0.03	0.01	—	802
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.66	0.66	< 0.005	0.07	0.07	—	7.20	7.20	< 0.005	< 0.005	0.01	7.52
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.49	0.67	< 0.005	0.02	—	0.02	0.02	—	0.02	—	132	132	0.01	< 0.005	—	133
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.19	1.19	< 0.005	< 0.005	< 0.005	1.24
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	< 0.005	0.11	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	113	113	< 0.005	0.02	0.27	118
Hauling	0.01	0.57	0.23	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	497	497	0.02	0.08	0.90	522

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.9	13.9	< 0.005	< 0.005	0.01	14.5
Hauling	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	61.2	61.2	< 0.005	0.01	0.05	64.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.30	2.30	< 0.005	< 0.005	< 0.005	2.41
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.1	10.1	< 0.005	< 0.005	0.01	10.6

3.5. Building Construction (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.24	110
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.01	110

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	1.96	2.87	0.01	0.04	—	0.04	0.04	—	0.04	—	558	558	0.02	< 0.005	—	560
Onsite truck	< 0.005	0.03	0.01	< 0.005	< 0.005	1.59	1.59	< 0.005	0.16	0.16	—	17.3	17.3	< 0.005	< 0.005	0.02	18.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.36	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	92.4	92.4	< 0.005	< 0.005	—	92.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	2.86	2.86	< 0.005	< 0.005	< 0.005	2.99
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.20	3.96	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,010	1,010	0.01	0.04	2.37	1,024
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.40	177
Hauling	< 0.005	0.29	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.45	261
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.24	3.34	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	957	957	0.01	0.04	0.06	969
Vendor	< 0.005	0.18	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.01	177
Hauling	< 0.005	0.30	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.01	261
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	160	160	< 0.005	0.01	0.17	162
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.8	40.8	< 0.005	0.01	0.03	42.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.4	26.4	< 0.005	< 0.005	0.03	26.8

Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.76	6.76	< 0.005	< 0.005	0.01	7.09

3.6. Building Construction (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.24	110
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.01	110
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	1.96	2.87	0.01	0.04	—	0.04	0.04	—	0.04	—	558	558	0.02	< 0.005	—	560
Onsite truck	< 0.005	0.03	0.01	< 0.005	< 0.005	1.59	1.59	< 0.005	0.16	0.16	—	17.3	17.3	< 0.005	< 0.005	0.02	18.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.36	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	92.4	92.4	< 0.005	< 0.005	—	92.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	2.86	2.86	< 0.005	< 0.005	< 0.005	2.99

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.20	3.96	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,010	1,010	0.01	0.04	2.37	1,024
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.40	177
Hauling	< 0.005	0.29	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.45	261
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.24	3.34	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	957	957	0.01	0.04	0.06	969
Vendor	< 0.005	0.18	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.01	177
Hauling	< 0.005	0.30	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.01	261
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	160	160	< 0.005	0.01	0.17	162
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.8	40.8	< 0.005	0.01	0.03	42.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.4	26.4	< 0.005	< 0.005	0.03	26.8
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.76	6.76	< 0.005	< 0.005	0.01	7.09

3.7. Paving (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	7.55	12.4	0.02	0.29	—	0.29	0.26	—	0.26	—	2,577	2,577	0.10	0.02	—	2,585
Dust From Material Movement	—	—	—	—	—	0.14	0.14	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	6.29	6.29	< 0.005	0.63	0.63	—	125	125	0.01	0.02	0.01	130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.36	< 0.005	0.03	—	0.03	0.03	—	0.03	—	282	282	0.01	< 0.005	—	283
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.65	0.65	< 0.005	0.07	0.07	—	13.6	13.6	< 0.005	< 0.005	0.01	14.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.25	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.7	46.7	< 0.005	< 0.005	—	46.9
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	2.26	2.26	< 0.005	< 0.005	< 0.005	2.36
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.31	0.36	4.72	0.00	0.00	1.57	1.57	0.00	0.37	0.37	—	1,415	1,415	0.02	0.06	0.08	1,432
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	164	164	0.01	0.02	0.01	171
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.54	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	157	157	< 0.005	0.01	0.15	159
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	18.0	18.0	< 0.005	< 0.005	0.02	18.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.0	26.0	< 0.005	< 0.005	0.02	26.4
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.97	2.97	< 0.005	< 0.005	< 0.005	3.11
Hauling	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

3.8. Paving (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	7.55	12.4	0.02	0.29	—	0.29	0.26	—	0.26	—	2,577	2,577	0.10	0.02	—	2,585

Dust From Material Movement	—	—	—	—	—	0.14	0.14	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	6.29	6.29	< 0.005	0.63	0.63	—	125	125	0.01	0.02	0.01	130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.36	< 0.005	0.03	—	0.03	0.03	—	0.03	—	282	282	0.01	< 0.005	—	283
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.65	0.65	< 0.005	0.07	0.07	—	13.6	13.6	< 0.005	< 0.005	0.01	14.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.25	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.7	46.7	< 0.005	< 0.005	—	46.9
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	2.26	2.26	< 0.005	< 0.005	< 0.005	2.36
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.31	0.36	4.72	0.00	0.00	1.57	1.57	0.00	0.37	0.37	—	1,415	1,415	0.02	0.06	0.08	1,432
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	164	164	0.01	0.02	0.01	171
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.54	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	157	157	< 0.005	0.01	0.15	159
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	18.0	18.0	< 0.005	< 0.005	0.02	18.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.0	26.0	< 0.005	< 0.005	0.02	26.4
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.97	2.97	< 0.005	< 0.005	< 0.005	3.11
Hauling	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

3.9. Architectural Coating (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.51	5.27	4.98	0.01	0.12	—	0.12	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	58.4	58.4	< 0.005	0.01	< 0.005	61.0

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.31	0.29	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.7	51.7	< 0.005	< 0.005	—	51.9
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	0.02	0.02	—	3.43	3.43	< 0.005	< 0.005	< 0.005	3.58
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.56	8.56	< 0.005	< 0.005	—	8.59
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.57	0.57	< 0.005	< 0.005	< 0.005	0.59
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.18	2.51	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	718	718	0.01	0.03	0.05	727
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	42.8	42.8	< 0.005	< 0.005	0.04	43.3
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.08	7.08	< 0.005	< 0.005	0.01	7.17
Vendor	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
Hauling	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

3.10. Architectural Coating (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.51	5.27	4.98	0.01	0.12	—	0.12	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	58.4	58.4	< 0.005	0.01	< 0.005	61.0
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.31	0.29	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.7	51.7	< 0.005	< 0.005	—	51.9
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	0.02	0.02	—	3.43	3.43	< 0.005	< 0.005	< 0.005	3.58
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.01	0.06	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.56	8.56	< 0.005	< 0.005	—	8.59
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.57	0.57	< 0.005	< 0.005	< 0.005	0.59
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.18	2.51	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	718	718	0.01	0.03	0.05	727
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	42.8	42.8	< 0.005	< 0.005	0.04	43.3
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.08	7.08	< 0.005	< 0.005	0.01	7.17
Vendor	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
Hauling	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

3.11. Architectural Coating (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.5	56.5	< 0.005	0.01	0.12	59.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.6	56.6	< 0.005	0.01	< 0.005	59.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	3.13	2.96	0.01	0.07	—	0.07	0.06	—	0.06	—	524	524	0.02	< 0.005	—	526
Architectural Coatings	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.61	1.61	< 0.005	0.16	0.16	—	33.6	33.6	< 0.005	< 0.005	0.03	35.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.57	0.54	< 0.005	0.01	—	0.01	0.01	—	0.01	—	86.7	86.7	< 0.005	< 0.005	—	87.0

Architectural Coatings	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	5.57	5.57	< 0.005	< 0.005	0.01	5.83
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.15	2.78	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	746	746	0.01	< 0.005	1.58	749
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.18	2.36	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	707	707	0.01	0.03	0.04	716
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.11	1.47	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	427	427	< 0.005	0.02	0.41	433
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.27	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	70.7	70.7	< 0.005	< 0.005	0.07	71.6
Vendor	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
Hauling	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

3.12. Architectural Coating (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.5	56.5	< 0.005	0.01	0.12	59.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.6	56.6	< 0.005	0.01	< 0.005	59.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	3.13	2.96	0.01	0.07	—	0.07	0.06	—	0.06	—	524	524	0.02	< 0.005	—	526
Architectural Coatings	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.61	1.61	< 0.005	0.16	0.16	—	33.6	33.6	< 0.005	< 0.005	0.03	35.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.57	0.54	< 0.005	0.01	—	0.01	0.01	—	0.01	—	86.7	86.7	< 0.005	< 0.005	—	87.0

Architectu Coatings	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	5.57	5.57	< 0.005	< 0.005	0.01	5.83
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.15	2.78	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	746	746	0.01	< 0.005	1.58	749
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.18	2.36	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	707	707	0.01	0.03	0.04	716
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.11	1.47	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	427	427	< 0.005	0.02	0.41	433
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.27	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	70.7	70.7	< 0.005	< 0.005	0.07	71.6
Vendor	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
Hauling	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

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	5/1/2030	7/2/2030	5.00	45.0	—
Grading	Grading	7/3/2030	9/3/2030	5.00	45.0	—
Building Construction	Building Construction	9/4/2030	11/26/2030	5.00	60.0	—
Paving	Paving	2/3/2031	3/28/2031	5.00	40.0	—
Architectural Coating	Architectural Coating	12/2/2030	10/31/2031	5.00	240	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37

Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Scrapers	Diesel	Average	2.00	6.00	423	0.48
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Off-Highway Tractors	Diesel	Average	1.00	7.00	38.0	0.44
Building Construction	Forklifts	Electric	Average	3.00	7.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Aerial Lifts	Diesel	Average	6.00	7.00	46.0	0.31
Building Construction	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Building Construction	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Building Construction	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Building Construction	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Building Construction	Excavators	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Paving	Surfacing Equipment	Diesel	Average	1.00	7.00	399	0.30
Paving	Trenchers	Diesel	Average	1.00	7.00	40.0	0.50
Paving	Graders	Diesel	Average	1.00	8.00	148	0.41
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Architectural Coating	Forklifts	Electric	Average	4.00	8.00	82.0	0.20
Architectural Coating	Generator Sets	Diesel	Average	3.00	8.00	14.0	0.74
Architectural Coating	Welders	Diesel	Average	1.00	7.00	46.0	0.45

Architectural Coating	Aerial Lifts	Diesel	Average	3.00	7.00	46.0	0.31

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Scrapers	Diesel	Average	2.00	6.00	423	0.48
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Off-Highway Tractors	Diesel	Average	1.00	7.00	38.0	0.44
Building Construction	Forklifts	Electric	Average	3.00	7.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Aerial Lifts	Diesel	Average	6.00	7.00	46.0	0.31
Building Construction	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Building Construction	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Building Construction	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Building Construction	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Building Construction	Excavators	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42

Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Paving	Surfacing Equipment	Diesel	Average	1.00	7.00	399	0.30
Paving	Trenchers	Diesel	Average	1.00	7.00	40.0	0.50
Paving	Graders	Diesel	Average	1.00	8.00	148	0.41
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Architectural Coating	Forklifts	Electric	Average	4.00	8.00	82.0	0.20
Architectural Coating	Generator Sets	Diesel	Average	3.00	8.00	14.0	0.74
Architectural Coating	Welders	Diesel	Average	1.00	7.00	46.0	0.45
Architectural Coating	Aerial Lifts	Diesel	Average	3.00	7.00	46.0	0.31

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	8.00	10.2	HHDT,MHDT
Site Preparation	Hauling	2.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	30.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	4.00	10.2	HHDT,MHDT
Grading	Hauling	8.00	20.0	HHDT
Grading	Onsite truck	5.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	80.0	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	6.00	10.2	HHDT,MHDT

Building Construction	Hauling	4.00	20.0	HHDT
Building Construction	Onsite truck	9.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	120	18.5	LDA,LDT1,LDT2
Paving	Vendor	6.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	11.0	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	60.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	5.00	4.00	HHDT,MHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	8.00	10.2	HHDT,MHDT
Site Preparation	Hauling	2.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	30.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	4.00	10.2	HHDT,MHDT
Grading	Hauling	8.00	20.0	HHDT
Grading	Onsite truck	5.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	80.0	18.5	LDA,LDT1,LDT2

Building Construction	Vendor	6.00	10.2	HHDT,MHDT
Building Construction	Hauling	4.00	20.0	HHDT
Building Construction	Onsite truck	9.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	120	18.5	LDA,LDT1,LDT2
Paving	Vendor	6.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	11.0	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	60.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	5.00	4.00	HHDT,MHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	57%	57%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	37,500	12,500	2,222

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	67.5	0.00	—
Grading	0.00	0.00	113	0.00	—
Paving	0.00	0.00	20.0	0.00	0.85

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Parking Lot	0.85	100%
Research & Development	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2030	648	690	0.05	0.01
2031	391	690	0.05	0.01

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	2	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	0	N/A
Wildfire	1	2	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	2	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	1	3
Wildfire	1	2	1	3
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	2	1	3

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

6.4.1. Temperature and Extreme Heat

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-23: Landscape with Climate Considerations	Improved Ecosystem Health, Water Conservation	—	1.00	—

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—

AQ-Ozone	69.6
AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0
Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8
Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—

Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0

Children	99.4
Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9
Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land uses based on PD and site plan.
Construction: Construction Phases	Construction schedule provided by LADWP.
Construction: Off-Road Equipment	Equipment inventory provided by LADWP.
Construction: Dust From Material Movement	All earthwork will be balanced on site.
Construction: On-Road Fugitive Dust	Limit vehicle speeds on unpaved roads to 15 mph (SCAQMD Rule 403).
Construction: Trips and VMT	Vehicle and personnel inventories provided by LADWP.

LADWP Headworks Project - Operations Detailed Report

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8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - Operations
Operational Year	2031
Lead Agency	LADWP
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.15285671760434, -118.3170842391024
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Research & Development	100	1000sqft	4.85	100,000	111,500	111,500	—	—

Research & Development	25.0	1000sqft	1.37	25,000	34,500	34,500	—	—
City Park	17.5	Acre	17.5	0.00	387,830	387,830	—	—
Parking Lot	6.00	Acre	6.00	0.00	13,000	13,000	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Transportation	T-34*	Provide Bike Parking
Energy	E-21*	Install Cool Pavements

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
Mit.	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535
Mit.	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535

% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561
Mit.	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252
Mit.	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	3,000
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	3,000
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Area	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Area	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.33	0.59	5.67	0.01	0.01	0.93	0.94	0.01	0.24	0.24	—	1,001	1,001	0.09	0.07	0.83	1,023
Area	3.87	0.03	3.72	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	15.3	15.3	< 0.005	< 0.005	—	15.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169
Area	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Energy	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	828	828	0.06	0.01	—	832
Water	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244
Waste	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
Total	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Area	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Area	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472

Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.33	0.59	5.67	0.01	0.01	0.93	0.94	0.01	0.24	0.24	—	1,001	1,001	0.09	0.07	0.83	1,023
Area	3.87	0.03	3.72	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	15.3	15.3	< 0.005	< 0.005	—	15.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169
Area	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Energy	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	828	828	0.06	0.01	—	832
Water	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244
Waste	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
Total	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.34	0.53	5.30	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	948	948	0.09	0.06	1.74	970
City Park	0.02	0.02	0.25	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	81.2	81.2	< 0.005	< 0.005	0.17	82.0
Parking Lot	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
Total	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.33	0.57	5.44	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	913	913	0.09	0.06	0.05	934
City Park	0.02	0.02	0.22	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	77.5	77.5	< 0.005	< 0.005	< 0.005	78.2
Parking Lot	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
Total	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.24	0.10	0.99	< 0.005	< 0.005	0.15	0.16	< 0.005	0.04	0.04	—	153	153	0.02	0.01	0.12	156
City Park	< 0.005	< 0.005	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	13.0	13.0	< 0.005	< 0.005	0.01	13.1
Parking Lot	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
Total	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.34	0.53	5.30	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	948	948	0.09	0.06	1.74	970
City Park	0.02	0.02	0.25	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	81.2	81.2	< 0.005	< 0.005	0.17	82.0
Parking Lot	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
Total	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.33	0.57	5.44	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	913	913	0.09	0.06	0.05	934
City Park	0.02	0.02	0.22	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	77.5	77.5	< 0.005	< 0.005	< 0.005	78.2
Parking Lot	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
Total	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.24	0.10	0.99	< 0.005	< 0.005	0.15	0.16	< 0.005	0.04	0.04	—	153	153	0.02	0.01	0.12	156
City Park	< 0.005	< 0.005	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	13.0	13.0	< 0.005	< 0.005	0.01	13.1
Parking Lot	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
Total	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	624	624	0.04	0.01	—	626
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	71.7	71.7	0.01	< 0.005	—	72.0
Total	—	—	—	—	—	—	—	—	—	—	—	695	695	0.05	0.01	—	699

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	624	624	0.04	0.01	—	626
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	71.7	71.7	0.01	< 0.005	—	72.0
Total	—	—	—	—	—	—	—	—	—	—	—	695	695	0.05	0.01	—	699

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134
City Park	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
Parking Lot	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
Total	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134
City Park	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
Parking Lot	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
Total	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.89	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Total	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscap Equipment	0.11	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Total	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.89	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Total	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Consumer Products	0.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.11	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Total	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346
City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346

City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	19.5	139	158	2.01	0.05	—	223
City Park	—	—	—	—	—	—	—	—	—	—	0.00	20.1	20.1	< 0.005	< 0.005	—	20.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.67	0.67	< 0.005	< 0.005	—	0.68
Total	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346
City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346

City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	19.5	139	158	2.01	0.05	—	223
City Park	—	—	—	—	—	—	—	—	—	—	0.00	20.1	20.1	< 0.005	< 0.005	—	20.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.67	0.67	< 0.005	< 0.005	—	0.68
Total	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	0.85	0.00	0.85	0.08	0.00	—	2.97
City Park	—	—	—	—	—	—	—	—	—	—	0.13	0.00	0.13	0.01	0.00	—	0.47
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	0.85	0.00	0.85	0.08	0.00	—	2.97
City Park	—	—	—	—	—	—	—	—	—	—	0.13	0.00	0.13	0.01	0.00	—	0.47
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipme Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Research & Development	580	580	580	211,700	1,051	1,051	1,051	383,615

Research & Development	16.0	16.0	16.0	5,840	159	159	159	58,195
City Park	12.1	12.1	12.1	4,407	120	120	120	43,919
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Research & Development	580	580	580	211,700	1,051	1,051	1,051	383,615
Research & Development	16.0	16.0	16.0	5,840	159	159	159	58,195
City Park	12.1	12.1	12.1	4,407	120	120	120	43,919
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	187,500	62,500	15,682

5.10.3. Landscape Equipment

Season	Unit	Value

Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Research & Development	1,592,875	690	0.0489	0.0069	2,009,186
Research & Development	398,219	690	0.0489	0.0069	502,296
City Park	0.00	690	0.0489	0.0069	0.00
Parking Lot	228,951	690	0.0489	0.0069	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Research & Development	1,592,875	690	0.0489	0.0069	2,009,186
Research & Development	398,219	690	0.0489	0.0069	502,296
City Park	0.00	690	0.0489	0.0069	0.00
Parking Lot	228,951	690	0.0489	0.0069	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Research & Development	49,169,395	3,474,980
Research & Development	12,292,349	1,075,218
City Park	0.00	12,087,009
Parking Lot	0.00	405,155

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Research & Development	49,169,395	3,474,980
Research & Development	12,292,349	1,075,218
City Park	0.00	12,087,009
Parking Lot	0.00	405,155

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Research & Development	7.60	—
Research & Development	1.90	—
City Park	1.50	—
Parking Lot	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Research & Development	7.60	—
Research & Development	1.90	—
City Park	1.50	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	2	3	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	2	2
Wildfire	2	2	2	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A

Air Quality Degradation	5	2	3	3

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	3	1
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	2	2
Wildfire	2	2	2	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	5	2	3	3

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

6.4.1. Temperature and Extreme Heat

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
EH-9: Expand Urban Tree Canopy	Energy and Fuel Savings, Improved Air Quality, Improved Public Health, Social Equity	1.00	1.00	—
MH-23: Landscape with Climate Considerations	Improved Ecosystem Health, Water Conservation	—	1.00	—

MH-39: Implement Pervious and Climate-Smart Surfaces	Energy and Fuel Savings, Improved Air Quality, Improved Ecosystem Health, Improved Public Health, Water Conservation	—	1.00	—

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	69.6
AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0
Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8

Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—

Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0

Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0
Children	99.4
Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9
Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—

Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

Measure Title	Co-Benefits Achieved
PH-2: Increase Urban Tree Canopy and Green Spaces	Energy and Fuel Savings, Enhanced Energy Security, Improved Air Quality, Improved Ecosystem Health, Improved Public Health, Social Equity
IC-4: Enhanced Open and Green Spaces	Improved Ecosystem Health, Improved Public Health, Social Equity, Water Conservation

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land uses based on updated PD & site plan.
Operations: Vehicle Data	Trips from traffic memo: 608 total daily, 580 WQL, 159 DPR, 120 Park.
Operations: Fleet Mix	No medium or heavy-duty trucks for Park patrons.

APPENDIX B

Biological Resources Assessment

HEADWORKS SITE DEVELOPMENT PROJECT

CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, CALIFORNIA

Biological Resources Assessment

Prepared For:

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January 2024

HEADWORKS SITE DEVELOPMENT PROJECT

CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, CALIFORNIA

Biological Resources Assessment

The undersigned certify that the statements furnished in this report and exhibits present data and information required for this biological evaluation, and the facts, statements, and information presented is a complete and accurate account of the findings and conclusions to the best of our knowledge and beliefs.

Arthur Popp
Senior Biologist

January 2024

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APPENDICES

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ACRONYMS AND ABBREVIATIONS

° F	degrees Fahrenheit
APN	assessor parcel number
BMPs	best management practices
CDFW	California Department of Fish and Wildlife
CDNPA	California Desert Native Plants Act
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CIRP	California Inventory of Rare and Endangered Plants
City	City of Los Angeles
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	federal Clean Water Act
DPR	Direct Potable Reuse
FESA	federal Endangered Species Act
GIS	Geographic Information System
HWSG	Headworks Spreading Grounds
IPaC	Information for Planning and Consultation
LADWP	Los Angeles Department of Water and Power
MBTA	Migratory Bird Treaty Act
Michael Baker	Michael Baker International
project	Headworks Site Development Project
NRCS	Natural Resources Conservation Service
RWQCB	Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
SAA	Streambed Alteration Agreement
SR	State Route
SRF	Clean Water State Revolving Fund
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WDR	Waste Discharge Requirements
WoS	waters of the State
WoUS	waters of the U.S.
WQC	Water Quality Certification
WQL	Water Quality Lab

Section 1 Introduction

The Los Angeles Department of Water and Power (LADWP) proposes to develop three facilities within its existing Headworks Spreading Grounds (HWSG) property, located along the northwest edge of Griffith Park in Los Angeles. The facilities would include a Water Quality Laboratory (WQL), a Direct Potable Reuse (DPR) Demonstration Facility, and a public park (Headworks Park), which are the components of the Headworks Site Development Project (referred to herein as the proposed project or project). The purpose of the WQL is to replace the existing obsolete LADWP laboratory facility, which is located in the City of Pasadena; the purpose of the DPR facility is to test various water purification technologies for treating recycled wastewater to help the City of Los Angeles meet the goal to reuse all of its wastewater by 2035; and the purpose of Headworks Park is to provide recreational access and educational opportunities regarding local ecosystems and water use. The proposed project would also include roads interior to the HWSG property, surface parking for staff and visitors, landscaping, and security lighting and fencing where required.

Michael Baker International (Michael Baker) was retained by LADWP to prepare a biological resource assessment of the proposed project in support of the California Environmental Quality Act (CEQA). In addition, LADWP is currently pursuing funding through the State Water Resources Control Board (SWRCB) Clean Water State Revolving Fund (SRF) for the proposed project. Per requirements of the SRF Environmental Package application, a biological resources assessment prepared in support of the project is required. Therefore, this memorandum has been prepared in accordance with CEQA and the requirements of the SRF application.

This report contains the findings of Michael Baker biological resources assessment for the proposed Headworks Site Development Project (project). A field survey/habitat assessment was conducted on October 14, 2021. The field surveys was conducted to characterize existing site conditions and assess the potential for special-status[1] biological resources to occur within the project site that could pose a constraint to implementation of the proposed project. Special attention was given to the suitability of habitats within the project site and their potential to support special-status biological resources that were identified during reviews of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database RareFind 5 (CNDDB), the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants of California (CIRP; CNPS 2022), and the U.S. Fish and Wildlife Service (USFWS) online Information for Planning and Consultation project planning tool (IPaC; USFWS 2022a), and other databases as potentially occurring in the vicinity of the project site.

[1] As used in this report, "special-status" refers to species that are either federally-/State-listed, proposed, or candidates; species that have been designated a California Rare Plant Rank by the California Native Plant Society; species designated as Fully Protected, Species of Special Concern, or Watch List by the California Department of Fish and Wildlife; or State/locally rare vegetation communities.

1.1 PROJECT LOCATION

The project site is located in the Hollywood community of the City of Los Angeles (City), within the existing HWSG property, which is located at 6001 West Forest Lawn Drive (refer to Figure 1 *Regional Location Map* and Figure 2 *Headworks Spreading Grounds and Vicinity*). The project site is depicted in the southcentral portion of the United States Geological Survey's (USGS) *Burbank, California* 7.5-minute quadrangle and is located within Township 1 North and Range 14 West. HWSG is a 43-acre property situated within the boundaries of Griffith Park. The property is owned by the Los Angeles Department of Recreation and Parks (LADRAP), but LADWP retains an easement over the entire 43 acres. The property is bounded by the Los Angeles River and the Ventura Freeway (State Route [SR]-134) to the north and by Forest Lawn Drive to the east and south. An LADWP high-voltage transmission line right-of-way runs along the northern perimeter of HWSG, between the river and the property boundary. Forest Lawn Memorial Park and Mount Sinai Memorial Park are located on the south side of Forest Lawn Drive across from HWSG. Griffith Park is located adjacent to the eastern edge of HWSG property, across Forest Lawn Drive.

The HWSG property has a General Plan land use designation of OS (Open Space) and is zoned OS-1XL-H-RIO (Open Space). Local access to the HWSG property is provided via Forest Lawn Drive, and regional access is provided via SR-134. While located within the urban setting of Los Angeles, the project site is more immediately surrounded by open space uses such as cemeteries, passive park areas, and other recreational facilities (refer to Figure 2)..

1.2 PROJECT SETTING

The HWSG property has historically been a source for water extraction, storage, and distribution for the City of Los Angeles associated with the adjacent Los Angeles River and the San Fernando Groundwater Basin. The property was acquired by the City in 1899 to serve as the "headworks" for its water distribution system by extracting groundwater from beneath the adjacent Los Angeles River. In 1902, a diversion dam and water supply conduit to convey water south to the City were built at the property. Deep infiltration galleries to extract groundwater were added in 1905 and expanded in 1916 and 1920. Wells were subsequently developed on the property, and by 1925, 14 wells at HWSG fed the City water system. Spreading grounds were developed at the facility in 1938 to detain river water for percolation. The water was collected in perforated pipes that were connected to infiltration galleries approximately 150 feet below the ground surface. An inflatable dam was built in the 1950s to direct river flows into the spreading grounds for infiltration into the aquifer. The infiltration galleries were removed from service in 1971, and river diversions into the spreading grounds ceased in 1982. The spreading grounds consisted of six separate basins, ranging in size from one acre to more than eight acres.

In 2012, construction began on the Headworks Reservoir Complex at HWSG. The Headworks Reservoir Complex replaced the storage capacity provided by the open-air Silver Lake Reservoir Complex, which was removed from service to comply with updated United States Environmental Protection Agency water quality regulations. The East Reservoir was completed in 2015, and construction of the West Reservoir was

completed in 2022. The reservoirs, which have a combined storage capacity of 110 million gallons (MG), are located in the eastern portion of the HWSG property, and occupy approximately half the property. The two reservoirs are roofed concrete structures that are partially below grade (20 feet) and partially above grade (20 feet). However, soil embankments have been built up around essentially all the above-grade walls of the reservoirs. The East Reservoir has also been buried with approximately 3 feet of soil, and the West Reservoir will be similarly buried prior to initiation of the proposed project construction.

The entire HWSG property has been highly disturbed starting early in the 20th century with the installation of water extraction and conveyance facilities involving deep excavation and grading, the mid-century development of spreading grounds requiring extensive earth movement across the site, and the recent implementation of the Headworks Reservoir Complex which entailed the construction of large, partially buried structures that encompass the eastern half of the property. While trees have reestablished in previously disturbed areas along portions of the southern perimeter (adjacent to Forest Lawn Drive) since the spreading grounds function was discontinued decades ago, the remainder of HWSG property remains largely devoid of vegetative cover, including the portion of the property west of the reservoirs, which was used as a soil borrow and fill area related to the reservoir construction. The exception to this is at the far eastern part of the property (east of the East Reservoir), where low-growing scrub vegetation has reestablished, and a portion of the top of the East Reservoir itself, which has been covered with soil and planted with low-growing scrub vegetation.

1.3 PROJECT DESCRIPTION

The proposed WQL would include approximately 100,000 gross square feet of floor space; surface parking for 12 visitor vehicles, 102 staff vehicles, and 20 LADWP fleet vehicles; a Mobile Laboratory Trailer; landscaping; and other site improvements. It would be located to the east of the proposed Direct Potable Reuse (DPR) Demonstration Facility at the Headworks Spreading Grounds (HWSG) property.

The DPR Demonstration Facility includes two treatment trains, a chemical storage area, support areas, a visitors center, and a parking lot. This facility would be approximately 20,000 square feet, with an additional 20,000 square feet for a surrounding vehicle access road. The visitor center would be approximately 5,000 square feet, and a parking lot would require approximately 16,500 square feet to accommodate staff and visitors. The DPR Demonstration Facility and visitor center would be located at the west end of the HWSG property.

Headworks Park would primarily be constructed on the roof of the West Reservoir. Areas adjacent to the reservoir would include a guest surface parking lot and gateway pavilion, on the west side of the West Reservoir, and a system of trails throughout the site that connect to the Los Angeles River Trail, Griffith Park, and an equestrian tunnel that intersects westbound lanes of the SR-134. The proposed facilities and existing features are provided in Figure 3 *Proposed Project Conceptual Site Plan*.



HEADWORKS SITE DEVELOPMENT PROJECT

Regional Vicinity

Figure 1



Legend

- Headworks Spreading Grounds Property
- Griffith Park

LA DWP

0 600 1,200 Feet

Source: County of Los Angeles, ArcGIS Online

HEADWORKS SITE DEVELOPMENT PROJECT

Headworks Spreading Grounds and Vicinity

Figure 2



Legend

1. Headworks Park (Proposed)
2. Headworks Park - Pavilion Gateway (Proposed)
3. Headworks Park - Parking Lot (Proposed)
4. LA River Trail Segment (Proposed)
5. Access Road (Proposed)
6. Equestrian Tunnel (Existing)
7. Connection to Griffith Park (Existing)
8. Water Quality Lab (Proposed)
9. DPR Demonstration Facility (Proposed)
10. DPR Demonstration Facility Visitor Center (Proposed)
11. East Reservoir (Existing)
12. Flow Control Station (In Construction)

HEADWORKS SITE DEVELOPMENT PROJECT

0 250 500 Feet

Source: ESRI, Nearmap, County of Los Angeles

Proposed Project Conceptual Site Plan

Figure 3

Section 2 Methodology

Michael Baker conducted thorough literature reviews and records searches to determine which special-status biological resources have the potential to occur on or within the general vicinity of the project site. A field survey was conducted to document existing conditions and determine the potential for special-status plant and wildlife species to occur within the project site.

2.1 LITERATURE REVIEW

Literature reviews and records searches were conducted for special-status biological resources[2] potentially occurring on or within the vicinity of the project site. Special-status plant and wildlife occurrence records within the USGS *Burbank* quadrangle, as well as quadrangles occurring within a 5-mile radius of the project site, including *Van Nuys, Beverly Hills, Hollywood, Los Angeles, and Pasadena*, were identified through a query of the CNDDB (CDFW 2022a) and CIRP (CNPS 2022), and for the project region through a review of IPaC.

The current regulatory/conservation status of special-status plant and wildlife species was verified through lists and resources provided by the CDFW, specifically the *Special Animals List* (CDFW 2022b), *State and Federally Listed Endangered and Threatened Animals of California* (CDFW 2022c), *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2022d), and *State and Federally Listed Endangered, Threatened, and Rare Plants of California* (CDFW 2022e). USFWS-designated Critical Habitat for species listed under the federal Endangered Species Act (FESA) was reviewed online via the Critical Habitat Mapper (USFWS 2022b).

In addition to the databases referenced above, Michael Baker reviewed all available reports, survey results, and literature detailing the biological resources previously observed on or within the vicinity of the HWSG property to understand existing site conditions, confirm previous species observations, and note the extent of any disturbances, if present, that have occurred in the project site that would otherwise limit the distribution of special-status biological resources. Standard field guides and texts were reviewed for specific habitat requirements of special-status and non-special-status biological resources. Aerial photography was also reviewed prior to the field survey to locate potential natural corridors and linkages that may support the movement of wildlife through the area.

On-site and adjoining soils were researched using the United States Department of Agriculture's Natural Resources Conservation Service's (NRCS) online Soil Web Survey (NRCS 2022). In addition, a review of

[2] As used in this report, "special-status" refers to species that are either federally-/State-listed, proposed, or candidates; species that have been designated a California Rare Plant Rank by the California Native Plant Society; species designated as Fully Protected, Species of Special Concern, or Watch List by the California Department of Fish and Wildlife; State/locally rare vegetation communities; or species covered under the Coachella Valley Multiple Species Habitat Conservation Plan.

the local geological conditions and historical aerial photographs was conducted to assess the ecological changes and disturbances that may have occurred within the HWSG property.

2.2 HABITAT ASSESSMENT

A field survey was conducted by biologist Art Popp on October 14, 2021, to document existing conditions at the locations of the three proposed facilities and to evaluate the potential for special-status species to occur at these locations and within the surrounding HWSG property. Weather conditions during the field survey consisted of temperatures ranging between 63-73º F, clear skies, and variable winds 3-10 miles per hour.

A 500-foot survey buffer around the three proposed facilities comprise the Biological Study Area (BSA) assessed for this report (see Figure 4 *Project Site and BSA Boundary Map*). A buffer was included in the analysis to capture potential indirect effects to biological resources from implementation of the project. Indirect effects could include elevated noise and dust levels, soil compaction, and increased human activity. It is anticipated that indirect impacts beyond 500 feet for this proposed project are generally diffuse and would not significantly affect biological resources.

Areas containing vegetation and other land cover types preliminarily identified on aerial photographs during the literature review were verified in the field by walking meandering transects through the BSA. Portions of the BSA, including the Los Angeles River and Forest Lawn and Mount Sinai Memorial Parks were not directly accessed, but observed with binoculars from a distance to document existing conditions. All plant and wildlife species observed during the field survey, as well as dominant plant species within each vegetation community, were recorded. In addition, site characteristics such as soil condition, topography, hydrology, anthropogenic disturbances, indicator species, and the overall condition of on-site vegetation communities were recorded.

2.3 VEGETATION COMMUNITIES AND LAND COVER TYPES

Vegetation communities and land cover types occurring within the project site were noted on an aerial photograph during the habitat assessment and later digitized using the GIS ArcView software to quantify the area of each vegetation community in acres. Any natural vegetation communities occurring within the project site are classified in accordance with descriptions provided in the *Manual of California Vegetation* (Sawyer *et al.,* 2009). Additionally, any vegetation communities that may occur on-site that are listed by CDFW as a California Sensitive Natural Community (CDFW 2022f) are noted.

2.4 PLANTS

Plant species observed during the habitat assessment were identified by visual characteristics and morphology in the field and recorded. Unfamiliar plants were photographed in the field and later identified using standard keys. Plant nomenclature used in this report follows the *Jepson Manual: Vascular Plants of*

California, Second Edition (Baldwin et al., 2012). In this report, scientific names are provided immediately following common names of plant species (first reference only).

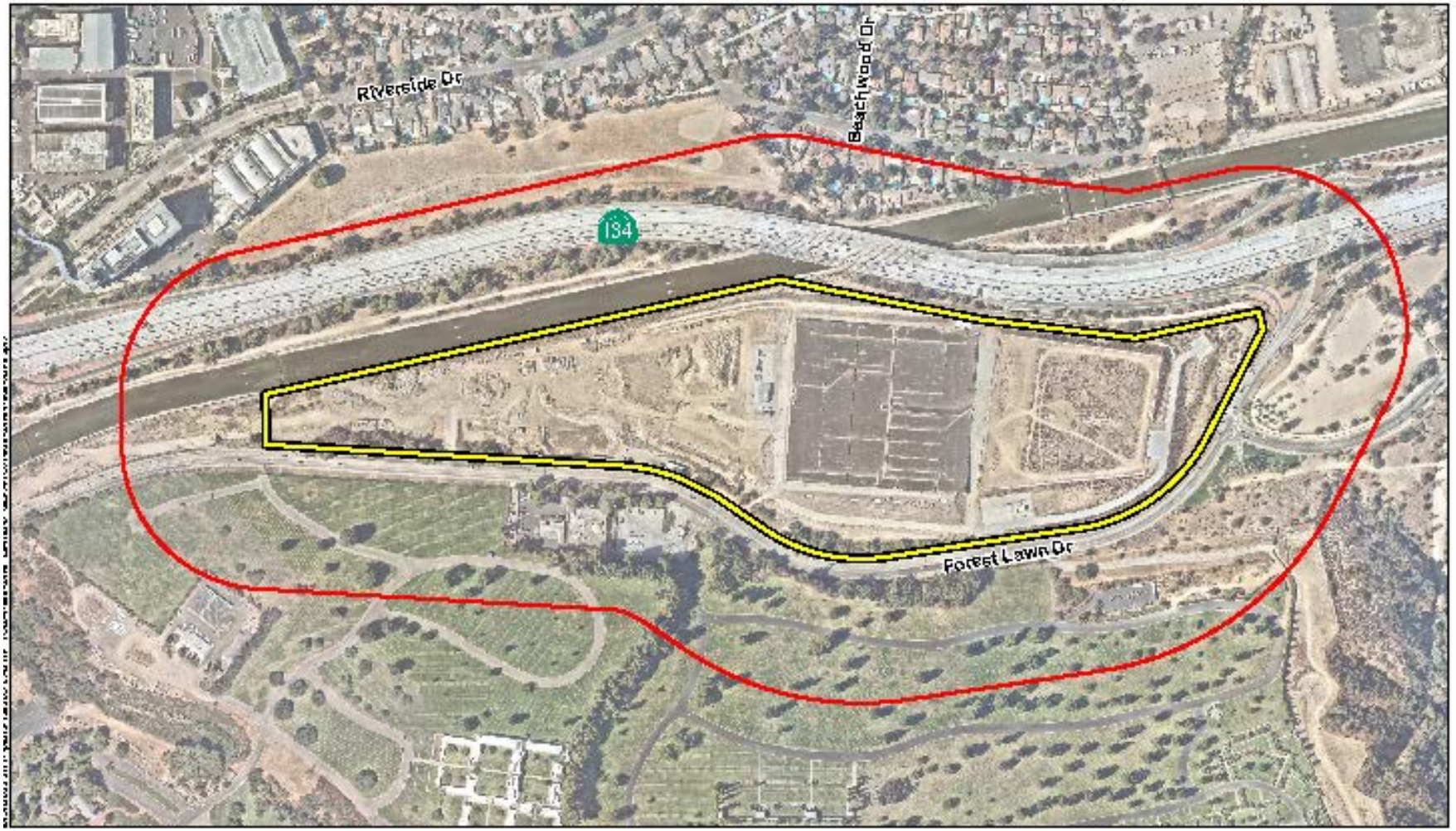
2.5 WILDLIFE

Wildlife species detected during the habitat assessment by sight, calls, tracks, scat, or other types of evidence were recorded in a field notebook. Field guides used to assist with identification of species during the habitat assessment included *The Sibley Guide to Birds* (Sibley, 2014) for birds, *A Field Guide to Western Reptiles and Amphibians* (Stebbins, 2003) for herpetofauna, and *A Field Guide to Mammals of North America* (Reid, 2006). Although common names of wildlife species are well standardized, scientific names are provided immediately following common names of wildlife species in this report (first reference only). To the extent possible, nomenclature of birds follows the most recent annual supplement of the American Ornithological Union's *Checklist of North American Birds* (Chesser et al., 2019), nomenclature of amphibians and reptiles follows *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our Understanding* (Crother, 2017), and nomenclature for mammals follows the *Bats of the United States and Canada* (Harvey et al., 2011) and *Revised Checklist of North American Mammals North of Mexico* (Bradley et al., 2014).

2.6 OTHER FIELD STUDIES

2.6.1 TREE SURVEY REPORT

A tree survey report covering the entire HWSG property was prepared in April 2021 by AECOM (AECOM 2021). The tree survey was conducted to identify the presence of all tree species occurring within the HWSG property, with a focus on those species protected under the City's Native Tree Protection Ordinance (discussed further in Section 4.3) and is intended to inform the design of facilities within the HWSG to avoid protected trees where possible.



HEADWORKS SITE DEVELOPMENT PROJECT

Project Site and BSA Boundary Map

Figure 4

Section 3 Results

The location of the WQL, DPR Demonstration Facility, and Headworks Park are unvegetated, consisting of bare ground at the proposed WQL, bare ground and existing pavement at the proposed DPR Demonstration Facility, and bare ground and the concrete top of the West Reservoir at the proposed Headworks Park site (refer to Figure 4). Vegetation does not generally coincide with the proposed access roads. Representative photographs taken throughout the HWSG property are included in Appendix A.

Extensive areas of bare ground occur within the BSA where grading and preparation of the sub grade for construction of the West Reservoir have occurred, at locations where equipment and materials are staged, and in other areas interspersed throughout the HWSG property, where activities associated with construction and operation of the site has removed vegetation communities. However, remnant native habitats, non-native vegetation, and ruderal species common in urbanized and previously disturbed areas are present in isolated areas. Remnant native vegetation occur primarily along the southern perimeter of the Headworks site, adjacent to Forest Lawn Drive.

3.1 TOPOGRAPHY AND SOILS

On-site surface elevations range from approximately 480-500 feet above mean sea level. The site is generally flat with topography altered by development of the site over the years. According to the online Web Soil Survey, (NRCS 2022), the project site is completely underlain by Urban Land Metz-Pico complex, 0-2% slopes. Metz soils consist of very deep, fine sandy loam, somewhat excessively drained soils that formed in alluvial material from mixed, but dominantly sedimentary rocks. Metz soils are found on floodplains and alluvial fans. Original on-site soil profiles were likely influenced by the near-by Los Angeles River.

3.2 VEGETATION COMMUNITIES AND LAND COVER TYPES

As noted above, the project footprints of the three proposed project facilities are composed entirely of bare ground, with some areas of concrete, and void of any vegetation (Photos 1-5, Appendix A). Extensive areas of bare ground also occur within the surrounding BSA where previous construction and equipment and materials staging has occurred. However, remnant native habitats, non-native vegetation, and ruderal species common in urbanized and previously disturbed areas are present in isolated areas of the BSA. Remnant native vegetation occurs primarily along the southern perimeter of the HWSG property, adjacent to Forest Lawn Drive, where stands of native arroyo willow (*Salix lasiolepis*), black willow (*S. gooddinggii*) (Photo 6), and toyon (*Heteromeles arbuitifolia*) are located south of the West Reservoir (Photos 7 and 8), and a stand of native laurel sumac (*Malosma laurina*) and blue elderberry (*Sambucus nigra spp. cerulea*) south of the proposed WQL (Photo 9). These stands of vegetation are small and are isolated from any larger community of natural vegetation by surrounding development. Native coast live oak (*Quercus agrifolia*), western sycamore (*Platanus racemose*), and Monterrey pine (*Pinus radiata*) trees also occur within the BSA.

Non-native trees occurring within the BSA were noted during the field survey, including primarily mature aleppo pine (*Pinus halephsis*) trees along the north side of Forest Lawn Drive (Photo 10). Canary Island pine (*P. canariensis*) trees also occur on site, as well as other occasional ornamental species typical of urbanized areas. Portions of Forest Lawn and Mount Sinai Memorial Parks lie in the BSA along the south side of Forest Lawn Drive and contain mature non-native ornamental trees and large areas of lawn.

Along the north edge of the Headworks property, adjacent to the Los Angeles River channel, an approximate 40- to 50-foot wide strip of low-growing vegetation is present within an electrical transmission corridor containing transmission towers (Photo 11). A mix of native and non-native species occur, including native deerweed (*Acmisopoon glaber*), coast goldenbush (*Isocoma menziesii*), and cudweed (*Pseudognaphalium* sp.), and non-native black mustard (*Brassica nigra*), short-pod mustard (*Hirshfeldia incana*), and Russian thistle (*Salsola tragus*). Landscape trees also occur in the northern portion of the BSA, along the SR-134 Freeway, across the river channel from the HWSG property.

In addition to the vegetation described above, patches of ruderal vegetation that have colonized previously-disturbed areas also within the HWSG property. Mustards, coast goldenbush, tree tobacco (*Nicotiana glauca*), castor bean (*Ricinus communis*), and other native and non-native opportunistic species were observed colonizing such areas.

As previously indicated in this report, the Los Angeles River runs north of the HWSG property and within the northern portion of the BSA. This section of the river is composed of a concrete box channel, and no riparian vegetation is present in or along the river (Photo 12).

3.3 WILDLIFE

This section provides a general discussion of those wildlife species that were observed during the field survey or that are expected to occur based on existing site conditions. The discussion is to be used as a general reference and is limited by the season, time of day, and weather conditions in which the field survey was conducted. Wildlife detections were based on calls, songs, scat, tracks, burrows, and direct observation. It is likely that birds and other wildlife species are currently less common in and around the HWSG due to a lack of vegetation and on-going construction activities.

3.3.1 FISH

No fish or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) with frequent sources of water that would be sufficient to support populations of fish were observed in the HWSG property during the field survey. Therefore, no fish are expected to occur in the project site.

3.3.2 AMPHIBIANS

No amphibians or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) that would provide suitable breeding habitat for amphibians were observed within the project site during the field survey. Therefore, no amphibians are expected to occur within the project site.

3.3.3 REPTILES

No reptiles were observed within the BSA during the field survey. Habitat within the BSA is suitable for reptile species common in urbanized City environments, such as western fence lizard (*Sceloporus occidentalis*), alligator lizard (*Elgaria multicarinata*), southern Pacific rattlesnake (*Crotalus oreganus helleri*), and gopher snake (*Pituophis catenifer catenifer*).

3.3.4 BIRDS

A number of bird species typical of the region were observed within the BSA and are listed below in Table 1.

Table 1. Bird Species Observed within the BSA

Birds	
Accipitridae	**Birds of Prey**
Buteo jamaicensis	red-tailed hawk
Anatidae	**Ducks, Geese, and Swans**
Anas platyrhynchos	mallard
Ardeidae	**Herons and bitterns**
Ardea herodias	great blue heron
Egretta thula	snowy egret

Columbidae	**Pigeons and Doves**
Zenaida macroura	mourning dove
Corvidae	**Crows, Jays and allies**
Aphelocoma californica	California scrub jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven
Fringillidae	**Finches**
Haemorhous mexicanus	house finch
Mimidae	**Mockingbirds and Thrashers**
Mimus polyglottos	Northern mockingbird
Parulidae	**New World Warblers**
Setophaga coronata	yellow-rumped warbler
Passerellidae	**New World Sparrows**
Melozone crissalis	California towhee
Recurvirostridae	**Stilts and Avocets**
Himantopus mexicanus	black-necked stilt
Trochilidae	**Hummingbirds**
Calypte anna	Anna's hummingbird
Tyrannidae	**Tyrant Flycatchers**
Sayornis nigricans	black phoebe

Mallard ducks, snowy egret, great blue heron, and black-necked stilt were observed within the Los Angeles River channel in the northern portion of the BSA. Other bird species were observed in or over terrestrial habitats within the BSA.

Nesting birds are protected pursuant to the federal Migratory Bird Treaty Act (MBTA) of 1918 and the California Fish and Game Code[3] (CFGC). No active or old bird nests or birds displaying nesting behaviors were observed within the project site during the field survey; however, the field survey was conducted outside the general nesting bird season (approximately February 1 through August 31).

3.3.5 MAMMALS

The BSA has the potential to support a variety of mammalian species; however, most mammalian species in the region are nocturnal and are difficult to observe during a day-time habitat assessment. Only California ground squirrel (*Otospermophilus beecheyi*) was directly observed during the field survey; however, habitat within the BSA is suitable for California deer mouse (*Peromyscus californicus*), eastern fox squirrel

[3] Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by CFGC or any regulation made pursuant thereto; Section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey); and Section 3513 makes it unlawful to take or possess any migratory non-game bird except as provided by the rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA, as amended (16 U.S.C. § 703 *et. sq.*).

(*Sciurus nigeri*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), coyote *(Canis latrans)*, and mule deer (*Odocoileus* sp.).

No bats or evidence of the presence of bats (i.e. guano, urine staining) were observed during the field survey. Mines, caves, rock outcrops, deep rock crevices, and buildings which may provide suitable colonial and/or maternity roosting habitat are absent from the BSA. Although there are a number of mature trees along Forest Lawn Drive and within the parks in the northern portion of the BSA, pine trees are the most common and do not provide suitable habitat for bats that may utilize trees for day or night-roosting. Palm trees, eucalyptus trees, and western sycamore trees, which provide the most suitable habitat for roosting by individual or small groups of bats, are not common in the BSA. Although limited, the presence of trees, shrubs, and ruderal herbaceous species in the BSA, and the occurrence of the Los Angeles River Channel north of the HWSG property, the BSA does provide limited foraging habitat for bats.

3.4 MIGRATORY CORRIDORS AND LINKAGES

In an urban context, a wildlife migration corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two comparatively undisturbed habitat fragments, or between a habitat fragment and some vital resource that encourages population growth and diversity. Habitat fragments are isolated patches of habitat separated by otherwise foreign or inhospitable areas, such as urban/suburban tracts, agricultural lands, or highways. Habitat fragments can isolate species populations by limiting migration, foraging, and breeding opportunities. Isolation of populations can have many harmful impacts and may contribute significantly to local species extinction.

Mature trees and shrubs along Forest Lawn Drive in the southern portion of the BSA and in adjacent parks on the other side of Forest Lawn Drive may provide a corridor for localized bird movement between natural open space areas in nearby Griffith Park and the surrounding urban environment. However, the BSA does not occur within or intersect a recognized/established regional wildlife corridor.

As previously indicated, the Los Angeles River is located along the northern limits of the BSA. This section of the river consists of a concrete box channel, about 200 feet wide, and up to 20 feet deep. There is no riparian vegetation in or along this reach of the river; however, storm flows and urban sources promote the production of substantial algae within sheet flow in the channel that support some bird species that feed on the algae and associated invertebrates. Although the river channel provides a food source for bird species and potentially other wildlife, and may provide opportunities for localized wildlife movement, it does not connect significant open or green-space areas or natural habitats that may provide critical wildlife resources (i.e., food, cover, water) and does not serve as a significant wildlife movement corridor.

3.5 SPECIAL-STATUS BIOLOGICAL RESOURCES

The CNDDB and CIRP were queried for reported locations of special-status plant and wildlife species as well as special-status natural vegetation communities occurring within the USGS *Burbank, Van Nuys, Beverly Hills, Hollywood, Los Angeles, and Pasadena* 7.5-minute quadrangles and those identified from a

review of IPaC. The field survey was conducted to assess and evaluate existing condition of the habitats within the boundaries of the project site to determine if the existing vegetation communities, at the time of the field survey, have the potential to provide suitable habitat for special-status plant and wildlife species. Additionally, the potentials for special-status species to occur within the BSA were determined based on the reported locations in the CNDDB and CIRP the following guidelines:

- **Present**: the species was observed or detected within the project site during the field survey.
- **High**: Occurrence records (within 20 years) indicate that the species has been known to occur on or within one mile of the project site and the site is within the normal expected range of this species. Intact, suitable habitat preferred by this species occurs within the project site and/or there is viable landscape connectivity to a local known extant population(s) or sighting(s).
- **Moderate**: Occurrence records (within 20 years) indicate that the species has been known to occur within one mile of the project site and the site is within the normal expected range of this species. There is suitable habitat within the project site, but the site is ecologically isolated from any local known extant populations or sightings.
- **Low**: Occurrence records (within 20 years) indicate that the species has been known to occur within five miles of the project site, but the site is outside of the normal expected range of the species and/or there is poor quality or marginal habitat within the project site.
- **Not Expected**: There are no occurrence records of the species occurring within five miles of the project site, there is no suitable habitat within the project site, and/or the project site is outside of the normal expected range for the species.

The literature search identified fifty-five (55) special-status plant species, twenty-seven (27) special-status wildlife species, and six (6) sensitive vegetation communities as having been recorded within the six-quad search of the CNDDB and CIRP, and during a search of IPaC. Special-status plant and wildlife species were evaluated for their potential to occur within the BSA based on habitat requirements, availability and quality of suitable habitat, and known distributions. Special-status biological resources identified during the literature review are presented in Appendix B *Special-Status Plant and Wildlife Species and Sensitive Natural Vegetation Communities*.

3.5.1 SPECIAL-STATUS PLANT SPECIES

Special-status plant species include those listed as Endangered, Threatened, Rare or those species proposed for listing by the USFWS under the FESA and CDFW under the California Endangered Species Act (CESA) (CDFW 2022a). The CNPS inventory is sanctioned by the CDFW and serves essentially as the list of candidate plant species for state listing. CNPS's California Rare Plant Ranks (CRPR) 1B and 2 species are considered eligible for state listing as endangered or threatened.

Fifty-five (55) special-status plant species were identified during a review of the CNDDB and CIRP to have been recorded within the USGS six quadrant search area and from a review of IPAC. Each species' special-status ranking, preferred habitats, and potential to occur within the BSA site are provided in Appendix B,

Table 1. No CNDDB records of any plant species listed under the FESA or CESA coincides with the BSA. A historical record of one special-status species, Parish's brittlescale (*Atriplex parishii*), a CNPS-listed species with a California Rare Plant Rank of 1B.1 (Plants rare, threatened, or endangered in California and elsewhere, seriously threatened in California) coincides with the BSA. The record indicates an undated collection from along the northern foot of the Santa Monica Mountains, north of Griffith Park. This species was not documented on site during the field survey, and habitat potentially suitable to support this species (alkali meadows, vernal poos, chenopod scrub, playas) no longer occur within the BSA, and this species is likely extirpated from the area.

Most special-status plant species occurrences identified during the literature review are known from intact natural habitats within the nearby Santa Monica Mountains, south of the BSA in Griffith Park, and from the Verdugo Mountains and Angeles National Forest, several miles to the north and east of the project site. Based on the results of the literature review and field surveys, Michael Baker determined that special-status plant species are generally not anticipated to occur within the BSA, or have a low potential to occur within the BSA based on existing site conditions and a review of specific habitat requirements, occurrence records, and known distributions of each species. Only those species with CNDDB records from within the past 20 years and from within 5 miles of the BSA were identified to have low potential to occur, based on the guidelines presented above in Section 3.6.

3.5.2 SPECIAL-STATUS WILDLIFE SPECIES

Special-status wildlife species include those listed as Endangered, Threatened, Rare or those species proposed for listing by the USFWS under FESA and CDFW under the California Endangered Species Act (CESA) (CDFW 2022b). Additional species receive federal protection under the Bald Eagle Protection Act (e.g., bald eagle, golden eagle), the Migratory Bird Treaty Act (MBTA), and state protection under the California Environmental Quality Act (CEQA) Section 15380(d).

All birds, except European starlings, English house sparrows, rock doves (pigeons), and non-migratory game birds such as quail, pheasant, and grouse are protected under the MBTA. However, non-migratory game birds are protected under California Fish and Game Code (CFGC) Section 3503. Many other species are considered by CDFW to be California Species of Special Concern (SSC) and others are on a CDFW Watch List (WL). The CNDDB tracks species within California for which there is conservation concern, including many that are not formally listed, and assigns them a CNDDB Rank (CDFW 2022c). Although CDFW SSC and WL species and species that are tracked in the CNDDB but not formally listed are afforded no official legal status, they may receive special consideration during the CEQA environmental review process. CDFW further classifies some species as "Fully Protected" (FP), indicating that the species may not be taken or possessed except for scientific purposes, under special permit from CDFW. Additionally, CFGC Sections 3503, 3505, and 3800 prohibit the take, destruction, or possession of any bird, nest, or egg of any bird except English house sparrows and European starlings unless authorization is obtained from CDFW.

Twenty-seven (27) special-status wildlife species were identified during a review of the CNDDB to have been recorded within the USGS six quadrant search area and from a review of IPAC. Each species' special-status ranking, preferred habitats, and potential to occur within the BSA site are provided in Appendix B, Table 2. CNDDB records of least Bell's vireo (*Vireo bellii pusillus*, federally-listed endangered and State-listed endangered) coincide with the BSA; however, the records are from the 1920s along the Los Angeles River adjacent to the HWSG property. No riparian habitat potentially suitable for this species currently occurs along the river or in the vicinity of the BSA. This species is considered extirpated from the area and is not expected to occur within the BSA. Additionally, an undated CNDDB record of western ridged mussel (*Gonidea angulate*; species tracked in CNDDB) from the Los Angeles River coincides with the BSA, but is considered extirpated from the area and not expected to occur within the BSA. Similar to regional records of special-status plant species, most wildlife species records in the region are known from intact natural habitats within the Santa Monica Mountains, Verdugo Mountains, and Angeles National Forest.

Although habitats suitable to support the special-status wildlife species identified during the database searches are generally absent from the BSA, American peregrine falcon (*Falco peregrinus anatum*), a species de-listed from FESA and CESA, but still Fully Protected by CDFW is known to occur within nearby Griffith Park and has as recently as 2020 attempted to fledge young at a known nest site within the park (Cooper and McCammon 2020). As a result, this species could occur across the BSA as a migrating or foraging transient; however, they are not expected to nest within the BSA. Additionally, mature trees within the BSA provide potentially suitable nesting habitat for Cooper's hawk (*Accipter cooperii*; CDFW WL species), a special-status raptor species not identified during the literature review, but one known to successfully nest throughout urban environments within the Los Angeles Basin, including in nearby Griffith Park and the Glendale-Burbank area (Cooper and McCammon 2021). American peregrine falcon and Cooper's hawk have low potential to occur within the BSA.

Based on the results of the literature review and field surveys, Michael Baker determined that all remaining special-status wildlife species included in Appendix B, Table 2 are not anticipated to occur within the BSA, or have a low potential to occur within the BSA based on existing site conditions and a review of specific habitat requirements, occurrence records, and known distributions of each species. Only those species with CNDDB records from within the past 20 years and from within 5 miles of the BSA were identified to have low potential to occur, based on the guidelines presented above in Section 3.6, including: California legless lizard (*Anniella* spp.; CDFW Species of Special Concern [SSC]), southern California legless lizard (*Anniella stebbinsi*; CDFW SSC), and San Diego woodrat (*Neotoma lepida intermedia*; CDFW SSC).

3.5.3 SPECIAL-STATUS VEGETATION COMMUNITIES

Six (6) special-status vegetation communities have been reported in the CNDDB within the six quad search area: California Walnut Woodland, Riversidian Alluvial Fan Sage Scrub, Southern Coast Live Oak Riparian Forest, Southern Cottonwood Willow Riparian Forest, Southern Sycamore Alder Riparian Woodland, and Walnut Forest. These communities are identified in the CNDDB from the nearby Santa Monica Mountains, Verdugo Mountains, and the Angeles National Forest, and do not coincide with the BSA. However, based

on results of the field survey and a review of CDFW's most-current Sensitive Natural Communities List (CDFW 2022f), one sensitive native vegetation community, arroyo willow, occurs within the BSA. Along with black willow, arroyo willow are common riparian species in southern California, and within the HWSG property, these species define the alignment of a linear swale-like feature that occurs south of the West Reservoir (see Chapter 3.6.4 below).

3.5.4 POTENTIAL JURISDICTIONAL WATERS

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities, are considered sensitive natural communities that can fall under the jurisdiction of several regulatory agencies. The USACE Regulatory Branch regulates discharge of dredged or fill material into "waters of the United States" pursuant to Section 404 of the federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the RWQCB regulates discharges to surface waters pursuant to Section 401 of the CWA and Section 13263 of the California Porter-Cologne Water Quality Control Act (Porter Cologne) and the CDFW regulates alterations to streambed and associated vegetation communities under Section 1600 *et seq*. of the CFGC.

Based on a review of the USFWS National Wetlands Inventory (NWI) (USFWS 2022), several features were originally mapped by NWI within the BSA, including freshwater ponds, freshwater emergent wetland, and riverine habitat (Los Angeles River channel); all were classified as being man-made and having temporary or seasonally flooded water regimes. These aquatic features are no longer evident within the HWSG property. One remaining potentially jurisdictional feature, a swale-like feature located south of the West Reservoir, along the southern boundary of the HWSG property, is not mapped in the NWI.

3.6 CRITICAL HABITAT

Under the definition included in the FESA, designated Critical Habitat refers to specific areas within the geographical range of a species that were occupied at the time it was listed and that contain the physical or biological features that are essential to the survival and eventual recovery of that species. Areas of Critical Habitat may require special management considerations or protection, regardless of whether the species is still extant in the area. Areas that were not known to be occupied at the time a species was listed can also be designated as Critical Habitat if they contain one or more of the physical or biological features that are essential to that species' conservation and if the occupied areas are inadequate to ensure the species' recovery. If a project may result in take or adverse modification to a species' designated Critical Habitat and the project has a federal nexus, the project proponent may be required to provide suitable mitigation. Projects with a federal nexus include those that occur on federal lands, require federal permits (e.g., federal CWA Section 404 permit), or receive any federal oversight or funding. If there is a federal nexus, then the federal agency that is responsible for providing funds or permits would be required to consult with the USFWS pursuant to the FESA.

The BSA does not coincide with any USFWS-designated Critical Habitat. The nearest Critical Habitat is located approximately 8 miles north of the BSA at Hansen Dam.

Section 4 Project Impact Analysis

Biological resources may be either directly or indirectly impacted by a project. Direct and indirect impacts may be either permanent or temporary in nature. These impact categories are defined below.

- **Direct**: Any alteration, physical disturbance, or destruction of biological resources that would result from project-related activities is considered a direct impact. Examples include clearing vegetation, loss of individual species and/or their habitats, and encroaching into wetlands or a river.

- **Indirect**: As a result of project-related activities, biological resources may also be affected in a manner that is ancillary to physical impacts. Examples include elevated noise and dust levels, soil compaction, increased human activity, decreased water quality, and the introduction of invasive wildlife (domestic cats and dogs) and plants.

- **Permanent**: All impacts that result in the long-term or irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources.

- **Temporary**: Any impacts considered to be reversible can be viewed as temporary. Examples include the generation of fugitive dust during construction, or removing vegetation to provide work areas, and either allowing the natural vegetation to recolonize or actively revegetating the impact area. Surface disturbance that removes vegetation and disturbs the soil is considered a long-term temporary impact because of slow natural recovery in arid ecosystems.

Impacts on biological resources from implementation of the project and the project's consistency with various federal, state, and local regulations as applicable are described in this section.

4.1 VEGETATION

Construction of the WQL and DPR Demonstration Facility would occur entirely in areas consisting of bare ground, while portions of the Headworks Park development would occur on top of the buried concrete West Reservoir as well as bare ground. With the exception of the possible removal of a limited number of trees and shrubs along the southern perimeter of the HWSG property for site access (discussed further in Section 4.3), no vegetation removal would be required to construct the three proposed facilities. All permanent impacts associated with the footprints of each proposed facility would occur within bare ground or previously disturbed surfaces, and temporary impacts associated with construction around the proposed facilities would also occur within bare ground or areas that have been previously disturbed and lack any vegetation.

Indirect impacts to vegetation communities could include the accumulation of fugitive dust, and the colonization of non-native, invasive plant species. Other indirect impacts could include an increase in the

amount of compacted or modified surfaces that, if not controlled, could increase the potential for surface runoff, increased erosion, and sediment deposition within vegetation beyond the project's footprint. With implementation of standard construction practices related to fugitive dust (e.g. implementation of Rule 403 measures required by the South Coast Air Quality Management District) and erosion control (e.g., implementation of a Storm Water Pollution Prevention Plan), the potential for indirect impacts to vegetation in the surrounding BSA would be reduced to less than significant.

SPECIAL-STATUS PLANT SPECIES

No special-status plants were observed during the field survey, and they are not expected to occur, or have only low potential to occur within the BSA due to a lack of potentially suitable habitat (see Appendix B, Table 1). Additionally, no USFWS-designated critical habitat for any federally listed plant species coincides with the BSA. No significant direct or indirect impacts to special-status plants are anticipated.

4.2 PROTECTED TREES

4.2.1 CITY OF LOS ANGELES TREE PROTECTION ORDINANCE

Native tree species protected under the City's Native Tree Protection Ordinance (Ordinance No. 177404) include oak trees indigenous to California but excluding scrub oak (*Q. dumosa*); southern California black walnut (*Juglans californica*); western sycamore; and California bay (*Umbellularia californica*) (Section 17.02 of City Municipal Code). In December 2020, the City added two native shrub species, blue elderberry and toyon. Pursuant to the ordinance, native trees that were planted or grown as part of a tree planting program are not "Protected Trees." Trees and shrubs must be four inches or greater in diameter at 4.5 feet above ground to be considered protected. The City's Board of Public Works (Public Works) must issue a permit before any alterations to protected trees are made that could cause them to be damaged, relocated or removed. Pruning also requires a permit and must comply with the pruning standards set forth by the Western Chapter of the International Society of Arboriculture in a manner that does not cause permanent damage or adversely affect the health of the trees. Per the ordinance, the tree removal permit may require replanting of native trees within the project area or at another location within the City to mitigate for the removal of these trees. The ordinance requires replacement of protected trees, with the size and number of replacement trees approximating the value of the tree or shrub to be replaced.

Coast live oak and western sycamore trees and toyon and blue elderberry shrubs were identified within the HWSG property (AECOM 2021). These species are protected under the Los Angeles Native Tree Protection Ordinance. A limited number of individual protected trees and shrubs may be impacted at the proposed primary entry at Mt. Sinai Drive, along the southern edge of the HWSG property (see Photos 7 and 8, Appendix A). Impacts to any ordinance-protected species would be considered significant and would be determined during final design. A Tree Removal Permit in compliance with the City's Native Tree Protection Ordinance would be required for the removal of any protected tree. With issuance of a tree removal permit from Public Works and implementation of compensation to mitigate for tree removals

pursuant to the permit, the project would be in compliance with the Native Tree Protection Ordinance, and direct impacts to ordinance-protected species would be reduced to less than significant.

4.2.2 CITY OF LOS ANGELES STREET TREE POLICY

Public Works also manages removal, replacement, and maintenance of the City's street trees and landscaped median islands. "Street trees" are those occurring in the public right-of-way, and a permit from Public Works Urban Forestry Division is required to remove a street tree. Under Los Angeles Municipal Code section 62.170, as a condition to the permit, the permittee may be required to plant another tree of the type and size specified in the permit. However, in accordance with Los Angeles Municipal Code Section 62.177, a payment of in-lieu fees for the purchase, installation, and maintenance of trees is possible when the required replacement trees cannot feasibly be planted on site.

In the event it is determined that street trees will require removal to accommodate construction of the primary entrance point, a street tree removal permit from Public Works would be obtained and the appropriate compensation to mitigate any street tree removals would be completed in compliance with the City's street tree policy.

4.3 SPECIAL-STATUS WILDLIFE SPECIES

No special-status wildlife species were observed during the field survey and they are not expected to occur, or have only low potential to occur within the BSA due to a lack of potentially suitable habitat (see Appendix B, Table 2). As indicated in Chapter 3.5.2, American peregrine falcon may occur across the BSA as a migrating or foraging transient, and Cooper's hawk may nest in mature trees within the BSA. Trees suitable for nesting by this species would not be removed under the project during the nesting season, and as a result, significant direct impacts to special-status wildlife are not anticipated.

Indirect impacts to special-status wildlife species occurring in the surrounding BSA could occur as a result of noise, increased human presence, and vibrations resulting from construction activities. If such impacts were to occur, they would be considered significant. However, with the exception of American peregrine falcon and Cooper's hawk, special-status wildlife are not expected to occur within the BSA because suitable habitat is not present. Indirect impacts to American peregrine falcon and Cooper's hawk would be avoided by adhering to the impact minimization measure provided in Section 5 related to pre-construction surveys for nesting birds and providing a qualified biological monitor should nesting birds be present.

No USFWS-designated critical habitat for any federally listed wildlife species coincides with the BSA and no designated critical habitat areas would be impacted.

4.3.1 BIRDS

Birds protected by the MBTA and CFGC have the potential to nest in the BSA, although nesting within the project footprint of the three proposed facilities is not anticipated due to a lack of any vegetation. However, nesting may occur within native and non-native trees and shrubs located in the surrounding HWSG

property. By avoiding vegetation removal during the nesting bird season (generally February 15 through August 31), or by implementing and adhering to the avoidance and mitigation measures included in Section 5 related to pre-construction surveys for nesting birds and providing a qualified biological monitor should nesting birds be present, direct impacts to nesting birds and associated nesting habitat are not anticipated.

Indirect impacts to nesting birds within the BSA could occur as a result of noise, increased human presence, and vibrations resulting from construction activities. Disturbances related to construction could result in increased nestling mortality due to nest abandonment or decreased feeding frequency. By adhering to the mitigation measures provided in Chapter 5, indirect impacts to nesting birds would be avoided and minimized, and would be less than significant.

4.3.2 BATS

Although no special-status bat species are expected to occur within the BSA, large trees in the BSA may provide suitable roosting habitat for individual or small groups of bats within the vicinity of the project. Mature trees potentially suitable for day or night-time roosting, such as palm and western sycamore trees occurring in the BSA, would not be removed, avoiding direct impacts to roosting bats. Further, the largest trees within the BSA are pine (*Pinus*) species, which do not provide suitable bat roosting habitat. Potentially suitable colonial roosting sites do not occur within the BSA, as caves are absent and large suitable structures are limited in the project vicinity. As a result, direct impacts to colonial bat roosting habitat and day or night-roosting habitat is also not anticipated

Indirect impacts to bats roosting within the vicinity of the project could occur as a result of noise, increased human presence, and vibrations resulting from construction activities. Disturbances related to construction could result in displacement from daytime roosts and temporary avoidance of the project area; however, suitable trees for bat roosting are present beyond the BSA in the project vicinity. Disruption of night-time roosts is not anticipated as construction will not occur during dusk or evening hours. As a result, significant indirect impacts to bats are not anticipated.

4.4 SENSITIVE NATURAL COMMUNITIES

Construction of the proposed project would occur within bare ground and areas that have been previously disturbed, and would avoid stands of remnant native vegetation within the HWSG property. Therefore, direct impacts to sensitive natural communities would not occur. Indirect impacts to native vegetation communities occurring in the BSA could include the accumulation of fugitive dust, and the colonization of non-native, invasive plant species. Other indirect impacts could include an increase in the amount of compacted or modified surfaces that, if not controlled, could increase the potential for surface runoff, increased erosion, and sediment deposition within the remanent native communities. With implementation of standard construction practices related to the control of fugitive dust, runoff, and erosion, the potential for indirect impacts to vegetation in the surrounding BSA would be reduced to less than significant.

4.5 POTENTIAL JURISDICTIONAL WATERS

No impacts to potential jurisdictional waters would occur during project implementation. The potentially-jurisdictional swale-like feature occurring south of the West Reservoir does not coincide with the footprint of any of the three proposed facilities. As a result, permits pursuant to the CWA, Porter-Colonge, and/or CFGC will not be required.

4.6 WILDLIFE MOVEMENT CORRIDOR

The BSA does not serve as a regional wildlife corridor, and as a result, direct impacts to a regional wildlife movement corridor would not occur. However, as previously presented, the Los Angeles River channel occurs within the BSA and could provide opportunities for local wildlife movement. Since no work would occur in the channel and no night work is proposed, project construction activities are not anticipated to impact the channel's potential to facilitate wildlife movement. As a result, impacts to a wildlife movement corridor are not anticipated.

Section 5 Recommended Avoidance and Minimization Measures

With the potential for nesting birds protected under the MBTA and CFGC, including Cooper's hawk, to occur in native and ornamental vegetation occurring within the BSA, implementation of the Avoidance and Minimization Measure (MM) BIO-1 presented below would reduce potential significant impacts to nesting birds that may occur in the BSA.

MM BIO-1

1. A pre-construction nesting bird survey should be conducted by a qualified biologist within 3 days (72 hours) prior to the start of project construction activities to determine whether active nests are present within or directly adjacent to the construction zones. Following completion of the survey, a brief memo report should be prepared to document the location of all nests found (if any), their status (i.e. eggs or hatchlings present), existing biological conditions of the project area, and the bird species detected during the survey. If an active nest is found, recommendations to avoid and minimize impacts to the nest, such as those presented below, should be included as appropriate.

2. A no-work (or reduced work) buffer shall be established around any active passerine bird nest and around any active raptor nest. The qualified biologist shall monitor the nest on a weekly basis, and project activities within 300 feet of an active nest of any passerine bird or within 500 feet of an active nest of any raptor, shall be evaluated for potential impacts to the active nest[4]. Monitoring shall occur until the nest is no longer active. The buffers may be adjusted (including increases or reductions to the buffer) by the qualified biologist on a case-by-case basis taking into consideration the location, type, duration and timing, and severity of work, distance of nest from project activities, surrounding vegetation and line-of-sight between the nest and work areas, and the species' site-specific level of habituation to the disturbance. If the qualified biologist determines nesting activities may fail as a result of project activities, the biologist shall immediately inform the resident engineer and construction supervisor and all project activities shall cease within the recommended no-disturbance buffer until the biologist determines the adults and young are no longer reliant on the nest site.

3. Avoidance buffers around active nests should be delineated on site with bright flagging or other means, for easy identification by project personnel. The resident engineer and construction supervisor will be notified of the nest and the buffer limits to ensure it is maintained.

[4] Such measures have been modified on many projects to take into account the existing condition. For example, a nest in a tree along a major boulevard would not require a 300-foot buffer from construction because the existing condition is already noisy and dusty. Monitoring of the nest aids in determining if a buffer or other measures are required. In addition, this should only apply if work is initiated during nesting season.

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Appendix A Site Photographs



Photo 1. Northwest-facing overview of location for the proposed WQL (foreground ~~background~~ of photo) and DPR demonstration facility (~~foreground~~background).



Photo 2. South-facing overview of location for the proposed DPR demonstration facility (at left of photo) and WQL (foreground).



Photo 3. Southwest-facing view of location for the proposed DPR Demonstration Facility.



Photo 4. East-facing view of partially buried West Reservoir, on top of which Headworks Park will be constructed.



Photo 5. South-facing view of partially buried West Reservoir.



Photo 6. East-facing view of a stand of native willows (at right in photo) occurring south of the West Reservoir (out of photo view at left).



Photo 7. Northeast-facing view of toyon shrubs that occur within close proximity of the proposed alignment of the primary access road into the Headworks site.



Photo 8. Northeast-facing view of toyon shrubs that occur within close proximity of the proposed alignment of the primary access road into the Headworks site.



Photo 9. West-facing view of a stand of native laurel sumac and blue elderberry (at left in photo) occurring south of the proposed location for the DPR Demonstration Facility (out of photo view at right).



Photo 10. West-facing view of pine trees occurring along Forest Lawn Drive.



Photo 11. West-facing view of a strip of vegetation between the proposed location for the WQL and DPR demonstration facility and the Los Angeles River Channel.



Photo 12. West-facing view of the Los Angeles River channel located in the northern portion of the BSA.

Appendix B Special-Status Plant and Wildlife Species and Sensitive Natural Vegetation Communities Identified During

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
SPECIAL-STATUS PLANT SPECIES				
Arctostaphylos glandulosa ssp. gabrielensis San Gabriel manzanita	1B.2 G5T3 S3	Perennial evergreen shrub. Found in chaparral and cismontane woodland habitats. Occurs between 300-700 meters (985-2,295 feet). Blooms in January.	No	**Not Expected.** Potentially suitable habitat for this species is absent and the BSA occurs outside the known elevation range for this species.
Arenaria paludicola marsh sandwort	FE SE 1B.1 G1 S1	Perennial stoloniferous herb. Prefers sandy openings in freshwater or brackish marshes and swamps. Occurs between 3-170 meters (10-560 feet). Blooms May-August.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Asplenium vespertinum western spleenwort	4.2 G3? S4	Perennial rhizomatous herb. Prefers rocky areas in chaparral, cismontane woodland, and coastal scrub habitats. Occurs between 180-1,000 meters (590-3,280 feet). Blooms February-June.	No	**Not expected.** Potentially suitable habitat for this species is absent.
Astragalus brauntonii Braunton's milk-vetch	FE 1B.1 G2 S2	Perennial herb. Occurs in closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grassland habitats. Prefers recent burns or disturbed areas, in stiff gravelly clay soils overlying granite or limestone. Occurs between 0-640 meters (10-2,100 feet). Blooms January-August.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Astragalus pycnostachyus var. lanosissimus Ventura Marsh milk-vetch	FE SE 1B.1 G2T1 S1	Perennial herb. Found in coastal dunes, coastal scrub, and edges of coastal salt or brackish marshes and swamps. Occurs between 0-35 meters (0-115 feet). Blooms June-October.	No	**Not Expected.** Potentially suitable habitat for this species is absent and the BSA occurs outside the known elevation range for this species.

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Astragalus tener var. titi coastal dunes milk-vetch	FE SE 1B.2 G2T1 S1	Annual herb. Often found in vernally mesic areas in sandy coastal bluff scrub, coastal dunes, and mesic coastal prairie habitats. Occurs between 0-50 meters (0-165 feet). Blooms March-May.	No	**Not Expected.** Potentially suitable habitat for this species is absent and the BSA occurs outside the known elevation range for this species.
Atriplex coulteri Coulter's saltbush	1B.2 G3 S1S2	Perennial herb. Prefers alkaline or clay soils in coastal bluff scrub, coastal dunes, coastal scrub, and valley and foothill grassland habitats. Occurs between 0-460 meters (10-1,510 feet). Blooms March-October.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Atriplex pacifica south coast saltscale	1B.2 G4 S2	Annual herb. Found in coastal bluff scrub, coastal dune, coastal scrub and playa habitats. Occurs between 0-140 meters (0-460 feet). Blooms March-October.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Atriplex parishii Parish's brittlescale	1B.1 G1G2 S1	Annual herb. Found in alkaline chenopod scrub, playas, and vernal pools. Occurs between 25-1,900 meters (80-6,230 feet). Blooms June-October.	No	**Not Expected.** Potentially suitable habitat for this species is absent. An undated CNDDB record of this species coincides with the HWSG property.
Atriplex serenana var. davidsonii Davidson's saltscale	21B.2 G5T1 S1	Annual herb. Prefers alkaline soils in coastal bluff scrub and coastal scrub habitats. Occurs between 10-200 meters (30-660 feet). Blooms April-October.	No	**Low.** Potentially suitable habitat for this species is generally absent; however, one record from 2015 occurs approximately 4 miles north of the BSA.

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Berberis nevinii Nevin's barberry	FE SE 1B.1 G1 S1	Perennial evergreen shrub. Found in chaparral, cismontane woodland, coastal scrub, and riparian scrub habitats. Prefers steep, north-facing slopes or low-grade sandy washes. Occurs between 275–825 meters (900-2,710 feet). Blooms March–June.	No	**Not Expected.** Potentially suitable habitat for this species is absent and the BSA occurs outside the known elevation range for this species.
Calochortus catalinae Catalina mariposa lily	4.2 G3G4 S3S4	Perennial bulbiferous herb. Found in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats. Occurs between 15-700 meters (50-2,295 feet). Blooms February–June.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Calochortus clavatus var. gracilis slender mariposa-lily	1B.2 G4T2T3 S2S3	Perennial bulbiferous herb. Found in chaparral and coastal scrub habitats. Occurs between 320-1,000 meters (1,050-3,280 feet). Blooms March–June.	No	**Low.** Potentially suitable habitat for this species is generally absent; however, one record from 2010 occurs approximately 1.7 miles south of the BSA.
Calochortus plummerae Plummer's mariposa-lily	4.2 G4 S4	Perennial bulbiferous herb. Found in coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, and lower montane coniferous forest habitats. Prefers rocky and sandy sites with granitic or alluvial material. Occurs between 100–1,700 meters (330-5,580 feet). Blooms May–July.	No	**Low.** Potentially suitable habitat for this species is generally absent; however, one record from 2009 occurs approximately 1.5 miles south of the BSA.

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Calystegia felix lucky morning-glory	1B.1 G1Q S1	Annual rhizomatous herb. Found in meadows and seeps (sometimes alkaline) and alluvial riparian scrub. Historically associated with wetland and marshy places, but possibly in drier situations as well. Possibly silty loam and alkaline. Occurs between 30-215 meters (100-705 feet). Blooms March-September.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Camissoniopsis lewisii Lewis' evening-primrose	3 G4 S4	Annual herb. Prefers sandy or clay sites in coastal bluff scrub, cismontane woodland, coastal dune, coastal scrub, and valley and foothill grassland habitats. Occurs between 0-300 meters (0-980 feet). Blooms March-June.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Centromadia parryi ssp. australis southern tarplant	1B.1 G3T2 S3	Annual herb. Found in vernal pool, valley and foothill grassland, and marsh and swamp habitats. Occurs 0-480 meters (0-1,565 feet). Blooms May-November.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Centromadia pungens* ssp. *laevis smooth tarplant	1B.1 G3G4T2 S2	Annual herb. Prefers alkaline soils in chenopod scrub, meadow and seep, playa, riparian woodland, and valley and foothill grassland habitats. Occurs between 0-640 meters (0-2,100 feet). Blooms April-September.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Chloropyron maritimum* ssp. *maritimum salt marsh bird's-beak	FE SE 1B.2 G4?T1 S1	Annual herb (hemiparasitic). Found in coastal dunes and coastal salt marshes and swamps. Occurs between 0-30 meters (0-100 feet). Blooms May-October.	No	**Not Expected.** Potentially suitable habitat for this species is absent and the BSA occurs outside the known elevation range for this species.

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Chorizanthe parryi var. Fernandina San Fernando Valley spineflower	SE 1B.1 G2T1 S2	Annual herb. Found in coastal dunes and coastal salt marshes and swamps. Occurs between 0-30 meters (0-100 feet). Blooms May-October.	No	**Not Expected.** Potentially suitable habitat for this species is absent and the BSA occurs outside the known elevation range for this species.
Chorizanthe parryi* var. *parryi Parry's spineflower	1B.1 G3T2 S2	Annual herb. Found in sandy coastal scrub and valley and foothill grassland habitats. Occurs 150-1,220 meters (490-4,000 feet). Blooms April - July	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Clinopodium mimuloides monkey-flower savory	4.2 G3 S3	Perennial herb. Prefers sandy or rocky soils in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats. Occurs between 275-1,220 meters (900-4,005 feet). Blooms April-June.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Convolvulus simulans small-flowered morning-glory	4.2 G4 S4	Annual herb. Prefers clay or serpentinite seeps in open areas within chaparral, coastal scrub and valley and foothill grassland habitats. Occurs between 30-700 meters (100-2,300 feet). Blooms March-July	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Dithyrea maritima beach spectaclepod	1B.1 ST G1 S1	Perennial rhizomatous herb. Found in coastal dune and sandy coastal scrub habitats. Occurs between 0-50 meters (10-160 feet). Blooms March-May.	No	**Not Expected.** Potentially suitable habitat for this species is absent and the BSA occurs outside the known elevation range for this species.
Dodecahema leptoceras slender-horned spineflower	FE SE 1B.1 G1 S1	Annual herb. Prefers sandy sites in chaparral, cismontane woodland, and alluvial fans of coastal scrub habitats. Occurs between 200-760 meters (660-2,490 feet). Blooms April-June.	No	**Not Expected.** Potentially suitable habitat for this species is absent and the BSA occurs outside the known elevation range for this species.

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Dudleya multicaulis many-stemmed dudleya	1B.2 G2 S2	Perennial herb. Prefers clay soils in chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 15-790 meters (50-2,520 feet). Blooms April-July.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Galium cliftonsmithii Santa Barbara bedstraw	4.3 G4 S4	Perennial herb. Occurs within cismontane woodland habitats. Found at elevations ranging from 655 to 4005 feet. Blooming period is May through July.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Harpagonella palmeri Palmer's grapplinghook	4.2 G4 S3	Annual herb. Found in chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 20-955 meter (65-3,130 feet). Blooms March–May.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Helianthus nuttallii* ssp. *parishii Los Angeles sunflower	1A G5TX SX	Perennial rhizomatous herb. Found in coastal salt and freshwater marshes and swamps. Occurs between 10-1,675 meters (30-5,490 feet). Blooms August-October.	No	**Not expected.** Potentially suitable habitat for this species is absent.
Hordeum intercedens vernal barley	3.2 G3G4 S3S4	Annual herb. Found in coastal dunes, coastal scrub, valley and foothill grasslands in saline flats and depressions, and vernal pools. Occurs between 5-1,000 meters (15-3,280 feet). Blooms March - June	Yes	**Not Expected.** Potentially suitable habitat for this species is absent.
Horkelia cuneata* var. *puberula mesa horkelia	1B.1 G4T1 S1	Perennial herb. Prefers sandy or gravelly sites in chaparral, cismontane woodland, and coastal scrub habitats. Occurs between 70-810 meters (230-2,660 feet). Blooms February-September.	Present	**Not Expected.** Potentially suitable habitat for this species is absent..

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Juglans californica southern California black walnut	4.2 G4 S4	Perennial deciduous tree. Prefers alluvial sites in chaparral, cismontane woodlands, coastal scrub, and riparian woodland habitats. Occurs between 50-900 meters (160-2,950 feet). Blooms March-August	Yes	**Not Expected.** No specimen of this species was detected during a tree survey conducted across the entire Headworks site in 2021 by AECOM (2021).
Lasthenia glabrata ssp. coulteri Coulter's goldfields	1B.1 G4T2 S2	Annual heb. Found in coastal salt marshes, playas, and vernal pools. Occurs between 0-1,220 meters (0-4,000 feet). Blooms February-June.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Lepechinia fragrans fragrant pitcher sage	4.2 G3 S3	Perennial herb. Found in chaparral habitats. Occurs between 20-1,310 meters (65-4,300 feet). Blooms March-October.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Lepidium virginicum* var. *robinsonii Robinson's pepper-grass	4.3 G5T3 S3	Annual herb. Found in chaparral and coastal scrub habitats. Occurs between 0-885 meters (0-2,900 feet). Blooms January-July.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Lilium humboldtii ssp. ocellatum ocellated Humboldt lily	4.2 G4T4? S4?	Perennial bulbiferous herb. Prefers openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland habitats. Occurs between 30-1,800 meters (100-5,900 feet). Blooms March-August.	Yes	**Not Expected.** Potentially suitable habitat for this species is absent.
Malacothamnus davidsonii Davidson's bush-mallow	1B.2 G2 S2	Perennial deciduous shrub. Found in chaparral, cismontane woodland, coastal scrub, and riparian woodland habitats. Occurs between 185-855 meters (610-2,800 feet). Blooms June-January)	No	**Not Expected.** Potentially suitable habitat for this species is absent.

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Nama stenocarpa mud nama	2B.2 G4G5 S1S2	Annual/perennial herb. Found in marsh and swamp habitats, including lake margins and riverbanks. Occurs between 5-500 meters (15-1,640 feet). Blooms January-July.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Nasturtium gambelii Gambel's water cress	FE ST 1B.1 G1 S1	Perennial rhizomatous herb. Found in freshwater or brackish marshes and swamps. Occurs between 5-330 meters (15-1,080 feet). Blooms April-October.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Navarretia prostrata prostrate vernal pool navarretia	1B.2 G2 S2	Perennial rhizomatous herb. Prefers mesic coastal scrub, meadows and seeps, alkaline valley and foothill grassland, and vernal pool habitats. Occurs between 15-1,210 meters (50-3,970 feet). Blooms April-July.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Pelazoneuron puberulum var. sonorensis Sonoran maiden fern	2B.2 G5T3 S2	Perennial rhizomatous herb. Occurs in seeps and streams within meadow and seep habitats. Found at elevations ranging from 165 to 2000 feet. Blooming period is January through September.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Phacelia hubbyi Hubby's phacelia	4.2 G4 S4	Annual herb. Prefers gravelly, rocky, or talus sites in chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 0-1,000 meters (0-3,280 feet). Blooms April-July.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Pseudognaphalium leucocephalum white rabbit-tobacco	2B.2 G4 S2	Perennial herb. Prefers sandy or gravelly sites in riparian woodland, cismontane woodland, coastal scrub, and chaparral habitats. Occurs between 0-2,100 meters (0-6,890 feet). Blooms July-December.	No	**Not Expected.** Potentially suitable habitat for this species is absent.

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Quercus dumosa Nuttall's scrub oak	1B.1 G3 S3	Perennial evergreen shrub. Prefers sandy or clay loam sites in closed-cone coniferous forest, chaparral, and coastal scrub habitats. Occurs between 15-400 meters (50-1,310 feet). Blooms February-August.	No	**Not Expected.** No specimen of this species was detected during a tree survey conducted across the entire Headworks site in 2021 by AECOM (2021).
Quercus durata var. gabrielensis San Gabriel oak	4.2 G4T3 S3	Perennial evergreen shrub. Found in chaparral and cismontane woodland habitats. Occurs between 450-1,000 meters (1,480-3,280 feet). Blooms April-May.	No	**Not Expected.** No specimen of this species was detected during a tree survey conducted across the entire Headworks site in 2021 by AECOM (2021).
Quercus engelmannii Engelmann oak	4.2 G3 S3	Perennial deciduous tree. Found in chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland habitats. Occurs between 15-1,300 meters (160-4,260 feet). Blooms March-June.	No	**Not Expected.** No specimen of this species was detected during a tree survey conducted across the entire Headworks site in 2021 by AECOM (2021).
Ribes divaricatum* var. *parishii Parish's gooseberry	1A G5TX SX	Perennial deciduous shrub. Found in riparian woodland habitats. Occurs between 65-300 meters (215-985 feet). Blooms February-April.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Romneya coulteri Coulter's matilija poppy	4.2 G4 S4	Perennial rhizomatous herb. Found in chaparral and coastal scrub habitats. Occurs between 20-1,200 meters (65-3,940 feet). Blooms March–July.	No	**Not Expected.** Potentially suitable habitat for this species is absent.

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Rupertia rigida Parish' rupertia	4.3 G4 S4	Perennial herb. Found in chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, pebble (pavement) plain, and valley and foothill grassland habitats. Occurs between 700-2,500 meters (2,300-8,200 feet). Blooms June-August.	No	**Not Expected.** Potentially suitable habitat for this species is absent and the BSA occurs outside the known elevation range for this species.
Sagittaria sanfordii Sanford's arrowhead	1B.2 G3 S3	Perennial rhizomatous herb (emergent). Occurs in shallow freshwater within marsh and swamp habitats. Found at elevations ranging from 0 to 2,135 feet. Blooming period is May through October (November).	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Sidalcea neomexicana salt spring checkerbloom	2B.2 G4 S2	Perennial herb. Prefers alkaline or mesic sites in chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playa habitats. Occurs between 15-1,530 meters (50-5,020 feet). Blooms March-June.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Spermolepis lateriflora western bristly scaleseed	2A G5 SH	Annual herb. Occurs sometimes in rocky or sandy soils within Sonoran desert scrub habitats. Found at elevations ranging from 1,200 to 2,200 feet. Blooming period is March through April.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Symphyotrichum defoliatum San Bernardino aster	1B.2 G2 S2	Perennial rhizomatous herb. Prefers sites near ditches, streams and springs in coastal scrub, cismontane woodland, lower montane coniferous forest, valley and foothill grassland, meadow and seep habitats. Occurs between 0–2,040 meters (0-6,690 feet). Blooms July–November.	Absent	**Not Expected.** Potentially suitable habitat for this species is absent.

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Symphyotrichum greatae Greata's aster	1B.3 G2 S2	Perennial rhizomatous herb. Prefers mesic sites in broad-leaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and riparian woodland habitats. Occurs between 300-2,010 meters (980-6,590 feet). Blooms June-October.	Absent	**Not Expected.** Potentially suitable habitat for this species is absent and project components occur outside the known elevation range of this species.
Thelypteris puberula var. sonorensis Sonoran maiden fern	2B.2 G5T3 S2	Fern (rhizomatous). Found in meadows and seeps. Occurs between 50-610 meters (165-2,000 feet). Blooms January-September.	Absent	**Not Expected.** Potentially suitable habitat for this species is absent.
SPECIAL-STATUS VEGETATION COMMUNITIES				
CNDDB/Holland (1986) California Walnut Woodland **MCV (1995)** California Walnut Series **NVCS (2009)** California Walnut Alliance	G2 S2.1		No	**Absent:** This vegetation community was not observed within the project site.

CNDDB/Holland (1986) Riversidian Alluvial Fan Sage Scrub **MCV (1995)** Scalebroom Series **NVCS (2009)** *Lepidospartum squamatum* intermittently flooded Shrubland Alliance	G1 S1.1	Found at elevations ranging from 164 to 4,922 feet amsl on intermittently or rarely flooded, low-gradient alluvial deposits along streams, washes, and fans. Scalebroom (*Lepidospartum squamatum*) is dominant, co-dominant, or conspicuous in the shrub canopy with burrobrush (*Ambrosia salsola*), California sagebrush, mule fat (*Baccharis salicifolia*), bladderpod (*Cleome isomeris*), California cholla (*Cylindropuntia californica*), brittlebush (*Encelia farinosa*), thick leaved yerba santa (*Eriodictyon crassifolium*), hairy yerba santa (*Eriodictyon trichocalyx*), California buckwheat, chaparral yucca (*Hesperoyucca whipplei*), deerweed, laurel sumac (*Malosma laurina*), prickly-pear cactus (*Opuntia littoralis*), lemonade berry (*Rhus integrifolia*), sugar bush (*Rhus ovata*), skunkbrush (*Rhus aromatica*), and poison oak (*Toxicodendron diversilobum*). Emergent trees or tall shrubs may be present at low cover, including mountain mahogany (*Cercocarpus betuloides*), southern California black walnut, California juniper (*Juniperus californica*), California sycamore, Fremont cottonwood, or black elderberry (*Sambucus nigra*). Shrubs are less than 7 feet tall; canopy is open to continuous, and two tiered. Herbaceous is layer variable and may be grassy.	No	**Absent:** This vegetation community was not observed within the project site.
CNDDB/Holland (1986) Southern Coast Live Oak Riparian Forest	G4 S4	Found at elevations ranging from sea level to 3,937 feet amsl in alluvial terraces,	No	**Absent:** This vegetation community was not

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
MCV (1995) Coast Live Oak Series **NVCS (2009)** *Quercus agrifolia* Woodland Alliance		canyon bottoms, stream banks, slopes, and flats, Soils are deep, sandy or loamy with high organic matter. Coast live oak is a dominant or co-dominant in the tree canopy with bigleaf maple (*Acer macrophyllum*), box elder (*Acer negundo*), madrono (*Arbutus menziesii*), southern California black walnut, California sycamore, Fremont cottonwood, blue oak (*Quercus douglasii*), Engelmann oak (*Quercus engelmannii*), California black oak, valley oak (*Quercus lobata*), arroyo willow (*Salix lasiolepis*), and California bay (*Umbellularia californica*). Trees are less than 98 feet tall; canopy is open to continuous. Shrub layer is sparse to intermittent. Herbaceous layer is sparse or grassy.		observed within the project site.

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
CNDDB/Holland (1986) Southern Cottonwood Willow Riparian Forest **MCV (1995)** Fremont Cottonwood Series **NVCS (2009)** *Populus fremontii* Forest Alliance	G3 S3.2	Found at elevations ranging from sea level to 7,874 feet amsl on floodplains, along low-gradient rivers, perennial or seasonally intermittent streams, springs, in lower canyons in desert mountains, in alluvial fans, and in valleys with a dependable subsurface water supply that varies considerably during the year. Fremont cottonwood is a dominant or co-dominant in the tree canopy with box elder, desert baccharis (*Baccharis sergiloides*), Oregon ash (*Fraxinus latifolia*), northern California black walnut (*Juglans hindsii*), California sycamore, coast live oak, narrowleaf willow (*Salix exigua*), Goodding's willow (*Salix goodingii*), polished willow (*Salix laevigata*), arroyo willow, pacific willow (*Salix lasiandra* ssp. *lasiandra*), and yellow willow (*Salix lutea*). Trees and less than 25 meters tall; canopy is continuous to open. Shrub layer is intermittent to open. Herbaceous layer is variable.	No	**Absent:** This vegetation community was not observed within the project site.

Table 1. Special-Status Plants and Sensitive Natural Communities

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
CNDDB/Holland (1986) Southern Sycamore Alder Riparian Woodland **MCV (1995)** California Sycamore Series **NVCS (2009)** *Platanus racemosa* Woodland Alliance	G4 S4	Found at elevations ranging from sea level to 7,874 feet amsl in gullies, intermittent streams, springs, seeps, stream banks, and terraces adjacent to floodplains that are subject to high-intensity flooding. Soils are rocky or cobbly alluvium with permanent moisture at depth. California sycamore is a dominant or co-dominant in the tree canopy with white alder (*Alnus rhombifolia*), southern California black walnut, Fremont cottonwood, coast live oak, valley oak, narrowleaf willow, Gooding's willow, polished willow, arroyo willow, yellow willow, Peruvian pepper tree (*Schinus molle*), and California bay.	No	**Absent:** This vegetation community was not observed within the project site.
CNDDB/Holland (1986) Walnut Forest **MCV (1995)** Walnut Forest **NVCS (2009)** Walnut Forest	G1 S1.1		No	**Absent:** This vegetation community was not observed within the project site.

Table 2. Special-Status Wildlife Species

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
SPECIAL-STATUS WILDLIFE SPECIES				
Aimophila ruficeps canescens southern California rufous-crowned sparrow	WL G5T3 S3	Resident of southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.	No	**Not Expected.** Potentially suitable habitat for this species is absent and no records are known from the vicinity of the BSA.
***Anniella* spp.** California legless lizard	SSC G3G4 S3S4	Prefers coastal dune, valley foothill grassland, chaparral, and coastal scrub habitats. Found primarily in areas with moist, loose sandy or organic soils where there is plenty of leaf litter for cover.	No	**Low.** Potentially suitable habitat for this species is generally absent; however, two records from 2011 occur within approximately 1 mile southwest of the BSA.
Anniella stebbinsi southern California legless lizard	SSC G3 S3	Locally abundant specimens are found in coastal sand dunes and a variety of interior habitats, including sandy washes and alluvial fans. A large protected population persists in the remnant of the once extensive El Segundo Dunes at Los Angeles International Airport.	No	**Low.** Potentially suitable habitat for this species is generally absent; however, one record from 2020 occurs approximately 1 mile south of the BSA.
Antrozous pallidus pallid bat	SSC G5 S3	Locally common species in the Great Basin, Mojave, and Sonoran deserts (specifically Sonoran life zone) and grasslands throughout the western U.S. Also occurs in shrublands, woodlands, and forests from sea level to 8,000 feet. Prefers rocky outcrops, cliffs, and crevices for roosting with access to open habitats for foraging. May also roost in caves, mines, bridges, barns, porches, and bat boxes, and even on the ground under burlap sacks, stone piles, rags, baseboards, and rocks.	No	**Not Expected.** Potentially suitable habitat for this species is absent.

Table 2. Special-Status Wildlife Species

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Arizona elegans occidentalis California glossy snake	SSC G5T2 S2	Inhabits arid scrub, rocky washes, grasslands, and chaparral habitats. Appears to prefer microhabitats of open areas and areas with soil loose enough for easy burrowing.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Aspidoscelis tigris stejnegeri coastal whiptail	SSC G5T5 S3	This subspecies is found in coastal southern California, mostly west of the Peninsular Ranges and south of the Transverse Ranges, and north into Ventura County. Ranges south into Baja California. Found in a variety of ecosystems, primarily hot and dry open areas with sparse vegetation in chaparral, woodland, and riparian areas. Associated with rocky areas with little vegetation or sunny microhabitats within shrub or grassland associations.	No	**Not Expected.** Potentially suitable habitat for this species is absent and no records are known from the vicinity of the BSA.
Athene cunicularia burrowing owl	SSC G4 S3	Inhabits open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, California ground squirrel.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Buteo swainsoni Swainson's hawk	ST G5 S3	Summer migrant in southern California. Typical habitat is open desert, grassland, or cropland containing scattered, large trees or small groves. Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley. Forages in adjacent grassland or suitable grain or alfalfa fields or livestock pastures.	No	**Not Expected.** Potentially suitable habitat for this species is absent.

Table 2. Special-Status Wildlife Species

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Coturnicops noveboracensis yellow rail	ST G5 S3	Inhabits sedge marshes and meadows with moist soil or shallow standing water.	Absent	**Not Expected.** Potentially suitable habitat for this species is absent.
Danaus plexippus plexippus pop. 1 monarch - California overwintering population	FC G4T1T2 S2	Winter roosts occur along California coast from Mendocino County, south to Baja California, Mexico. Roosts in wind-protected tree groves (eucalyptus, Monterey pine, cypress) with nectar and water sources nearby.	Absent	**Not Expected.** Potentially suitable habitat for this species is absent. Suitable stands of trees for winter roosts are not present and there are no known overwintering sites in the vicinity (Xerces 2022). No CNDDB records are known from the vicinity of the BSA.
Empidonax traillii extimus southwestern willow flycatcher	FE SE G5T2 S1	Uncommon summer resident in southern California primarily found in lower elevation riparian habitats occurring along streams or in meadows. The structure of suitable breeding habitat typically consists of a dense mid-story and understory and can also include a dense canopy. Nest sites are generally located near surface water or saturated soils. The presence of surface water, swampy conditions, standing or flowing water under the riparian canopy are preferred.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Emys marmorata western pond turtle	SSC G3G4 S3	Inhabits permanent or nearly permanent bodies of water in many habitat types, below 6,000 feet (1,830 meters). This species requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Also needs suitable nesting sites.	Absent	**Not Expected**. Potentially suitable habitat for this species is absent.

Table 2. Special-Status Wildlife Species

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Eumops perotis californicus western mastiff bat	SSC G4G5T4 S3S4	Primarily a cliff-dwelling species, roost generally under exfoliating rock slabs. Roosts are generally high above the ground, usually allowing a clear vertical drop of at least 3 meters below the entrance for flight. In California, it is most frequently encountered in broad open areas. Its foraging habitat includes dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas.	No	**Not Expected**. Potentially suitable habitat for this species is absent.
Falco peregrinus anatum American peregrine falcon	FP G4T4 S3S4	Prefer breeding sites in proximity to water with nearby vertical structure such as niches in cliffs, steep banks, and ledges to serve as nesting sites. Coastal cliffs and bluffs are favored for nesting in California and granitic outcroppings of the Sierra Nevada. Also in urban areas where they use tall buildings and bridges for resting, foraging platforms, and breeding sites (Comrack and Logsdon 2008).	No	**Low.** Potentially suitable foraging habitat for this species is present in the BSA, with potentially suitable nesting habitat present outside the BSA in nearby Griffith Park. As a result, this species may fly across the BSA as a migratory or foraging transient.
Lasiurus xanthinus western yellow bat	SSC G4G5 S3	Uncommon in California, known only in Los Angeles and San Bernardino Counties. Occurs in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Prefers to roost and feed in, and near, palm oases and riparian habitats. Commonly found in the southwestern U.S. roosting in the skirt of dead fronds in both native and non-native palm trees.	No	**Not Expected**. Potentially suitable habitat for this species is absent.

Table 2. Special-Status Wildlife Species

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Microtus californicus stephensi south coast marsh vole	SSC G5T2T3 S1S2	Tidal marshes in Los Angeles, Orange and southern Ventura Counties.	No	**Not Expected.** Potentially suitable habitat for this species is absent.
Neotoma lepida intermedia San Diego desert woodrat	SSC G5T3T4 S3S4	Occurs in coastal scrub communities between San Luis Obispo and San Diego Counties. Found in a variety of shrub and desert habitats, primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth. Woodrats often are associated with cholla cactus which they use for water and dens or boulders and boulder piles. The most common natural habitats for records are chaparral, coastal sage scrub (including RSS and Diegan coastal sage scrub) and grassland.	No	**Low.** Potentially suitable habitat for this species is generally absent; however, two records from 2006 occur within approximately 1.5 miles south-southwest of the BSA.
Nyctinomops macrotis big free-tailed bat	SSC G5 S3	Low-lying arid hilly areas in Southern California to about 6,000 feet amsl. Roosts in crevices and cliffs, buildings, and cavities in trees.	No	**Not Expected.** Potentially suitable roosting habitat for this species is absent.

Table 2. Special-Status Wildlife Species

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Onychomys torridus ramona southern grasshopper mouse	SSC G5T3 S3	Common in arid desert habitats of the Mojave and southern Central Valley of California. Known elevation range is generally below 3,000 feet amsl. Little is known about habitat requirements; however, it is commonly found in scrub habitats with friable soils for digging in desert areas. It is believed that alkali desert scrub and desert scrub habitats are preferred, with somewhat lower densities expected in other desert habitats, including succulent shrub, wash, and riparian areas. Also occurs in coastal scrub, mixed chaparral, sagebrush, low sage, and bitterbrush habitats.	No	**Not expected.** Potentially suitable roosting habitat for this species is absent.
Perognathus longimembris brevinasus Los Angeles pocket mouse	SSC G5T2 S1S2	Occurs in lower elevation grasslands and coastal sage scrub communities in and around the Los Angeles Basin. Prefers open ground with fine sandy soils. May not dig extensive burrows, but instead will seek refuge under weeds and dead leaves instead.	No	**Not Expected.** Potentially suitable habitat for this species is absent and no records are known from the vicinity of the BSA.

Table 2. Special-Status Wildlife Species

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Phrynosoma blainvillii coast horned lizard	SSC G3G4 S3S4	Occurs in a wide variety of vegetation types including coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland and coniferous forest. Its elevational range extends up to 4,000 feet in the Sierra Nevada foothills and up to 6,000 feet in the mountains of southern California. In inland areas, this species is restricted to areas with pockets of open microhabitat, created by disturbance (e.g. fire, floods, unimproved roads, grazing lands, and fire breaks). The key elements of such habitats are loose, fine soils with a high sand fraction; an abundance of native ants or other insects; and open areas with limited overstory for basking and low, but relatively dense shrubs for refuge.	No	**Not Expected.** Potentially suitable habitat for this species is absent and no records are known from the vicinity of the BSA.
Polioptila californica californica coastal California gnatcatcher	FT SSC G4G5T3Q S2	Yearlong resident of sage scrub habitats that are dominated by California sagebrush. This species generally occurs below 750 feet amsl in coastal regions and below 1,500 feet amsl inland. Ranges from the Ventura County, south to San Diego County and northern Baja California and it is less common in sage scrub with a high percentage of tall shrubs. Prefers habitat with more low-growing vegetation.	No	**Not Expected.** Potentially suitable habitat for this species is absent.

Table 2. Special-Status Wildlife Species

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Rana muscosa southern mountain yellow-legged frog	FE SE WL G1 S1	The species inhabits ponds, lakes, and streams at moderate to high elevations. Usually associated with montane riparian habitats in lodgepole pine, ponderosa pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), white fir, whitebark pine (*Pinus albicaulis*), and wet meadow vegetation types. Occupied alpine lakes usually have margins that are grassy or muddy and inhabit sandy or rocky shores at lower elevations. Streams utilized vary from rocky, high gradient streams with numerous pools, rapids, and small waterfalls to those with marshy edges and sod banks. Species seems to prefer streams of low gradient and slow or moderate flow with very small, shallow streams being less frequently used.	No	**Not Expected.** Potentially suitable habitat for this species is absent and no records are known from the vicinity of the BSA.
Spea hammondii western spadefoot	SSC G2G3 S3	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Rain pools which do not contain American bullfrogs (*Lithobates catesbeianus*), predatory fish, or crayfish are necessary for breeding. Estivates in upland habitats adjacent to potential breeding sites in burrows approximating 3 feet in depth.	No	**Not Expected.** Potentially suitable habitat for this species is absent.

Table 2. Special-Status Wildlife Species

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Taricha torosa Coast Range newt	SSC G4 S4	Found in coastal drainages from Mendocino to San Diego County. Lives in terrestrial habitats and will migrate over 1 kilometer to breed in ponds, reservoirs, and slow-moving streams.	No	**Not Expected**. Potentially suitable habitat for this species is absent.
Taxidea taxus American badger	SSC G5 S3	Occupies a wide variety of habitats including dry, open grassland, sagebrush, and woodland habitats. Badgers are generally associated with treeless regions, prairies, park lands and cold desert areas (Lindzey, 1982). Require dry, friable, often sandy soil to dig burrows for cover, food storage, and giving birth. Occasionally found in riparian zones and open chaparral with less than 50% plant cover.	No	**Not Expected**. Potentially suitable habitat for this species is absent.
Vireo bellii pusillus least Bell's vireo	FE SE G5T2 S2	Summer resident in southern California. Breeding habitat generally consists of dense, low, shrubby vegetation in riparian areas, and mesquite brushlands, often near water in arid regions. Early successional cottonwood-willow riparian groves are preferred for nesting. The most critical structural component of nesting habitat in California is a dense shrub layer that is 2 to 10 feet above ground. The presence of water, including ponded surface water or moist soil conditions, may also be a key component for nesting habitat.	No	**Not Expected**. Potentially suitable habitat for this species is absent.

* **U.S. Fish and Wildlife Service (USFWS)**

FE Endangered – any species which is in danger of extinction throughout all or a significant portion of its range.

FT Threatened – any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

FC Candidate – any species which has been designated as a candidate eligible for considering to be listed under the Federal Endangered Species Act.

California Department of Fish and Wildlife (CDFW)

SE Endangered – any native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.

ST Threatened – any native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required under the California Endangered Species Act.

SCE State Candidate for listing as Endangered - The classification provided to a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the Fish and Game Commission has formally noticed as being under review by the Department of Fish and Wildlife for addition to the list of endangered species, or a species for which the commission has published a notice of proposed regulation to add the species to the list of endangered species.

FP Fully Protected – any native species or subspecies of bird, mammal, fish, amphibian, or reptile that were determined by the State of California to be rare or face possible extinction.

SSC Species of Special Concern – any species, subspecies, or distinct population of fish, amphibian, reptile, bird, or mammal native to California that currently satisfies one or more of the following criteria:

- is extirpated from California or, in the case of birds, in its primary seasonal or breeding role;
- is listed as Federally-, but not State-, threatened or endangered; meets the State definition of threatened or endangered but has not formally been listed.
- is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; or
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

WL Watch List - taxa that were previously designated as “Species of Special Concern” but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.

CR Rare - a native plant that is designated as “rare” under the California Fish and Game Code.

California Native Plant Society (CNPS) California Rare Plant Rank

1A Presumed extirpated in California and either rare or extinct elsewhere.

1B Plants rare, threatened, or endangered in California and elsewhere.

2B Plants rare, threatened, or endangered in California but more common elsewhere.

3 Plants about which more information is needed – Review List.

4 Plants of limited distribution – Watch List.

Threat Ranks

.1 Seriously threatened in California (over 80% of occurrences threatened/high degree any immediacy of threat).

.2 Moderately threatened in California (20 to 80 percent of occurrences threatened/moderate degree and immediacy of threat).

.3 Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known).

NatureServe Conservation Status Rank

The Global Rank (G#) reflects the overall condition and imperilment of a species throughout its global range. The Infraspecific Taxon Rank (T#) reflects the global situation of just the subspecies or variety. The State Rank (S#) reflects the condition and imperilment of an element throughout its range within California. (G#Q) reflects that the element is very rare but there are taxonomic questions associated with it; the calculated G rank is qualified by adding a Q after the G#). Adding a ? to a rank expresses uncertainty about the rank.

G1/T1 Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2/T2 Imperiled— At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3/T3 Vulnerable— At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4/T4 Apparently Secure— Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5/T5 Secure – Common; widespread and abundant.

S1 Critically Imperiled – Critically imperiled in the state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the State.

S2 Imperiled – Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or State.

S3 Vulnerable – Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

APPENDIX C

Cultural Resources Technical Memorandum

Michael Baker
INTERNATIONAL

January 9, 2024

James R. Howe, Environmental Specialist
Environmental Planning and Assessment
Los Angeles Department of Water and Power
111 N. Hope St., Room 1044
Los Angeles, CA 90012

RE: HISTORIC PROPERTY IDENTIFICATION MEMORANDUM AND FINDING OF NO HISTORIC PROPERTIES AFFECTED FOR THE HEADWORKS SITE DEVELOPMENT PROJECT, CITY OF LOS ANGELES, CALIFORNIA

Dear Mr. Howe:

The Los Angeles Department of Water and Power (LADWP) is proposing to develop a project comprising three components at the Headworks Spreading Grounds property: the Water Quality Laboratory, Direct Potable Reuse (DPR) Demonstration Facility, and Headworks Park Projects (altogether referred to as the project). LADWP is proposing to use monies provided by the California State Water Resources Control Board State Revolving Fund for development of the DPR Demonstration Facility. The project meets the definition of an "undertaking" according to 36 Code of Federal Regulations (CFR) Section 800.16(y), and this memo is intended to fulfill the requirements of the California Environmental Quality Act (CEQA), CEQA-Plus as defined by the State Water Resources Control Board, and Section 106 of the National Historic Preservation Act (NHPA). In support of the project, Michael Baker International completed a South Central Coastal Information Center (SCCIC) records search; a literature, aerial photograph, and historical map review; and archaeological sensitivity assessment to determine whether the project could result in adverse effects to historic properties in accordance with NHPA Section 106. Methods, results, and recommendations are summarized below.

PROJECT DESCRIPTION

The proposed project would be located in the Hollywood community of Los Angeles, at 6001 West Forest Lawn Drive, within the existing Headworks Spreading Grounds (HWSG) property. HWSG is a 43-acre property situated within the boundaries of Griffith Park along its northern perimeter, across from Mount Sinai and Forest Lawn Memorial Parks. The property is bordered by the Los Angeles River and State Route 134 to the north, Forest Lawn Drive to the south and east, and Sennet Canyon to the west; it is located within Township 1 North and Range 14 West, as shown on the Burbank 7.5-minute United States Geological Survey topographic map. The property is owned by the Los Angeles Department of Recreation and Parks; however, LADWP retains an easement over the entire 43 acres.

PROPOSED FACILITIES

LADWP proposes to develop three sites within the area of potential effects (APE) at the existing HWSG property (**Attachment1: Figure 3**):

1. A Water Quality Laboratory (WQL),
2. A Direct Potable Reuse (DPR) Demonstration Facility, and
3. A public park (Headworks Park).

All three sites would be accessed via Forest Lawn Drive at Mount Sinai Drive.

WQL

The proposed WQL would include approximately 100,000 gross square feet of floor space; surface parking for 12 visitor vehicles, 102 staff vehicles, and 20 LADWP fleet vehicles; a Mobile Laboratory Trailer; landscaping; and other site improvements. It would be located to the east of the proposed Direct Potable Reuse (DPR) Demonstration Facility at the Headworks Spreading Grounds (HWSG) property.

DPR Demonstration Facility

The DPR Demonstration Facility will include two treatment trains, a chemical storage area, support areas, a visitor center, and a parking lot. The DPR Demonstration Facility and visitor center would be located at the west end of the HWSG property.

Headworks Park

Headworks Park would be primarily constructed on the roof of the West Reservoir. However, areas to be constructed outside the reservoir would include a guest surface parking lot and gateway pavilion, adjacent to the West Reservoir on the west, and a system of trails throughout the site. The trails will connect to the Los Angeles River Trail, Griffith Park, and an existing equestrian tunnel that intersects State Route 134 westbound.

AREA OF POTENTIAL EFFECTS

The APE for the undertaking is identified as the boundary of the 43-acre HWSG property, although portions of the property, including the existing East Reservoir, would not be involved in the development of the project (see **Attachment 1**). The vertical APE is 10 feet below ground surface to encompass the maximum depth of excavation anticipated for the project.

REGULATORY CONTEXT

The project is subject both to CEQA and, because federal funding will be received via the Clean Water State Revolving Fund, the standards of CEQA-Plus. CEQA-Plus utilizes CEQA documentation plus the federal standards of the National Environmental Policy Act (NEPA). CEQA-Plus requires compliance with Section 106 of the NHPA, 16 U.S. Code Section 470f and its implementing

regulations 36 CFR Part 800, and with CEQA, Public Resources Code (PRC) Section 21000 et seq. and the State CEQA Guidelines, California Code of Regulations (CCR) Section 15000 et seq.

Section 106 of the NHPA requires that federal projects or projects under federal jurisdiction consider the effect of an undertaking on properties eligible for or included in the National Register of Historic Places (NRHP). The California Register of Historical Resources (CRHR) was created to identify resources deemed worthy of preservation on a state level and was modeled closely after the NRHP. The criteria are nearly identical to those of the NRHP but focus on resources of statewide, rather than national, significance.

NRHP

The NHPA establishes the NRHP, which is "an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). To be eligible for listing in the NRHP, a property must be at least 50 years old (or have reached 50 years old by the project completion date) and possess significance in American history and culture, architecture, or archaeology to meet one or more of four established criteria (36 CFR 60.4):

A. Association with events that have made a significant contribution to the broad patterns of our history;
B. Association with the lives of persons significant in our past;
C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
D. Have yielded, or may be likely to yield, information important in prehistory or history.

Historic resources eligible for listing in the NRHP are considered "historic properties," and may include buildings, sites, structures, objects and historic districts. A potential historic property less than 50 years of age may be eligible under NRHP Criteria Consideration G (Properties that have Achieved Significance within the Past 50 Years) if it can be demonstrated that sufficient time has passed to understand its historic importance (National Park Service 1995: 43). To be eligible for listing in the NRHP, a property must also have integrity, which is defined as "the ability of a property to convey its significance." Within the concept of integrity, the NRHP recognizes seven aspects or qualities that, in various combinations, define integrity: feeling, association, workmanship, location, design, setting and materials (National Park Service 1995: 44-45).

CRHR

The determination of CRHR significance of a cultural resource is guided by specific legal context outlined in PRC Sections 15064.5 (b), 21083.2, and 21084.1, and the CEQA Guidelines (CCR Title 14, Section 15064.5). A cultural resource may be eligible for listing in the CRHR if it:

1. is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. is associated with the lives of persons important in our past;
3. embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of an important creative individual or possesses high artistic values; or
4. has yielded, or may be likely to yield, information important in prehistory or history.

A cultural resource determined to meet one or more of the above criteria is considered a historical resource under CEQA. In addition, historical resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be able to convey the reasons for their significance. Such integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

CULTURAL RESOURCES IDENTIFICATION METHODS

The results of the SCCIC records search, archival research, literature, historical map, and aerial photograph review, and archaeological site sensitivity analysis are presented below.

SOUTH CENTRAL COASTAL INFORMATION CENTER

On October 6, 2022, Michael Baker International archaeologist Marc Beherec conducted a records search at the SCCIC located at California State University, Fullerton. The records search included the APE and a half-mile radius. The SCCIC is part of the California Historical Resources Information System (CHRIS), an affiliate of the California Office of Historic Preservation (OHP) and the State Historic Resources Commission (SHRC), and is the official state repository of cultural resources records and reports for Los Angeles, Ventura, San Bernardino, and Orange Counties. Michael Baker International supplemented this search with available online databases maintained by federal and state repositories. As part of the records search, the following federal and California inventories were reviewed:

- NRHP (National Park Service 2020)
- California Inventory of Historic Resources (OHP 1976)
- California Points of Historical Interest (OHP 2022b)
- California Historical Landmarks (OHP 2022b)

- Archaeological Determinations of Eligibility (OHP 2012) and Los Angeles County Archaeological Resources Directory (OHP 2022c). The directories include the OHP determinations of eligibility for archaeological resources in Los Angeles County.
- Built Environment Resources Directory (BERD) for Los Angeles County (OHP 2022a). The directory includes resources reviewed for eligibility for the NRHP and the California Historical Landmarks programs through federal and state environmental compliance laws, and resources nominated under federal and state registration programs, including the NRHP, CRHR, California Historical Landmarks, and California Points of Historical Interest.

***Historic-Cultural Monument (HCM) List: City Declared Monuments* (City of Los Angeles Department of City Planning 2022) Previous Studies**

The records search revealed that 15 studies have taken place within the 0.5-mile records search radius. Of the 15 previous studies, seven have previously surveyed the APE, resulting in previous survey coverage of 100 percent of the APE.

Portions of the APE were previously surveyed on two occasions (Leonard 1968; Sylvia 2001), and 100 percent of the APE was previously surveyed as part of several recent projects (Bard n.d.; Beherec 2020; Beherec and Griffith 2016; Greenwood and Associates 2004).

Author	Report No.	Date	Title/Description	Within APE?	Historic Properties Identified within the APE?
Beroza, Barbara	LA-00845	1980	Prehistoric Cultural Resource Survey and Impact Assessment for a Portion of Griffith Park, Los Angeles, Calif.	No	No
Leonard, Nelson N. III	LA-03554	1968	UCAS-304 Survey of Griffith Park, Los Angeles County	Yes	No
McLean, Deborah K.	LA-03978	1998	Archaeological Assessment for Pacific Bell Mobile Services Telecommunications Facility La131-14, 6250 1/2 Forest Lawn Drive, City and County of Los Angeles, California	No	No
Grenda, Donn R.	LA-04460	1998	Archaeological Monitoring at Forest Lawn - Hollywood Hills, Exaltation Development	No	No

Author	Report No.	Date	Title/Description	Within APE?	Historic Properties Identified within the APE?
Windmiller, Ric	LA-06747	2001	Negative Archaeological Survey Report Bechtel Telecommunications Site C573-134 Fwy/Buena Vista Geotrans Project L260-000 Burbank, Los Angeles County, California	No	No
Foster, John M.	LA-06752	2002	Highway Project Mariposa Street Improvement Project, City of Burbank	No	No
McKenna, Jeanette A.	LA-07266	2004	Phase I Cultural Resources Investigation of a Proposed Alternative Route for the Los Angeles Department of Water and Power River Supply Conduit, Los Angeles County, California	No	No
Sylvia, Barbara	LA-07840	2001	Negative Archaeological Survey Report for the Beautification and Modernization Along Route 134 From the 134/170 Separation to Shoup Ave Undercrossing, and Along Route 101 From the 101/170 Separation to Concord Street Undercrossing	Yes	No
McKenna, Jeanette A.	LA-08254	2004	Results of a Phase 1 Cultural Resources Investigation of the Proposed Los Angeles Department of Water and Power River Supply Conduit, Los Angeles County, California	No	No
Lawson, Natalie and Roderic McLean	LA-12498	2009	Cultural Resources Assessment Proposed Master Plan for the Forest Lawn Memorial-Park Hollywood Hills, City of Los	No	No

Author	Report No.	Date	Title/Description	Within APE?	Historic Properties Identified within the APE?
			Angeles, Los Angeles County, California		
Greenwood and Associates	LA-13249	2004	Silver Lake Reservoir Complex Storage Replacement Project, Cultural Resources Assessment Report	Yes	No
Bard, Jim	LA-13249A	n.d.	Addendum to the Cultural Resources Assessment Report for the Silver Lake Reservoir Complex Storage Replacement Project	Yes	No
Lander, E. Bruce	LA-13249B	2004	Final Draft, Silver Lake Reservoir Complex Storage Replacement Project, Palaeontologic Resource Inventory/Impact Assessment	Yes	No
Lander, E. Bruce	LA-13249C	n.d.	Addendum to the Palaeontologic Resources Inventory/Impact Assessment for the Silver Lake Reservoir Complex Storage Replacement Project	Yes	No
Beherec, Marc A. and Kyle Griffith	LA-13250	2016	Phase I Cultural Resources Investigation for the Headwords West Reservoir Project Los Angeles, Los Angeles County, California	Yes	P-19-004712

In addition to the studies entered in the CHRIS, Michael Baker International is in possession of an additional study of the APE that has been forwarded to the SCCIC but not yet entered into the CHRIS. It is a memo entitled *Headworks Flow Control Station Project, Current Conditions and CEQA-Plus Evaluation* (Beherec 2020).

Previously Recorded Resources

The records search revealed two resources located within the APE and two resources within the 0.5-mile records search radius. All four resources are historic-period resources. A brief description of the resources recorded within or overlapping the APE follows.

Primary Number	Trinomial	Description	Evaluation / OHP Status Code	Historical Resource/ Historic Property	Distance from APE
P-19-004712	CA-LAN-004712H	Headworks Spreading Grounds	6Y: Not eligible for listing in NRHP	No	Within
P-19-150414	CA-LAN-0022H	Adobe house, Ranch House of the Rancho Cahuenga	Unevaluated	No	0.3 miles north
P-19-150415	CA-LAN-0023H	House structure, "Old House of Lopez"	Unevaluated	No	Precise location unknown (not within APE)
P-19-175297	None	Griffith Park	2S2: Individually determined eligible for NRHP by consensus through Section 106 process. Listed in the CRHR.	Yes	Within

Headworks Spreading Grounds (P-19-004712/CA-LAN-004712)

The boundaries of the APE are coterminous with resource P-19-004712/CA-LAN-004712, the Headworks Spreading Grounds. The City of Los Angeles acquired the property in 1899 to serve as the headworks of a new City-owned and operated domestic water system. In 1902, a dam was constructed at the facility, followed by infiltration galleries. Spreading grounds ranging in size from 1 acre to more than 8 acres were developed at the facility in 1938. The infiltration galleries were removed from service in 1971, and river diversions into the spreading grounds ceased in

1982 (Griffith and Beherec 2015). In 2012, construction began on the Headworks Reservoir Complex, resulting in the demolition of most of the spreading grounds earthworks.

Surface constructions of the resource were recorded in 2015. At that time, a total of eight surviving features were documented. These included pipes, walls, and a concrete block structure (Griffith and Beherec 2015).

The site was revisited in 2020 when it was subjected to an intensive pedestrian archaeological survey. Three of the features in 2015 were found to be demolished in order to construct the new Headworks West Reservoir (Beherec 2020). In November 2020, the site was subject to an additional built environment survey. One additional feature, a pipe connection and control devices for a 1950s-era rubber dam, was documented in November 2020 (Wilson and Beherec 2020).

The Headworks Spreading Grounds was evaluated for possible inclusion in the CRHR in 2015 and recommended not eligible (Griffith and Beherec 2015). In 2020, the resource was again evaluated and determined ineligible for inclusion in both the CRHR and NRHP by consensus via the Section 106 process conducted by the California State Water Resources Control Board (Wilson and Beherec 2020; OHP 2022c). It is not a historic property as defined by Section 106 of the NHPA or a historical resource as defined by CEQA Section 15064.5(a).

Griffith Park (P-19-175297)

Established in 1896 when it was gifted to the City of Los Angeles by the self-designated "Colonel" Griffith J. Griffith, Griffith Park is one of the largest urban parks in the nation. In the 1920s and 1930s, Griffith's son, Vandell Mowry Griffith, oversaw the trust that developed Griffith Park into one of the most notable urban parks in the United States (Eberts 1996).

Griffith Park was documented as a resource by Christy J. McAvoy, with a period of significance of 1896-1944. McAvoy documented eleven contributing natural and man-made features, at least one of which is outside the boundaries of the park itself, as well as five non-contributing features. They are as follows:

Contributing features:

1. Ferndell, a ravine on the south side of the park developed with trails and imported and native plants
2. Mount Hollywood, a peak in the middle of the park
3. Bird Sanctuary, a landscape with parallel paths separated by trees and ferns and a double row of cascading fountains
4. Griffith Park Observatory and Planetarium
5. Astronomers' Monument, a statue group designed by Archibald Garner and located at the entrance of the Observatory and Planetarium depicting the astronomers Herschel, Newton, Kepler, Galileo, Copernicus, and Hipparchus

6. Los Feliz Adobe, constructed in 1853 and remodeled in the 1920s
7. Merry-Go-Round
8. Harding Golf Course
9. Swimming Pool and Building
10. Boys' Camp
11. Mulholland Fountain (located on LADWP property outside Griffith Park)

Non-contributing features:

1. Los Angeles Zoo
2. Greek Theater
3. Girls' Camp
4. Travel Town
5. Gene Autry Western Heritage Museum

The closest feature to the APE, the non-contributing Travel Town, is located approximately 0.14 miles east (McAvoy 1994). Travel Town is listed in the BERD with the code 6Y, indicating that it was found ineligible for inclusion in the NRHP by the Keeper of the Register, but has not been evaluated for CRHR or local listing.

Griffith Park is listed in the BERD with the code 2S2, which indicates that it has been determined to be eligible for inclusion in the NRHP by consensus through the Section 106 process. It is a historic property as defined by Section 106 of the NHPA and a historical resource as defined by CEQA Section 15064.5(a). No character-defining features of Griffith Park are located within the APE.

On November 12, 2008, Griffith Park was designated Los Angeles Historic-Cultural Monument No. 942. In the Department of City Planning Recommendation Report for the nomination, 36 character-defining features/contributing elements and 5 non-contributing elements were identified within the park, and are enumerated as follows.

Character-defining features/Contributing elements:

1. Former Costume Workshop and Surroundings/LA Shares Warehouse (1961)
2. Ranger House (ca. 1938)
3. Municipal Plunge and Associated Buildings (1927)
4. Pony Ride (1947) & Train Ride (1947, 1963)
5. 1920s era DWP Building (I)
6. 1920s era DWP Building (II)
7. Feliz Adobe (1853, 1934) (LAHCM No. 401)
8. Sycamore Grove
9. Riverside Drive Bridge (1938) (LAHCM No. 910)

10. L.A. Live Steamers
11. Walt's Barn (1950)
12. Travel Town Transportation Museum (Collection, 1952-1962)
13. "Little Nugget" Railcar (1937) (LAHCM No. 474)
14. Wilson & Harding Golf Courses (1923-1924)
15. Wilson & Harding Golf Clubhouse (1937)
16. Old Zoo Buildings (1914-ca.1937)
17. Wilson-Harding Turf Maintenance Facility (1927)
18. Merry-Go-Round (1926, installed 1936)
19. Los Feliz Café and Signage (1948, 1956)
20. Central Service Yard Administration Building (1958)
21. Former Cricket House (ca. 1933)
22. Vermont Tennis Courts (ca. 1927)
23. Nursery and Horticulture Center (1927)
24. Greek Theater (1930)
25. Bird Sanctuary (1922-ca. 1937)
26. Griffith Observatory (1935) (LAHCM No. 168)
27. Mt. Hollywood Tunnel (1927)
28. Fern Dell Nature Area (1914, 1937)/Gabrielino Indian Site (LAHCM No. 112)
29. Bronson Caves (ca. 1909-1920)
30. Hollywood Sign (1923, reconstructed 1978) (LAHCM No. 111)
31. Hollywood Sign Viewshed
32. 1930s era Stoppage Dam
33. Cedar Grove
34. Early Water Tower (ca. 1927)
35. Bee Rock
36. Bee Rock Trail (1903)

Non-contributing Elements:

1. Los Angeles Zoo and Autry National Center (1966/1987)
2. Freeways and All Associated Ramps (1957)
3. Toyon Landfill/Reclamation Project (1958)
4. Marty Tregnan Golf Academy (2000)
5. Roosevelt Municipal Golf Course (1966)

The Los Angeles Department of Planning Recommendation Report (Goldberg and Garcia 2008: 7) nominating the resource also notes:

> In addition to these contributing elements, another character-defining feature located throughout the subject area is a collection of retaining walls, drainage

> ditches, stoppage dams, culverts, barriers, and drinking fountains (1930-1950) constructed in the "Park style."
>
> The natural features of the subject area, the extensive undeveloped natural features of Griffith Park, are also identified as a major character-defining feature/contributing element of the proposed designation.

Of the contributing elements detailed in the resource's Recommendation Report, three are located within 0.5 miles of the APE. They are:

- Former Cricket House (ca. 1933), located approximately 0.38 miles north
- Travel Town, located approximately 0.14 miles east
- "Little Nugget," one of the Travel Town collection of rail cars, located approximately 0.22 miles east

A Griffith Park Historic Resources Map is included in **Attachment 1**. The Los Angeles Department of City Planning Recommendation Report for Griffith Park is included as **Attachment 3**.

LITERATURE, HISTORICAL MAP, AND AERIAL PHOTOGRAPH REVIEW

Michael Baker International reviewed literature, maps, and aerial photographs for historical and archaeological information about the APE and the vicinity. Below is a list of resources reviewed, followed by a narrative description of the results for the APE.

- *Handbook of the Indians of California* (Kroeber 1925)
- "Gabrielino" (Bean and Smith 1978)
- *Water and Power for a Great City* (Layne 1957)
- *Griffith Park: A Centennial History* (Eberts 1996)
- *Anza's California Expeditions* (Bolton 1930)
- *San Gabriel Mission and the Beginnings of Los Angeles* (Engelhardt 1927)
- *Comprehensive Management Plan and Final Environmental Impact Statement, Juan Bautista de Anza National Historic Trail, California and Arizona* (National Park Service 1996)
- *The Juan Bautista de Anza National Historic Trail in Griffith Park Information and Map* (Friends of Griffith Park n.d.)
- *Discovering Griffith Park: A Local's Guide* (Schreiner 2020)
- "One If by Land, Two If by Sea: Who Were the First Californians?" (Erlandson et al. 2007)
- *Kirkman-Harriman Pictorial and Historic Map of Los Angeles County, A.D. 1860* (Kirkman 1937)
- *The First Angelinos: The Gabrielino Indians of Los Angeles* (McCawley 1996)
- *California's Gabrielino Indians* (Johnston 1962)
- *California Archaeology* (Moratto 1984)
- "The Archaeology of California" (Arnold, Walsh, and Hollimon 2004)

- "Reconceptualizing the Encinitas Tradition of Southern California (Sutton and Gardener 2010)
- "A Suggested Chronology for Southern California Coastal Archaeology" (Wallace 1955)
- "Cultural Tradition and Ecological Adaptation on the Southern California Coast" (Warren 1968)
- "Frequently Asked Questions" (Fernandeño Tataviam Band of Mission Indians 2022)
- *The Los Angeles River: Its Life, Death, and Possible Rebirth* (Gumprecht 1999)
- *The Indians of Los Angeles County: Hugo Reid's Letters of 1852* (Reid 1968)
- *Vineyards and Vaqueros: Indian Labor and the Economic Expansion of Southern California, 1771–1877* (Phillips 2010)
- *Early Cemeteries of the City of Los Angeles* (Carpenter 1973)
- *A Description of Distant Roads: Original Journals of the First Expedition Into California, 1769-1770* (Crespi and Brown 2001)
- "A New Look at the Founding of Old Los Angeles" (Kelsey 1976)
- "The Los Angeles Zanja System: Archaeological Manifestations and Management Considerations" (Beherec 2022)
- *Baist's Real Estate Atlas Surveys of Los Angeles* (Baist 1910)
- *Los Angeles, California*, 1:62,500 scale topographic quadrangle (USGS 1894)
- *Los Angeles, California,* 1:62,500 scale topographic quadrangle (USGS 1900)
- *Santa Monica, California,* 1:62,500 scale topographic quadrangle (USGS 1921)
- *Burbank, California*, 1:24,000 scale topographic quadrangle (USGS 1926)
- *Burbank, California,* 1:24,000 scale topographic quadrangle (USGS 1948)
- *Burbank, California,* 1:24,000 scale topographic quadrangle (USGS 1953)
- *Burbank, California,* 1:24,000 scale topographic quadrangle (USGS 1966)
- *Aerial photograph:* Flight C-113, Frame 743 (UCSB 1927)
- *Aerial photograph:* Flight AJX-1938, Frame 1245 (UCSB 1938)
- *Aerial photograph:* Flight DDF-1944, Frame 1628 (UCSB 1944)
- *Aerial photograph:* Flight PAI-14-1, Frame 44 (UCSB 1950)
- *Aerial photograph:* Flight IMC-392, (UCSB 1964)
- *Aerial photograph:* Flight TG-2755, Frame 199 (UCSB 1971)
- *Aerial photograph:* Flight AMI-LA-79, Frame 161 (UCSB 1979)
- *Aerial photograph:* Flight AMI-LA-86, Frame 108 (UCSB 1986)
- *Aerial photograph:* Flight EAG-18, Frame 120 (UCSB 2008)

Results

The earliest habitation of the Los Angeles Basin and Santa Ana River watershed likely occurred in the Paleocoastal or Paleoindian Period, which is generally dated between about 13,000 and 8,500 before present (BP) (Arnold, Walsh, and Hollimon 2004; Moratto 1984; Erlandson et al. 2007). These earliest inhabitants were highly mobile hunter-gatherers who left behind little in the way of archaeological remains.

The first uncontested evidence of human occupation in this area dates to about 9,000 BP. It is associated with the Millingstone Cultural Horizon, or as it is also known, the Encinitas Tradition. Millingstone populations established permanent settlements that were located primarily on the coast and in other locations with reliable water sources and a variety of potential foodstuffs. There they relied heavily on shellfish, seeds, and small animals. The period takes its name from the appearance of ground stone artifacts. In the Early Millingstone, these ground stone artifacts are manos and metates, but after approximately 5000 BP, when acorns become important in the diet, mortars and pestles become an important component of the artifact assemblage (Wallace 1955; Warren 1968; Sutton and Gardner 2010).

The period between 3,500 BP and 1,500 BP is known as the Intermediate period. Increasing population pressures led to intensified exploitation of existing terrestrial and marine resources. The intensified resource procurement was enabled by technological innovations such as the circular fishhook on the coast, greater use of the mortar and pestle to exploit acorns more efficiently, and the use of the dart and atlatl to diversify hunting (Erlandson et al. 2007). Larger numbers of settlements that are also bigger in size are observed in the archaeological record, suggesting a larger and more sedentary population. Trade networks and greater craft specialization developed during this period.

During the Late Prehistoric, which began approximately 1,500 BP and continued until European intrusion, is the period of the development and florescence of the Native American tribes encountered by the Spanish. Late Prehistoric subsistence consisted of hunting, trapping, fishing, and gathering, and continued the pattern of increased population and sedentism.

Ethnohistoric and Early Historic Context

Spanish explorers first visited the coast of southern California in 1542. But European settlement did not begin in the area until 1769, when Gaspar de Portola led an exploratory mission intended to open up Alta California to settlement. Portola's expedition passed to the south of the APE and Griffith Park, crossing the Los Angeles River in the vicinity of the North Broadway Bridge, nearly 8 miles southeast of the APE. Portola met several friendly Native American groups along this route, which were described by his diarist, Fray Juan Crespi (Crespi and Brown 2001).

On September 8, 1771, Franciscan friars established Mission San Gabriel Arcángel, approximately 12 miles southeast of the project APE. The APE was located within the area allotted to Mission San Gabriel, and the Franciscans called the local Native Americans Gabrielinos after the mission. Gabrielino descendant communities refer to themselves and their ancestors as either Tongva or Kizh. The inhabitants of the San Fernando Valley came to be known as the Fernandeño after Mission San Fernando Rey de España, which was founded in 1797. The inhabitants of the San Fernando Valley were so similar in language and culture to their neighbors in the Los Angeles Basin that anthropologists generally consider the Fernandeño as one part of the broader Gabrielino tribe (Englehardt 1927; Kroeber 1925: 620). The Fernandeño descendant community is often known as Tataviam, after a northern tribe that was relocated to the San Fernando Valley and

intermarried with the Fernandeño during the mission period (Fernandeño Tataviam Band of Mission Indians 2022). Gabrielino territory included the Los Angeles Basin, parts of the Santa Ana and Santa Monica Mountains, and San Clemente, San Nicolas, and Santa Catalina Islands. The Gabrielino spoke a dialect of the Cupan group of the Takic language family (Bean and Smith 1978: 538-549).

Gabrielino villages were most common along the coast and along the region's major rivers, where villages formed of domed semipermanent structures the Spanish likened to half-oranges centered around a temple and the home of the village chief. The resource procurement area claimed by these villages spread around the village center, abutting against the territories of nearby villages. The exact locations of the centers of Gabrielino villages are generally poorly known. The few Spanish or Mexican period maps of the region generally do not show Gabrielino villages. Most of the Los Angeles region was included in land grants, and so never entered the Public Lands System; therefore, it was not surveyed when California was first acquired by the United States; therefore, no early American surveyors mapped villages either. The rapid development of Los Angeles in the nineteenth and twentieth centuries led to the destruction of villages' archaeological remains. The irregular flow of the area's drainages led to washing away or burying of village sites, and the paving of the same drainages in the middle twentieth century entombed whatever sites were there beneath concrete and rubble. In general, archaeologists and ethnologists rely on American-period historical documents, the oral histories of the Gabrielino themselves, and rare archaeological finds to pinpoint village locations.

According to Hugo Reid's 1852 listing of "the principal Lodges or Rancherías, with their corresponding present local names," which is one of the few early American sources for Gabrielino village locations, the village of "Maug-na," also spelled Maawnga, corresponded with "Rancho de los Felis" (Reid 1968: 8). As described below, Rancho los Feliz was a Spanish land grant that included most of today's Griffith Park, and it is often therefore assumed that Maawnga was located within or adjacent to Griffith Park. But Rancho los Feliz also included today's Los Feliz Hills, Thai Town, and Little Armenia, extending into the Elysian Valley. If Reid was correct, Maawnga was located at an unknown location somewhere in this nearly 10.4-square-mile area.

But Reid may have only given Maawnga's approximate location, at a place north of Los Angeles in the direction of Rancho los Feliz. According to Jose de los Santos Juncos and Setimo Lopez, two Gabrielinos interviewed by J. P. Harrington in the early twentieth century, Maawnga was located south of Rancho los Feliz itself. Juncos gives the most precise location, near what was then the Jewish Cemetery. The City's first Jewish Cemetery was established by the Hebrew Benevolent Society of Los Angeles in 1855 and located in Cemetery Ravine, south of today's Dodger Stadium (Carpenter 1973). The cemetery no longer exists. Maps of the cemetery show it was located where the Los Angeles Fire Department's Frank Hotchkin Memorial Training Center is today (Baist 1910: Plate 6).

Maps show other Gabrielino villages known or suspected to be located the vicinity of Griffith Park and the APE. The *Kirkman-Harriman Pictorial and Historical Map of Los Angeles County, A.D. 1860*, which was prepared in 1937 but intended to represent the area as it existed nearly 80 years earlier, shows several unnamed villages located on alluvial fans around the Santa Monica Mountains. Some of these sites skirt the boundaries of Griffith Park, and one appears in the hills south of the river in the vicinity of Forest Lawn Cemetery and Griffith Park, not far from the APE (Kirkman 1937). However, no other authorities show a village in this location, and this village marker may have been intended to mark the village of Cahuenga (or Kaweenga). The Fernandeño Tataviam Band of Mission Indians, and most scholars, place Cahuenga at the Campo de Cahuenga, which is known to have existed at the mouth of the Cahuenga Pass, in today's Universal City, approximately 2.5 miles southwest of the APE (Fernandeño Tataviam Band of Mission Indians 2022; Johnston 1962: x; Kroeber 1925: Plate 57; McCawley 1995: 36, 40). On the *Kirkman-Harriman* map, the location of the Campo de Cahuenga is occupied by a church and battlefield marker, and no Native American village is demarcated.

Other than Cahuenga and Maawnga, the closest known Gabrielino village was Haahamonga. Reid placed Haahamonga on the "Ranco de los Verdugos," by which he is believed to have meant Jose Maria Verdugo's Rancho San Rafael. This would place Haahamonga on the west side of the Los Angeles River in the vicinity of today's Glendale, Eagle Rock, and Burbank (McCawley 1995: 40). The Fernandeño Tataviam Band of Mission Indians' map (2022) shows this village (spelled "Jajamonga") in the area of Burbank.

Other villages, the names of which are not recorded, no doubt existed throughout the Los Angeles Basin, San Fernando Valley, and Santa Monica Mountains. Smaller settlements, possibly unnamed and lacking a chief's house and ceremonial structure and owing allegiance to a nearby village, likely also peppered the area. The resource procurement areas of these known and unknown villages would have included the immediate vicinity, and the APE would have been claimed by one of these villages. But by the early 1800s, as introduced diseases led to population decline, and Spanish use of the land for agriculture and grazing made the Gabrielinos' reliance on their traditional lifestyle increasingly untenable, the majority of California's coastal Native American populations had entered the mission system (Jackson 1999).

Portola was followed by Juan Bautista de Anza, who led the first non-indigenous expedition to visit the area of the APE. In 1774, Anza led a group of approximately 20 soldiers, 3 missionaries, and 11 servants overland from the Presidio San Ignacio de Tubac in what is today Arizona (but which was then the outermost limit of Spanish settlement in the Apacheria) more than 1,200 miles to San Francisco Bay and then returned in order to open a road to settlement in California (Bolton 1930: vol. 1). Anza repeated the journey in 1775-1776, leading nearly 300 colonists. On February 21, 1776, the expedition left Mission San Gabriel and traveled as far as today's Griffith Park. Anza's party likely traveled down the path of what is today Crystal Springs Drive and then turned west, camping on the Los Angeles River in the vicinity of the Glendale Narrows. Anza's diarist, Fray Pedro Font, called the place Puertolezuelo. Regrettably, the laconic Font had little to say about

Puertolezuelo and said nothing of any Native Americans the expedition may have encountered there. The precise location of Anza's camp is unknown, but it was near the bend in the river at the northeast corner of Griffith Park. In 1996, the approximate location was marked with a plaque in the Pecan Grove Picnic Area approximately 1.25 miles east of the APE. Today, the Juan Bautista de Anza National Historic Trail follows Zoo Drive and Forest Lawn Drive south of the APE (Bolton 1930: vol. 4, 244-245; Friends of Griffith Park n.d.; National Park Service 1996: B-7).

In 1781, Spanish Governor Felipe de Neve established a new secular settlement, El Pueblo de Nuestra Señora de los Angeles de Porciuncula, on the Los Angeles River. De Neve visited the planned location of the settlement and had a number of Native Americans from the nearby settlement of Yaanga baptized to serve as the pueblo's workforce. They were soon joined by a small group of settlers from Sonora who set about constructing the new settlement's infrastructure, starting with a canal they called the Zanja Madre (Kelsey 1976; Phillips 2010).

In 1795, Spanish Governor Pedro Fages granted 6,647 acres north of Los Angeles Pueblo lands to Jose Vicente Feliz. Feliz was a member of Anza's expedition and the *comisionado* or governor's representative to the Pueblo de Los Angeles. In 1853, his heirs built an adobe near Crystal Springs approximately 2.35 miles southeast of the APE. The adobe, heavily modified over the years, still stands and serves as Griffith Park Headquarters (Schreiner 2020: 33).

In 1821, Mexico won its independence from Spain. The new state was secular in nature and moved increasingly towards secularization of the mission and dispersal of the mission properties among politically connected elites. In 1834, the missions were secularized and their lands divided up. Little of the missions' lands and wealth went to the Native Americans. However, 388 acres of ex-Mission San Fernando land known as Rancho Cahuenga, in the vicinity of today's Universal City, was granted to Jose Miguel Triunfo in 1843, a member of the Fernandeño. More than 600 ranchos were granted between 1833 and 1846 as the Mexican government sought to solidify its authority over Alta California amid fears of intrusion by the United States. Among these was Rancho Providencia, a 4,064-acre property granted to Vicente de la Osa in 1843. The APE is located at the south end of Rancho Providencia, adjacent to Rancho los Feliz.

California was ceded to the United States at the conclusion of the Mexican-American War of 1846–1848. The discovery of gold in California led to a population boom in the 1850s and 1860s. In 1867, dentist David Burbank purchased Rancho Providencia (including the APE), Rancho Cahuenga, and part of Rancho San Rafael, creating a ranch of nearly 9,000 acres. The completion of the transcontinental Santa Fe Railroad in 1886 led to increased land speculation and development, leading to a boom in the population of Los Angeles (Meyer 1981). Burbank capitalized on this influx of land-seekers by selling his holdings to a company of speculators known as the Providencia Land, Water & Development Company. Burbank sat on the company's board of directors. The company subdivided Burbank's lands, creating a business district and residential lots that formed the town of Burbank and dividing the surrounding area into farms.

Although the APE was located on Rancho Providencia, it presently lies on the south side of the Los Angeles River. Its recent history is more connected to the lands on the south and west of the river than the lands north and east of the river. Therefore, the APE's history is more closely tied to the history of Los Angeles than that of Burbank and Glendale.

In 1882, after passing through a series of hands, most of Rancho los Feliz was purchased by Griffith J. Griffith. The self-proclaimed colonel, who was a genuine major in the California National Guard, made his wealth through mining before arriving in Los Angeles the same year he purchased the rancho. In 1896, Griffith donated approximately one-third of the rancho, encompassing its most rugged and therefore worthless lands, to the City of Los Angeles to serve as a park. The rancho had a developed irrigation system, and Griffith later also sold the rancho's water rights to the City. Griffith donated funds to develop the park. But in 1903, convinced his Catholic wife was in league with the Pope and was slowly poisoning him, Griffith shot her. She survived and escaped, but Griffith was imprisoned for nearly two years and his reputation in the City never recovered. Griffith died in 1919, and it was left to his son, Vandell Mowry Griffith, to lead the trust which developed the park in the 1920s to 1940s (Eberts 1996). Griffith Park has increased substantially in size over the years through purchase and gift.

Project Site Development History

Until the Los Angeles River was channelized in the middle twentieth century, the APE lay within the floodplain of the meandering river. Sometimes the APE was on the river's south bank, like today. Other times it was on the river's north bank, which is why it was included in Rancho Providencia rather than Rancho Los Feliz. At times the APE would have been beneath the meandering river. In maps published between 1894 and 1921, the Los Angeles River follows the path of today's Forest Lawn Drive, and the APE is an undeveloped projection of land located north of the river. In the 1921 map, it is shaded to indicate floodplain (USGS 1894, 1900, 1921). It is not until the 1926 USGS map that the Los Angeles River is straightened and the APE is located on the south side of the river (USGS 1926). The straightened channel was stabilized with the deepening and paving of the Los Angeles River's bed in 1938 (Gumprecht 1999; USGS 1948).

HWSG's location within the Los Angeles River floodplain (and sometimes riverbed) contributed to its importance as a source of water extraction by the City of Los Angeles. Prior to 1902, the City provided irrigation water to its residents through its Zanja (Spanish for ditch) Department, but relied on private companies to provide them with domestic water. From 1868 to 1898, the privately owned Los Angeles City Water Company held a lease giving it access to the City's water rights. With the expiration of the lease, City residents were eager to establish a publicly owned water provider (Beherec 2022; Layne 1957). In preparation, the City acquired the APE in 1899 to serve as the headworks of its new water system.

Negotiations with the Los Angeles City Water Company dragged on until 1902, after which the City acquired the company's infrastructure and staff, including its superintendent, William

Mulholland. The City's Board of Water Commissioners merged the company with the City's Zanja Department to form a new Department of Water under Mulholland's direction and entered into domestic water distribution in earnest (Beherec 2022; Layne 1957).

In 1902, a diversion dam and water supply conduit were built at the APE. Deep infiltration galleries to extract groundwater were added in 1905 and expanded in 1916 and 1920. Wells were subsequently developed on the property, and by 1925, 14 wells fed the City water system. Spreading grounds were developed at the facility in 1938 to detain river water for percolation. Water was diverted from the river into the spreading grounds and then collected in perforated pipes that were connected to infiltration galleries approximately 150 feet below the ground surface. An inflatable dam was built in the 1950s to direct river flows into the spreading grounds for infiltration into the aquifer. The spreading grounds consisted of six separate basins, ranging in size from 1 acre to more than 8 acres. The infiltration galleries were removed from service in 1971, and river diversions into the spreading grounds ceased in 1982, due to water pollution (Beherec and Griffith 2016; Wilson and Beherec 2020).

Maps and aerial photographs reflect the history of the site described above. There are no buildings or structures visible in the APE in maps and aerial photographs of the 1920s (USGS 1921, 1926; UCSB 1927). A 1938 aerial photograph shows there is a diversion channel from the Los Angeles River running through the APE. By 1944, the diversion channel from the Los Angeles River joins to eight Headworks Spreading Grounds sections (UCSB 1944), and in 1948, the spreading grounds appear fully developed (USGS 1948). This configuration of spreading basins remains in 1950, and the diversion channel to the west abuts the now channelized Los Angeles River leading to the eight spreading basins (UCSB 1950). The configuration of the spreading grounds appears to shift in aerial photographs between 1950 and 1964 (NETR 2022). Buildings first appear in the west end of the APE in the 1964 aerial photograph and the 1966 1:24,000 USGS quadrangle shows one structure is mapped. By the middle 1960s, US Highway 134 is located directly north of the APE (USGS 1966; UCSB 1964). The use of the spreading grounds is visible into the late 1970s, but by 1986 the spreading grounds appear abandoned. The diversion channel is faintly visible and spreading ponds have vegetation growth (UCSB 1964, 1971, 1979, 1986).

After the Headworks Spreading Grounds were decommissioned, the APE was transferred to Los Angeles Department of Recreation and Parks. However, the APE was never integrated into Griffith Park, and the APE remains separated from the rest of Griffith Park by the 60-foot-wide roadway of Forest Lawn Drive and a tall fence. Between its 1986 abandonment and the early 2000s, the site was overgrown with grass and weeds. Trees grew around its perimeter. The far eastern section was a cleared area with modern fill sediments mixed with native soils exposed (UCSB 2008). DWP maintains an easement across the entire Headworks Spreading Grounds property.

Construction commenced in 2012 on the Headworks Reservoir Complex at HWSG, leading to massive ground disturbance within the APE. This project aimed to replace the storage capacity of the open-air Silver Lake Reservoir Complex, which was removed from service due to changes in

US Environmental Protection Agency water quality regulations. Work was completed on the East Reservoir in 2015 and the West Reservoir in 2022. Combined, the two reservoirs can store up to 110 million gallons of water. These structures are partially buried around 20 feet below surface grade and extend approximately 20 feet aboveground. Since completion of this work, soil embankments have been built up around the above-grade walls of the reservoirs, and both reservoirs have been covered with approximately 3 feet of soil. Current Google Earth aerial imagery dating to March 2022 clearly shows this most recent alteration of the APE (Google Earth 2022).

FIELD SURVEY

No field survey was necessary for this project because the entire APE has been surveyed on multiple occasions, including within the past five years. Most recently, the entire APE was subjected to an intensive pedestrian survey in 2020 (Beherec 2020; Beherec and Wilson 2020). The most recent survey is less than five years old and includes the entire APE; therefore, a new survey was considered unnecessary for this project.

BURIED ARCHAEOLOGICAL SITE SENSITIVITY ANALYSIS

The APE has a low sensitivity for buried archaeological resources.

The APE is located on the banks of the Los Angeles River, and beside the resource-rich hills that are now a part of Griffith Park. Two adobe structures are believed to have once existed within 0.5 miles of the area, and a third is located 2.5 miles away in Griffith Park. Because of the area's rich resources, it might be expected to have been intensively used in prehistoric and early historic times.

However, the erratic nature of the Los Angeles River would make the APE an unlikely site for more than temporary use. As described above, prior to the Los Angeles River's channelization in the middle twentieth century, the river frequently flooded, overflowing and shifting its banks. The project APE was located within the river's floodplain, sometimes on the north bank of the river and sometimes on its south bank. The APE would have been frequently underwater, and other times overgrown by water-loving vegetation or a sticky morass. Riverine resources would have been hunted and gathered in such an environment, but this would be the limit of most human activity in such a location. Frequent flooding would have led to the destruction and washing away of anything that was deposited here.

Map research shows no buildings or structures within the APE prior to the channelization of the Los Angeles River, which stabilized the property. One map, the *Kirkman-Harriman* map, shows a Native American village in the vicinity of the APE (Kirkman 1937). This map was published in 1937 but intended to represent the Los Angeles County of 80 years earlier. It used unknown sources to map historic sites. In 1860, the date the map is intended to represent, the APE was located north of the river. The cartographer used tipis to represent Native American villages, and placed a tipi

in the hilly area of what is today Forest Lawn Cemetery or Griffith Park south of the river. At present, no prehistoric archaeological resources are documented within the mapped location.

The entire APE is mapped as Urban land-Metz-Pico Complex, 0 to 2 percent slopes (NRCS 2022). This soil type is deposited on urban floodplains and is of low potential for archaeological resources.

Moreover, the area has a history of intensive disturbance. The APE is located on what is naturally the bottomlands beside the Los Angeles River, and natural flooding likely washed away archaeological remains that may have existed at the site prior to the river's channelization. Deep wells and pipes up to 150 feet have been dug at the site since the first quarter of the twentieth century. Further, the massive earthmoving associated with the channelization of the Los Angeles River and the construction of the spreading grounds in 1938, and the spreading grounds' reorganization between 1954 and 1964, disturbed the APE to significant depths and would most likely have destroyed any cultural resources located within the APE. Finally, recent earthmoving construction associated with the Headworks East and West Reservoirs has eradicated most features associated with the original Headworks Spreading Grounds, including the outlines of the six spreading basins that existed in 2004.

No archaeological resources were encountered in the APE during multiple archaeological surveys conducted for projects or during the construction of the reservoirs (Bard n.d.; Greenwood and Associates 2004; Beherec and Griffith 2016; Beherec 2020). Based on the results of the archival research and past surveys, there is low potential that unknown archaeological resources will be encountered during ground-disturbing activities for the project due to massive ground disturbance associated with the construction of two reservoirs and associated features within the APE.

NATIVE AMERICAN/INTERESTED PARTIES OUTREACH

Amendments to CEQA made by the passage of Assembly Bill (AB) 52 require that California state agencies consider the impacts of their projects to tribal cultural resources. Part of this process requires meaningful consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of the proposed project who have requested such consultation from the lead agency. Additionally, Section 106 of the NHPA requires the federal lead agency to consult with appropriate Native American tribes as well as identify and engage stakeholders such as historical societies.

LADWP is conducting appropriate AB 52 consultation. The California State Water Resources Control Board is responsible for Section 106 consultation. The results of onsultation will be documented separately and reported in the environmental document.

EFFECTS/IMPACTS ANALYSIS

Michael Baker International applied the Criteria of Adverse Effect pursuant to 36 CFR 800.5(a)(1–2) to evaluate the project's effects to the historic properties within the APE. This code section defines adverse effects as any direct or indirect effect that may alter the characteristics of a historic property that qualify the property for listing in the NRHP. Adverse effects diminish the integrity of a historic property's location, design, setting, materials, workmanship, feeling, or association, and may include, but are not limited to the following:

i. Physical destruction of or damage to all or part of the property;

ii. Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines;

iii. Removal of the property from its historic location;

iv. Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

v. Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;

vi. Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

vii. Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

Additionally, Michael Baker International applied the criteria of substantial adverse change pursuant to the CEQA Guidelines codified in the CCR Title 14, Chapter 3, Section 15000 and in PRC Section 5020.1 to evaluate the project's impacts to the historical resources listed or eligible for listing in CRHR or NRHP that are within the APE.

CEQA Section 15064.5(b) states that "a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

> (1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.

(2) The significance of an historical resource is materially impaired when a project:

(A) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or

(B) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code; or

(C) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA."

One historic property overlaps the APE. Below is an effects and impacts analysis for Griffith Park (P-19-175297).

GRIFFITH PARK (P-19-175297)

The project includes construction of and approximately 100,000 gross square feet of building, surface parking, a mobile laboratory trailer, electric car charging stations, landscaping, and site improvements, as part of the WQL facility. It also includes constructing two treatment trains, a chemical storage area, support areas, a visitor center, and a parking lot as part of the DPR Demonstration Facility. Lastly, it includes constructing a park on the roof of the West Reservoir, as well as surface parking, gateway pavilion, and trails as part of the Headworks Park facility.

The boundaries of the NRHP-eligible and LAHCM Griffith Park overlaps the APE; however, historically the area within the APE did not function as part of the park. The APE has a separate history associated with water acquisition as opposed to recreation. At some point over the park's history, the area within the APE was incorporated into the park's boundaries, but DWP retains an easement over the entire property. None of the historic property's character-defining features are located within or adjacent to the APE (see **Attachment 1**). The closest character-defining feature, Travel Town, is separated from the APE by 0.14 miles, which includes a 60-foot-wide roadway and two high fences. The APE is located in an arm of the park beside the river in the San Fernando Valley and is not visible from any of the park's character-defining features.

A finding of no effect is appropriate for Griffith Park because the historic property will remain in place, as is, with no physical destruction or damage; alteration; removal from location; change of use, or change of any known physical features within the property's setting that contribute to its historic significance; introduction of visual, atmospheric, or audible elements that diminish the

integrity of the property's significant historic features; neglect; or property transfer, lease, or sale, as defined in the Criteria of Adverse Effect at 36 CFR 800.5(a)(2)(i-vii).

Additionally, the project would not constitute a substantial adverse change because the historical resource would not be demolished or materially altered in an adverse manner, and the physical characteristics that convey its historical significance and justify its eligibility for inclusion in the NRHP/CRHR/LAHCM will remain intact and unchanged (CEQA Section 15064.5[b][2][A-C]). There would be no impact to the historical resource.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

The SCCIC records search and literature and map review identified two known resources within or overlapping the APE: Griffith Park (P-19-175297) and the Headworks Spreading Grounds (P-19-004712/CA-LAN-004712). The Headworks Spreading Grounds was determined ineligible for the NRHP and CRHR in 2020 and is not a historical resource as defined by CEQA Section 15064.5(a) or a historic property as defined by Section 106 of the NHPA. Griffith Park is a historic property and historical resource because it has been determined eligible for listing in the NRHP and CRHR, and is a LAHCM. The effects/impacts analysis identified no impacts to any of the resource's contributing elements/character-defining features, as identified in the original NRHP evaluation (McAvoy 1994) or the later LAHCM Recommendation Report (Goldberg and Garcia 2008). Additionally, a buried archaeological sensitivity assessment indicates low sensitivity for buried prehistoric archaeological resources within the APE due to its location on the Los Angeles River floodplain and past natural and human disturbances. Therefore, a finding of no historic properties affected under Section 106 of the NRHP and less than significant impact with mitigation incorporated is appropriate for this project.

Below are standard measures if archaeological material or human remains are identified during project activities.

> If archaeological material is uncovered in the course of ground-disturbing activities, work shall be temporarily halted in the vicinity of the find and the project proponent shall retain a qualified professional archaeologist meeting the Secretary of the Interior's Standards for archaeology to evaluate the significance of the find and determine appropriate treatment for the resource in accordance with 36 CFR Section 800.6 (Resolution of adverse effects) and Section 800.13 (Post-review discoveries).
>
> In the event that human remains are discovered, the remains would be treated in accordance with all applicable regulations. In accordance with the provisions of California Health and Safety Code Section 7050.5, in the event that human remains are discovered during project construction, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains would occur, and the Los Angeles County coroner would be notified. The coroner would provide recommendations

concerning the treatment and disposition of the human remains within two working days. If the remains and/or related resources, such as funerary objects, are determined to be of Native American origin, the coroner would contact the Native American Heritage Commission within 24 hours. In accordance with California PRC Section 5097.98, the Native American Heritage Commission would immediately notify the person it believes to be most likely descended from the deceased Native American. The most likely descendent would be given access to the site where the remains were discovered and may make recommendations for the treatment and disposition of the remains and related resources, as well as provide input regarding the potential for other remains to be present. Work at the discovery site may commence only after consultation with the most likely descendent and treatment of the remains and any associated resources have been concluded. Work may continue on other parts of the project site while consultation and treatment are conducted. The above recommendations would ensure less than significant impacts for archaeological resources, tribal cultural resources, and human remains.

PREPARER QUALIFICATIONS

This memorandum was prepared by Michael Baker International Archaeologist Marcel Young, Senior Archaeologist Marc Beherec, PhD, RPA, and Senior Cultural Resources Manager Margo Nayyar.

Marcel S. Young, BA, Archaeologist, matriculated from California State University, Long Beach, in 2014 with a degree in anthropology/Native American cultures, and has worked in various capacities in cultural resource management since 2013. He is experienced in archaeological survey and in recording and evaluating historic and prehistoric archaeological sites in California. Mr. Young is versed in conducting fieldwork within frameworks of Section 106 of the NHPA, NEPA, and CEQA. He has participated in projects in several phases of archaeology: Phase I pedestrian, Extended Phase I testing and shovel test surveys, Phase II buried site testing, Phase III data recovery, and cultural resources monitoring.

Marc A. Beherec, PhD, RPA, Principal Investigator/Senior Archaeologist, has more than 20 years of experience in prehistoric and historical archaeology and cultural resources management. His experience includes writing technical reports, including NEPA, NHPA, and CEQA compliance documents. He has supervised and managed all phases of archaeological fieldwork, including survey, Phase II testing and evaluations and Phase III data recovery, and monitoring at sites throughout Southern California. Dr. Beherec meets the Secretary of the Interior's Professional Qualification Standards for prehistory and historical archaeology.

Margo Nayyar, MA, Department Manager, is a senior architectural historian with 12 years of cultural management experience in California, Nevada, Arizona, Idaho, Texas, and Mississippi. Her experience includes built environment surveys, evaluation of historic-era resources using guidelines outlined in the NRHP and CRHR, and preparation of cultural resources technical studies pursuant to CEQA and Section 106 of the NHPA, including identification studies, finding of effect

documents, memorandum of agreements, programmatic agreements, and Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey mitigation documentation. She prepares cultural resources sections for CEQA environmental documents, including infill checklists, initial studies, and environmental impact reports, as well as NEPA environmental documents, including environmental impact statements and environmental assessments. She also specializes in municipal preservation planning, historic preservation ordinance updates, Native American consultation, and provision of Certified Local Government training to interested local governments. She develops Survey 123 and Esri Collector applications for large-scale historic resources surveys, and authors NRHP nomination packets. Ms. Nayyar meets the Secretary of the Interior's Professional Qualification Standards for history and architectural history.

Sincerely,



Marc Beherec, PhD, RPA	Marcel Young, BA	Margo Nayyar, MA
Senior Archaeologist	Archaeologist	Senior Cultural Resources Manager

Attachments:

Attachment 1 – Figures

Attachment 2 – Department of Parks and Recreation 523 Series forms

Attachment 3 – City of Los Angeles Historic-Cultural Monument Documentation for Griffith Park

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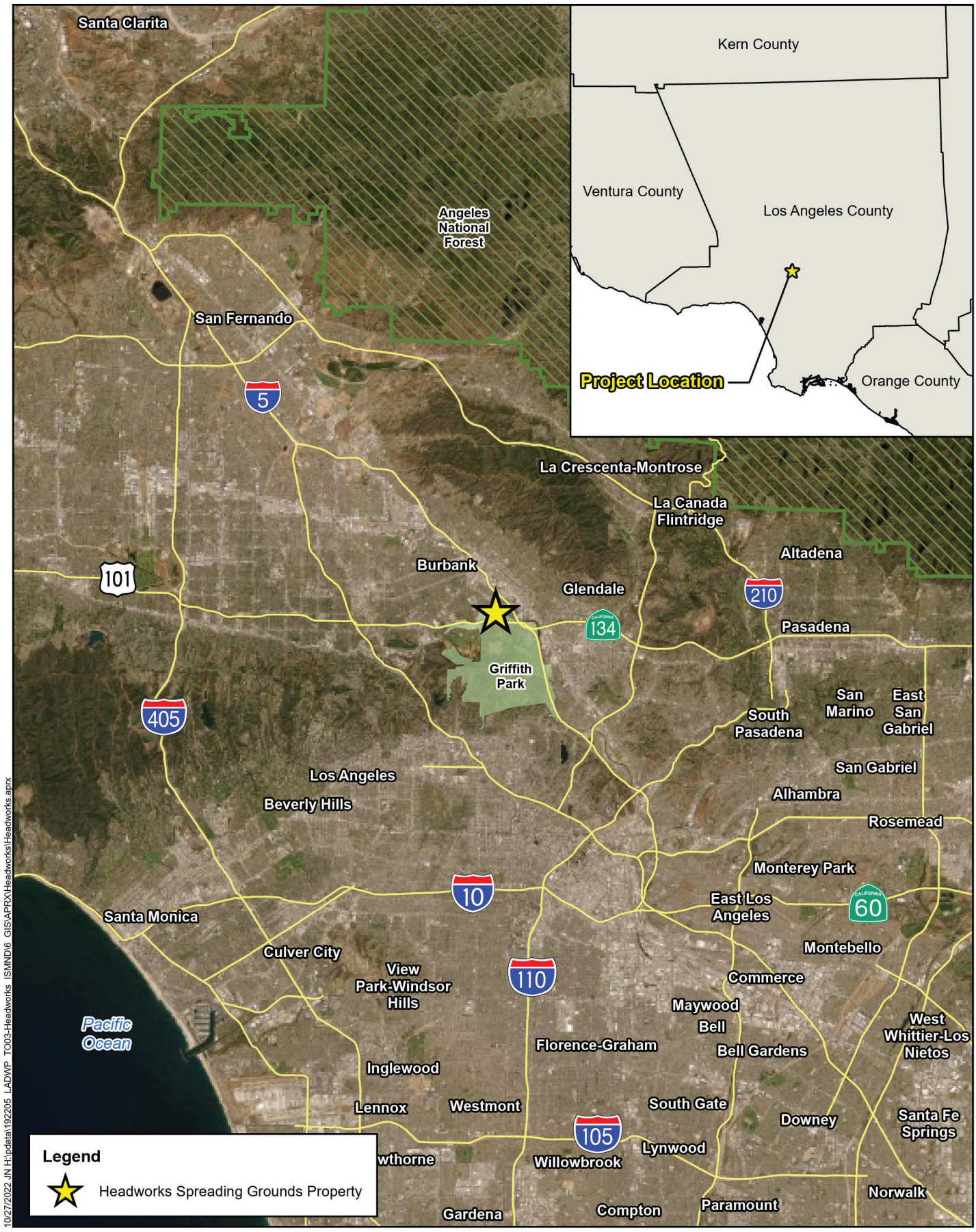
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Attachment 1

Figures



HEADWORKS SITE DEVELOPMENT PROJECT

Regional Vicinity

Figure 1



Legend

- Headworks Spreading Grounds Property
- Griffith Park

0 600 1,200 Feet

Source: County of Los Angeles, ArcGIS Online

HEADWORKS SITE DEVELOPMENT PROJECT

Headworks Spreading Grounds and Vicinity

Figure 2



Legend

1. Headworks Park (Proposed)
2. Headworks Park - Pavilion Gateway (Proposed)
3. Headworks Park - Parking Lot (Proposed)
4. LA River Trail Segment (Proposed)
5. Access Road (Proposed)
6. Equestrian Tunnel (Existing)
7. Connection to Griffith Park (Existing)
8. Water Quality Lab (Proposed)
9. DPR Demonstration Facility (Proposed)
10. DPR Demonstration Facility Visitor Center (Proposed)
11. East Reservoir (Existing)
12. Flow Control Station (In Construction)

LA DWP

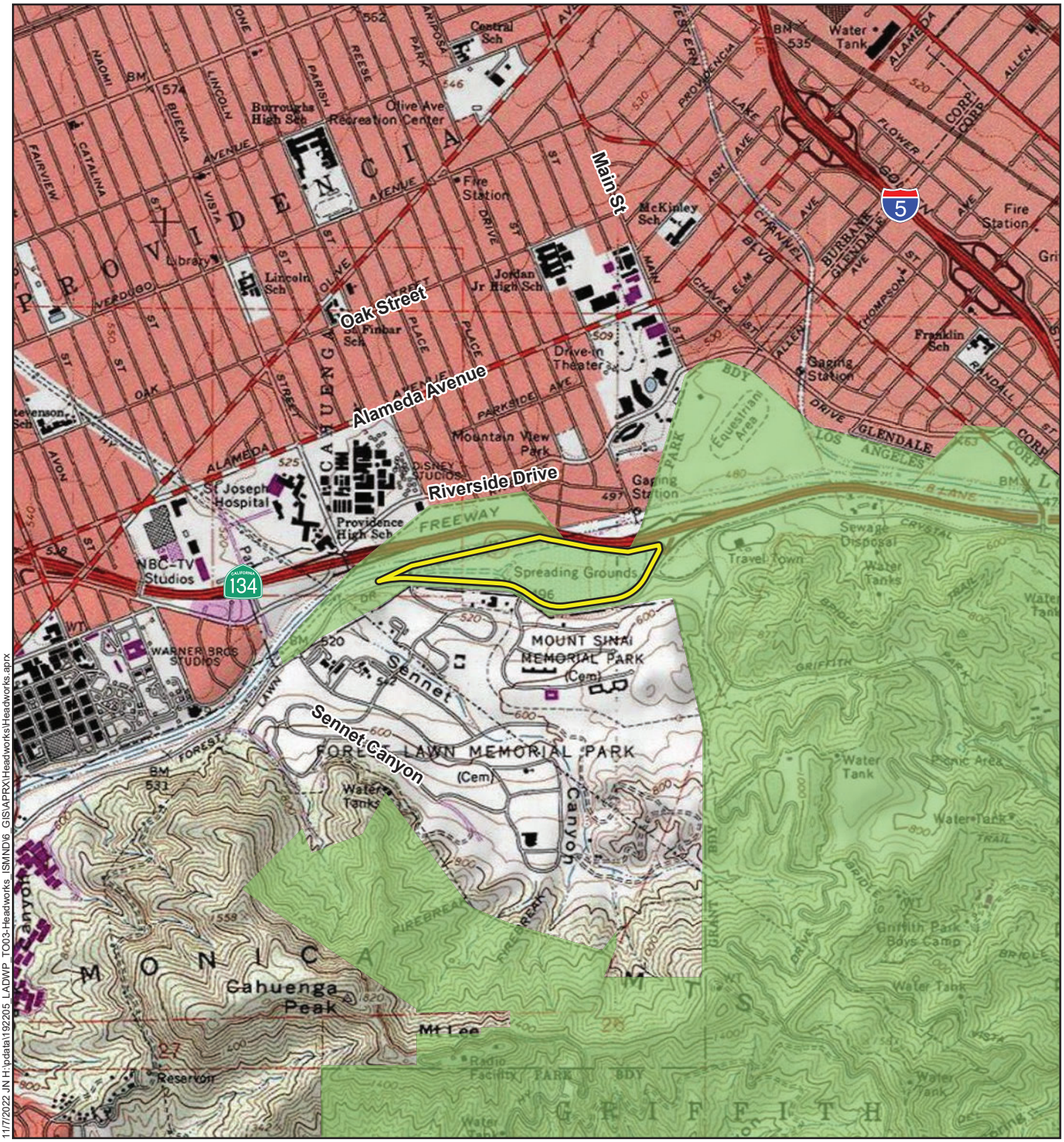
0 250 500 Feet

Source: ESRI, Nearmap, County of Los Angeles

HEADWORKS SITE DEVELOPMENT PROJECT

Proposed Project Conceptual Site Plan

Figure 3



Legend

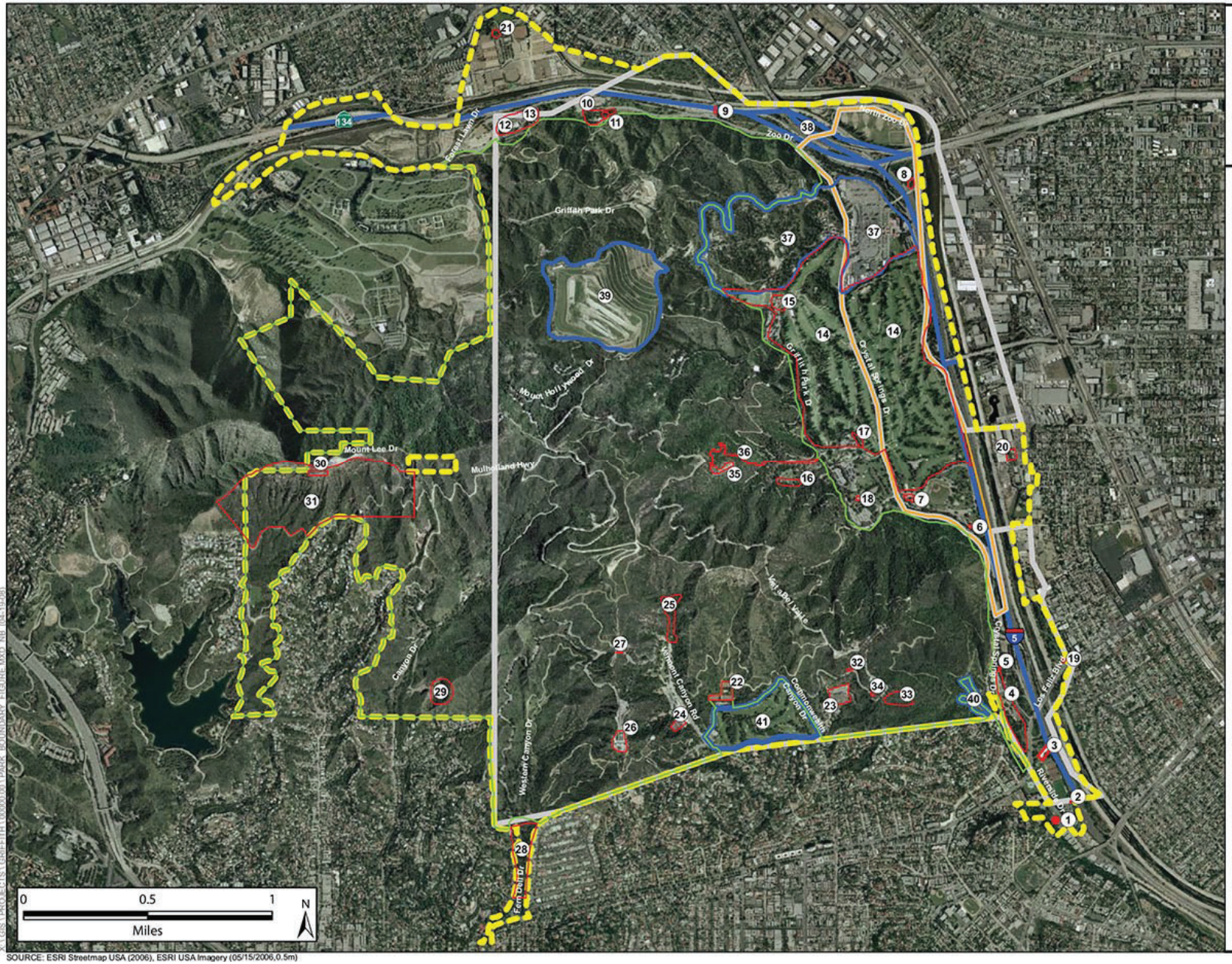
- Project Area of Potential Effects
- Griffith Park (P-19-175297)

0 1,200 2,400 Feet

Source: County of Los Angeles, ArcGIS Online

HEADWORKS SPREADING GROUNDS
ARCHEOLOGICAL REPORT
Headworks Site Development
Project Area of Potential Effects
Figure 4

GRIFFITH PARK HISTORIC RESOURCES MAP



SOURCE: ESRI Streetmap USA (2006), ESRI USA Imagery (05/15/2006,0.5m)

City of Los Angeles Park Boundary (approx.)
1897 Park Survey Boundary (approx.)
Historically Senistive Resources and Areas
Non-Contributing or Altered Components
Wilderness Area
Griffith Reservation

Historically Sensitive Resources and Areas:

1- Former Costume Workshop and Surroundings/ LA Shares Warehouse, 1961
2- Ranger House, c.1938
3- Municipal Plunge and Associated Buildings, 1927
4- Pony Ride, 1947 & Train Ride, 1947, 1963
5-1920's era DWP Building (I)
6-1920's era DWP Building (II)
7- Feliz Adobe, 1853, 1934 (City HCM No. 401)
8- Sycamore Grove
9- Riverside Drive Bridge, 1938
10- L.A. Live Steamers, 1956
11- Walt's Barn, 1950
12- Travel Town Transportation Museum (Collection), 1952-1962
13- "Little Nugget" Railcar, 1937 (City HCM No.474)
14- Wilson & Harding Golf Courses, 1923, 1924
15- Wilson & Harding Golf Clubhouse, 1937
16- Old Zoo Buildings, 1914- c.1937
17- Wilson Harding Turf Maintenance Facility, 1927
18- Merry-Go-Round, 1926, installed 1937
19- Los Feliz Cafe and Signage, 1948, 1956
20- Central Service Yard Administration Building, 1958
21- Former Cricket House, c.1933
22- Vermont Tennis Courts, c.1927
23- Nursery and Horticultural Center, 1927
24- Greek Theatre, 1930
25- Bird Sanctuary, 1922-c.1937
26- Griffith Observatory, 1935 (City HCM No.168)
27- Mt. Hollywood Tunnel, c.1927
28- Fern Dell Nature Area, 1914 -c.1937/ Gabrielino Indian Site (City HCM No.112)
29- Bronson Caves, c.1909-1920
30- Hollywood Sign, 1923, reconstructed 1978 (City HCM No.111)
31- Hollywood Sign Viewshed
32- 1930's era Stoppage Dam
33- Cedar Grove
34- Early Water Tower, c.1927
35- Bee Rock
36- Bee Rock Trail, 1903

The Wilderness Area is a Historically Sensitive Resource

Non-Contributing or Altered Components:

37- Los Angeles Zoo and Autry National Center, 1966, 1987
38- Freeways and All Associated Ramps, 1957
39- Toyon Landfill/ Reclamation Project, 1958
40- Marty Tregnan Golf Academy, 2000
41- Roosevelt Municipal Golf Course, 1966

Attachment 2

Department of Parks and Recreation
523 Series Forms

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary# P-19-004172 UPDATE
HRI#
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** (Assigned by recorder) Headworks Spreading Grounds

P1. Other Identifier: n/a
***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted**
***a. County:** Los Angeles
***b. USGS 7.5' Quad** Burbank, CA 1966 (Photo revised 1972, Minor revision 1994)
Unsectioned subdivision of Rancho Providencia and Scott Tract; **T_; R Sec ; B.M.** San Bernardino
c. Address 6001 West Forest Lawn Drive **City** Los Angeles **Zip** 90068
d. UTM: (Give more than one for large and/or linear resources) **Zone** 11S; 378640 m E/ 3779937 m N
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
The Headworks Spreading Grounds is bounded on the north by the Los Angeles River and State Route 134, and on the east and south by Forest Lawn Drive.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The former Headworks Spreading Grounds (HWSG) covers approximately 43 acres. It formerly consisted of six spreading basins, ranging in size from 1 acres to more than 8 acres, and a channel from which water was diverted from the Los Angeles River. These have been largely destroyed by the construction of the Headworks Reservoir. Five previously recorded features were observed, three previously recorded features have been demolished, and one new feature was identified (**Photographs 1 through 5**). (SEE CONTINUATION SHEET)

***P3b. Resource Attributes:** (List attributes and codes) AH6. Water Conveyance Systems; HP9. Public Utility Building, HP11. Engineering Structure, HP22. River/Reservoir

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☒Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: (view, date, accession #) **Photograph 1.** Headworks Reservoir under construction, June 23, 2020, view to northeast.

***P6. Date Constructed/Age and Source:**
☒Historic ☐Prehistoric ☐Both

Headworks: 1902; additions in 1905, 1906, 1916, and 1920; Spreading grounds: 1938, redesigned between 1954 and 1964. Headworks Reservoir: 2012–2020. (UCSB 1928, 1938, 1952, 1960)

***P7. Owner and Address:**
City of Los Angeles
Department of Public Works
650 S. Spring St., Suite 574
Los Angeles, CA 90014

***P8. Recorded by:** (Name, affiliation, address)
Monica Wilson, M.A.; Marc A. Beherec, Ph.D., RPA, AECOM, 401 West A Street, Ste 1200, San Diego, CA 92101
***P9. Date Recorded:** November 13, 2020
***P10. Survey Type:** Intensive

***P11. Report Citation**: Memorandum, Headworks Flow Control Station Project, Current Conditions and CEQA-Plus Evaluation. Prepared by AECOM for LADWP, dated November 13, 2020.

***Attachments:** ☐NONE ☒Location Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☒Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code** 6Z

***Resource Name or #** (Assigned by recorder) Headworks Spreading Grounds

B1. Historic Name: Crystal Springs Headworks; Headworks Spreading Grounds
B2. Common Name: Headworks Spreading Grounds
B3. Original Use: Water acquisition and purification
B4. Present Use: Water acquisition and purification
***B5. Architectural Style:** Utilitarian
***B6. Construction History:** (Construction date, alterations, and date of alterations)

The first dam headworks was constructed 1902. Subterranean infiltration galleries were added in 1905 and 1906 and expanded in 1916 and 1920. Los Angeles Department of Water and Power started diverting water to the headgrounds in 1917 with an auxiliary pumping station constructed and swinging wooden barriers added to block the river flow to recharge the subterranean reservoir. The spreading grounds basins were constructed in 1938 and later redesigned between 1954 and 1964. In the late 1950s, the swinging wooden barriers were replaced with an inflatable rubber dam. The dam at the headworks site was the first of its kind used in Los Angeles. Diversions from the river into the HWSG were halted in 1982, and the site was abandoned as a water retrieval site in 1987. The original rubber dam was replaced in 1991. See Continuation Sheet.

***B7. Moved?** X **No** __**Yes** __**Unknown** **Date:** _____ **Original Location:**_____
***B8. Related Features:** Los Angeles River, Dams, Diversion Structures, Pump Houses, Feeding Canal

B9a. Architect: unknown b. Builder: Los Angeles Department of Water and Power

***B10. Significance: Theme** Water Conveyance **Area** Los Angeles River, Los Angeles, California
Period of Significance 1905–1960 **Property Type** Engineering Structure **Applicable Criteria** N/A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The HWSG was inventoried and evaluated by AECOM staff in 2015 for the report titled, *Phase I Cultural Resource Investigation for the Headworks West Reservoir Project, Los Angeles County, California*.

The previous evaluation concluded that the property was not eligible for the California Register of Historical Resources (CRHR) or the National Register of Historic Places (NRHP). The Historic Property Data File provided by the South Central Coastal Information Center reported that the property has been assigned Status Code 6Z, which means it has been found ineligible through survey evaluation. After review of the previous recordation and current field check and research, the present evaluation concludes that the property does not appear to meet the criteria for listing in the NRHP or the CRHR.

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** SEE CONTINUATION SHEET

B13. Remarks: Documented features anticipated to be destroyed by construction.

***B14. Evaluator:** Monica Wilson, M.A.; Marc A. Beherec, Ph.D., RPA

***Date of Evaluation:** November 13, 2020

(This space reserved for official comments.)

(Sketch Map with north arrow required.)

***A1. Dimensions: a. Length** 3,570 feet (E/W) x **b. Width** 900 feet (N/S)
Method of Measurement: □ Paced □ Taped □ Visual estimate ☒ Other: Google Earth measurements
Method of Determination (Check any that apply): □Artifacts □Features □ Soil □ Vegetation □ Topography □ Cut bank □ Animal burrow □ Excavation ☒ Property boundary □ Other (Explain):
Reliability of Determination: ☒ High □Medium □ Low Explain: Site limits of original Headworks property
Limitations (Check any that apply): □ Restricted access ☒ Paved/built over □Site limits incompletely defined ☒ Disturbances □ Vegetation □Other (Explain):

A2. Depth: 150 feet □ None □ Unknown Method of Determination: Historic descriptions of depth of subterranean galleries.

***A3. Human Remains:** □ Present ☒ Absent □ Possible □ Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.): Five previously recorded features were observed, three previously recorded features have been demolished, and one new feature was identified. See Continuation Sheet.

***A5. Cultural Constituents** (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.): No other cultural constituents were observed.

***A6. Were Specimens Collected?** □No □ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)

***A7. Site Condition:** □ Good □ Fair ☒ Poor (Describe disturbances): Site has been impacted by construction activities.

***A8. Nearest Water** (Type, distance, and direction): Los Angeles River, adjacent to site on north.

***A9. Elevation:** 500 feet.

A10. Environmental Setting (Describe vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc., as appropriate.): The site is located on the south bank of the Los Angeles River, north of Griffith Park. Vegetation consists of native and imported weeds. Surface sediment consists of younger Quaternary alluvium.

A11. Historical Information:
See Continuation Sheet.

***A12. Age:** □ Prehistoric □ Protohistoric □ 1542-1769 □ 1769-1848 □ 1848-1880 ☒ 1880-1914 ☒ 1914-1945 ☒ Post 1945 □Undetermined
Describe position in regional prehistoric chronology or factual historic dates if known: First dam headworks constructed in 1902. Subterranean infiltration galleries added in 1905 and 1906; expanded in 1916 and 1920. Spreading grounds constructed in 1938; redesigned between 1954 and 1964. Headworks Reservoir constructed 2012–2020. (UCSB 1928, 1938, 1952, 1960).

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations): The site has been heavily impacted. Further data potential appears very limited.
A14. Remarks: N/A
A15. References (Documents, informants, maps, and other references): N/A
A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.): See Continuation Sheet.
Original Media/Negatives Kept at: AECOM 401 West A Street, Ste 1200, San Diego, CA 92101

***A17. Form Prepared by:** AECOM **Date:** 11/13/2020
Affiliation and Address: AECOM 401 West A Street, Ste 1200, San Diego, CA 92101

***P3a. Description (Continued):**
Features 1, 2, and 3, originally recorded in 2015, have since been demolished by construction.

Feature 4, originally recorded in 2015, consists of a concrete retaining wall surrounding a curved 24-inch steel pipe and I-beam on three sides that received overflow water from Feature 6 (**Photograph 2**). This feature remains extant and generally retains the elements and composition it had at the time of last recordation.

Feature 5, originally recorded in 2015, consists of a concrete block retaining wall that received overflow water from Feature 6 (**Photograph 2**). This feature remains extant and generally retains the elements and composition it had at the time of last recordation.

Feature 6, originally recorded in 2015, consists of an 18-inch-diameter horizontal steel pipe that runs in an east-to-west direction that carried overflow water west to the control feature/drain (Features 4 and 5) (**Photograph 2**). This feature remains extant and generally retains the elements and composition it had at the time of last recordation.

Feature 7, originally recorded in 2015, consists of a 12-inch-diameter pipe and is a non-historic utility conduit that crosses over a historic-period steel pipe (**Photograph 2**). This feature remains extant and generally retains the elements and composition it had at the time of last recordation.

Feature 8, originally recorded in 2015, consists of a concrete block building that originally housed water flow control device controls (**Photograph 4**). This feature remains extant and generally retains the elements and composition it had at the time of last recordation.

Feature 9 includes a pipe connection and control devices used for the previous rubber dam (**Photograph 5**). The rubber dam would have been anchored with bolts and inflated with water through a pipe connection with a tank on the riverbank (LADWP n.d.[b]). This feature includes two rectangular vaults with steel pipes enclosed by chain-link fencing.

B10. Significance (Continued):

Historic Context
The site of the HWSG was included within the lands deeded by Mexican Governor Juan B. Alvarado to Vincente de la Osa in 1843. De la Osa sold the land to David W. Alexander in 1849, who subsequently sold it to David Burbank. In 1886, Burbank sold the land to the Providencia Land, Water, & Development Company, on the board of which he sat.

The company developed Burbank in 1887, and the settlement incorporated as the City of Burbank in 1911 (City of Burbank n.d.). Between 1895 and 1898, earthen irrigation ditches with wooden water diversion structures were developed on the HWSG site, then referred to as Crystal Springs and owned by the Crystal Springs Land and Water Company (Plates 1 and 2) (USC 1895, 1898). In 1897, City Engineer John Henry Dockweiler released a water report that outlined the city's plan for a waterworks main supply to stem from the Providencia Rancho and to have a distribution system of conduits connecting from the upper headworks at Providencia Rancho to a lower headworks and infiltration gallery at Crystal Springs and on to a series of reservoirs and distribution pipelines (Plate 3) (LAT 1897).

In 1897–1898, the City of Los Angeles condemned a 2-mile-long strip of land alongside the Los Angeles River north of Griffith Park, known as the Pomeroy & Hooker Tract, which included the Crystal Spring structures, in order to build a new headworks for the city water system. This action led to an eminent domain valuation case that went to the California Supreme Court. In *Los Angeles v. Pomeroy*, the court ruled in favor of the city finding that the water beneath the land was part of the Los Angeles River and established a precedent that distinguished between subterranean streams and percolating groundwater (Sax 2002). The case was just one of many subsurface water law developments in the California Supreme Court between 1899 and 1913, which ultimately led to the 1913 Water Commission Act (Sax 2002).

In 1902, after legal settlements with the Crystal Springs Land and Water Company, the city passed an ordinance approving the construction of a new water distribution system. Hoping to prevent a reoccurrence of the lease fiasco as

demonstrated with Crystal Springs, the city council also approved an amendment to the city charter that prohibited any future lease or sale of the waters of the Los Angeles River (Gumprecht 1999).

In 1902, the city built a new diversion dam, water supply conduit, and infiltration galleries at the Crystal Springs/ Pomeroy & Hooker lands. Concrete infiltration galleries were completed in 1905 and 1906. The infiltration galleries were 14 to 22 feet beneath the surface, 4 to 5 feet in diameter with a horseshoe arch shape, 406 and 2478 feet in length, and connected by open-jointed vitrified stoneware infiltration pipes (Los Angeles Board of Water Commissioners 1910). The infiltration galleries were expanded in 1916 and 1920. In 1917, the Los Angeles Department of Water and Power put an auxiliary pumping station into service at the Griffith plant and started diverting water to the headgrounds by blocking the flow of the river with a set of swinging wooden barriers to recharge the subterranean reservoir (*Los Angeles Evening Post* 1917; LAT 1987). In 1925, further improvements to the gallery and headworks pumping plant began and 14 wells at the HWSG site were added to feed the city water system (Plate 4) (LADWP 1991; Gumprecht 1999).

In 1938, spreading grounds with a main infiltration gallery were developed at the facility to capture further river water within spreading basins (Plate 5). Recharge water was collected in perforated pipes in the spreading basins and connected to galleries approximately 150 feet below the ground surface (Plate 6) (Karimi et al. 1998). By 1944, the Los Angeles River in this area was channelized, the original 1902 dam was removed, and the spreading grounds included seven spreading basins (Plate 8) (UCSB 1944). By 1952, additional spreading basins and above-ground steel pipe conduit was added (Plate 9) (UCSB 1952).

In the late 1950s, the swinging wooden barriers used to block the river flow were replaced with an inflatable rubber dam (Plate 7). The dam at the headworks site was the first of its kind used in Los Angeles (Linton 2010).The rubber dam was a neoprene and nylon fabric tube, 150 feet long and 30 feet in circumference, which extended up the vertical walls of the Los Angeles river channel 10 feet along each side (LADWP n.d.[b]). The rubber dam would have been anchored with bolts and inflated with water through a pipe connection with a tank on the riverbank (LADWP n.d.[b]). The pipe connection (Feature 9) remains extant. The weight of water flowing on top of the dam would cause it to collapse (LADWP n.d.[b]). By 1960, the control/ gate house building was constructed (Feature 8) along with an additional tank to service the inflatable dam (UCSB 1960). The HWSG underwent a redesign project, which was completed by 1964, and the Ventura 134 Freeway was constructed north of property in 1971 (Plates 10 and 11) (UCSB 1971).

Pollution ultimately condemned the HWSG facility. The Headworks Deep Gallery was shut down in 1971. Diversions from the river into the HWSG were halted in 1982 due to deterioration of the rubber dam (Plates 12 and 13). Water was instead purified at the Donald C. Tillman Plant, opened in 1981, rendering the unsafe HWSG facility superfluous. Most of the wells near the Los Angeles River were closed in the 1980s due to industrial contamination originating in the San Fernando Valley, and the last well at the HWSG was closed in 1987 (Gumprecht 1999; Karimi et al. 1998). The rubber dam was replaced in 1991 and plans to remediate and restore the headworks wells back into operation began in the late 1990s (LAT 1991, 1998).

In 2004, at the time of the Silver Lake Reservoir Complex Storage Replacement Project (SLRC SRP) study, the HWSG had been abandoned for nearly two decades. The site encompassed a series of six dry shallow basins, ranging in size from less than 1 acre to more than 8 acres. The group of basins took up a space measuring approximately 0.75 mile in length and 0.20 mile across at the widest point. The surface of the basins was at a depth of approximately 30 feet below the level of Forest Lawn Drive. An earthen channel approximately 15 feet in depth and ran east-west through the central section of the site. To the west of this channel, a concrete gate at one time allowed water from the Los Angeles River to flow onto the site. In 2004, the channel was dry with a large corrugated metal pipe dissecting it. The western basin measured approximately 500 feet across and the eastern basin was occupied by the actual spreading basins. These two basins were separated by a central, east-west–running berm consisting of native sand and gravel. There was also a series of smaller basins to the east also divided by earthen berms. The eastern portion of the site has seen extensive filling, which has raised the ground level several feet above the spreading basin berms (Greenwood and Associates 2004:23). Construction of two concrete reservoirs named Headworks East and Headworks West at the HWSG site began in 2012.

Evaluation

NRHP Criterion A and CRHR Criterion 1

Under NRHP Criterion A/ CRHR Criterion 1, the HWSG has associations with water distribution history of Los Angeles. The site was the original starting point for the City of Los Angeles' water distribution system and included a complex of infiltration galleries, wells, and conduits constructed and reconstructed in numerous episodes from 1902 into the late 1960s. From 1897 to 1899, the property itself, known as the Pomeroy & Hooper Tract, which included the Crystal Spring structures, was the locus of the Supreme Court case *Los Angeles v. Pomeroy*. The Pomeroy case ruled in favor of Los Angeles finding that the water beneath the land was part of the Los Angeles River and established a precedent that distinguished between subterranean streams and percolating groundwater. The case was just one of many subsurface water law developments in the California Supreme Court between 1899 and 1913, which ultimately led to the 1913 Water Commission Act.

The first dam headworks was constructed in 1902. Subterranean infiltration galleries were added in 1905 and 1906, and expanded in 1916 and 1920. The Los Angeles Department of Water and Power started diverting water to the headgrounds in 1917 with an auxiliary pumping station constructed and swinging wooden barriers added to block the river flow to recharge the subterranean reservoir. The spreading grounds basins were constructed in 1938 and later redesigned between 1954 and 1964. In the late 1950s, the swinging wooden barriers were replaced with an inflatable rubber dam. The dam at the headworks site was the first of its kind used in Los Angeles. Diversions from the river into the HWSG were halted in 1982 and the site was abandoned as a water retrieval site in 1987. The original rubber dam was replaced in 1991.

The surviving elements of the HWSG appear to date to the 1950s and not the facility's original construction. The HWSG and its wells and other features do not appear to have played a significant individual role in local, state, or national history individually because they are representative of such facilities constructed throughout California in the 20th century. Therefore, the HWSG is not eligible for NRHP listing under Criterion A/ CRHR listing under Criterion 1.

NRHP Criterion B and CRHR Criterion 2

Under NRHP Criterion B/ CRHR Criterion 2, the HWSG has no significant association with the lives of persons important to local, California, or national history. The California Department of Transportation (Caltrans) historic context, Water Conveyance Systems in California, notes that water conveyance systems will rarely be found eligible for their association with significant people (JRP and Caltrans 2000). Important people that may be associated with the water conveyance features would most likely have been involved with the design and construction of these features, such as a master engineer, which would be more appropriately evaluated under Criterion C/3. There may be instances, however, when a water conveyance system would be eligible under Criterion B/2, notably when the person's association with the system is very strong and no properties more closely associated with that person remain. The HWSG was first constructed under the direction of William Mulholland, the important city engineer more famous for his work in the construction of the Los Angeles Aqueduct. The facility is also associated with many organizations who contributed to the planning and implementation of their construction, including the Los Angeles Department of Water and Power. However, research has not revealed a direct association with any individuals involved with the construction or design of the facility's surviving elements, which appear to date to the 1960s. The HWSG has no direct association with important historic persons and, thus, does not meet NRHP Criterion B/ CRHR Criterion 2.

NRHP Criterion C and CRHR Criterion 3

Under NRHP Criterion C/ CRHR Criterion 3, the former HWSG is not an important example of a type, period, or method of construction. The Caltrans historic context, Water Conveyance Systems in California, notes properties eligible under Criterion C/3 may have unique values or they may be the best or good examples of a type of water conveyance property. The earliest, best preserved, largest, or sole surviving examples of particular types of water conveyance systems or a property that introduced a design innovation may be eligible as examples of evolutionary trends in engineering. To be considered a good representative of that type, period, or method of construction, a water conveyance system must possess "distinctive characteristics," the common features or traits of that type, period, or method of construction. Through those distinctive characteristics, a property must clearly illustrate one or more of the following: the pattern of

features common to a particular class of resources; the individuality or variation of features that occurs within the class; the evolution of that class; or the transition between classes of resources (JRP and Caltrans 2000).

The HWSG is not the earliest, best preserved, largest, or sole surviving example of its type. The HWSG is representative of common spreading grounds and their associated features throughout California. The HWSG is similar to many other facilities, such as the 28 spreading facilities that were built between 1917 and 1994 and owned and operated by LADPW (LADWP n.d.; Gibson 2012). These spreading grounds were apparently designed from a standard set of plans, similar to that applied to spreading grounds in the Los Angeles Flood Control District. They have no known associations with individual engineers and do not represent the work of a master. The HWSG does not possess high artistic values because it consists of basic spreading grounds designed for function and utility and not for aesthetic quality. In summary, the HWSG does not have distinctive engineering or architectural features to meet NRHP Criterion C or CRHR Criterion 3.

NRHP Criterion D and CRHR Criterion 4

The HWSG is not likely to yield further information important to history or prehistory because the construction history and use of these resources are known. Therefore, the HWSG does not meet NRHP Criterion D or CRHR Criterion 4.

Integrity Analysis

In addition to meeting one of the NRHP/CRHR criteria, a property must also retain a significant amount of its historic integrity to be considered eligible for listing to one of these registers. Historic integrity is made up of seven aspects: location, design, setting, materials, workmanship, feeling, and association.

The HWSG retains integrity of location but does not retain integrity of design, materials, workmanship, or setting. The HWSG is in its original location but lacks feeling and association because it is not functional and has been heavily impacted by past construction. The HWSG does not retain its integrity of design, materials, or workmanship because it has been significantly and permanently altered. The property no longer compromises its original form, plan, space, structure, or style. During its active use, the HWSG was actively maintained and upgraded, and at one point between 1954 and 1964 was redesigned on a large scale. Since its abandonment in 1987, and particularly since 2011, it has been massively impacted by construction associated with SLRC SRP, and the infiltration basins are no longer recognizable in aerial photographs. The property does not retain integrity of setting, and the surrounding environs have undergone significant urban development and commercialization from the 1940s into the 1980s, thereby impairing the resource's integrity of setting, as it is now surrounded by modern roadways and the Ventura Freeway and commercial improvements. The HWSG does not retain sufficient principal character-defining features or specific aspects of integrity necessary to convey its history or significance.

In summary, the HWSG does not meet any NRHP or CRHR criteria for designation and does not retain sufficient integrity to be eligible for the NRHP or CRHR in any case due to lack of integrity.

***B12. References: Continued**

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Photograph 2. Overview of Features 4–8, view to southwest



Photograph 3. Overview of flow control box and concrete headwall, Feature 5, view to northwest



Photograph 4. Feature 8, Control House, view to northeast



Photograph 5. Feature 9, dam control devices, view to northwest



Plate 1. Early development of irrigation ditches at the headwaters at Griffith Park ca. 1895/1898 (USC 1895)



Plate 2. Irrigation ditches and a sluice gate at the headwaters at Griffith Park ca. 1898/1910 (USC 1898)

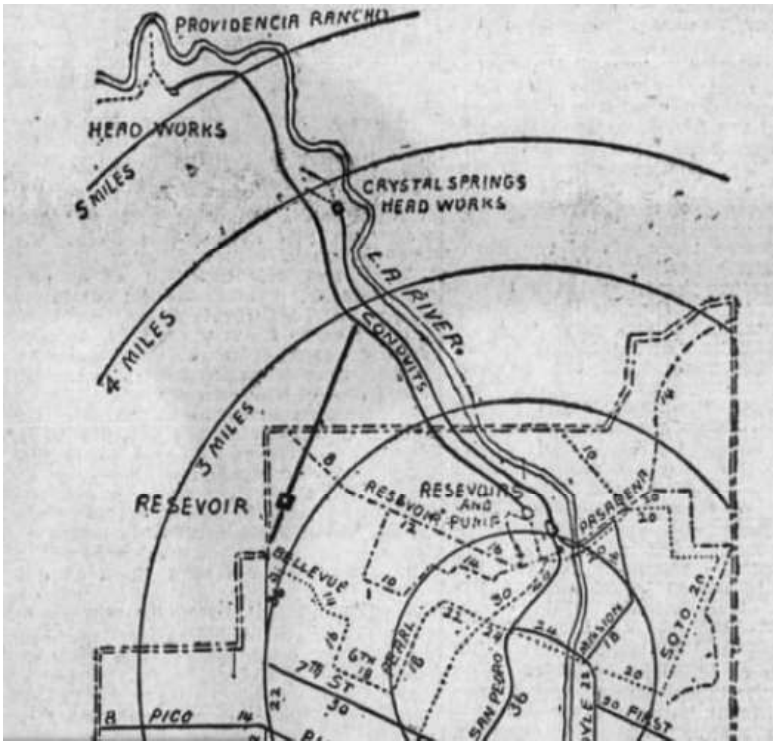


Plate 3. Excerpt from proposed plan of water distribution system 1897 (LAT 1897)

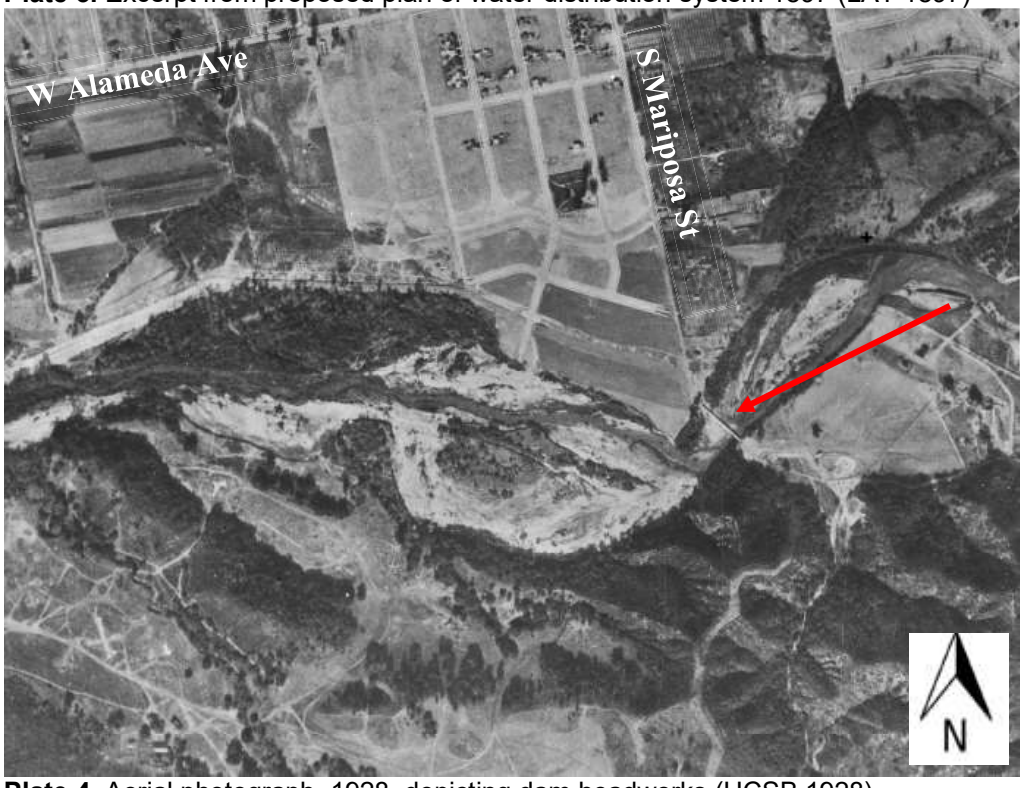


Plate 4. Aerial photograph, 1928, depicting dam headworks (UCSB 1928)

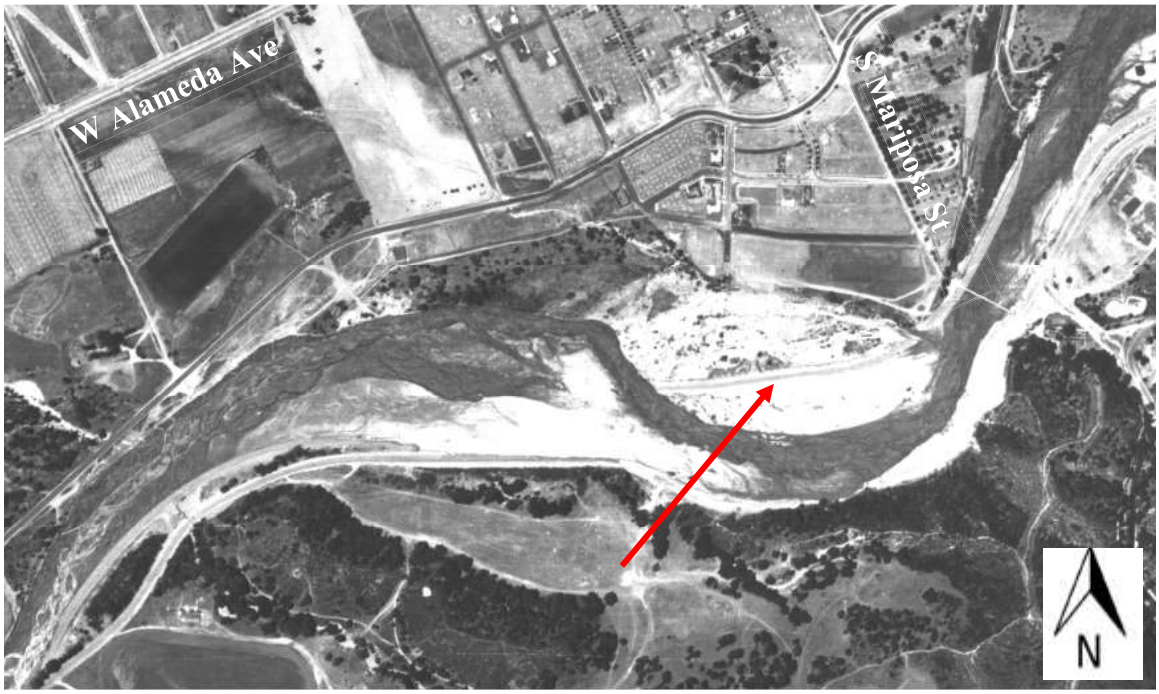


Plate 5. Aerial photograph, 1938, construction of spreading grounds main infiltration gallery (UCSB 1938)

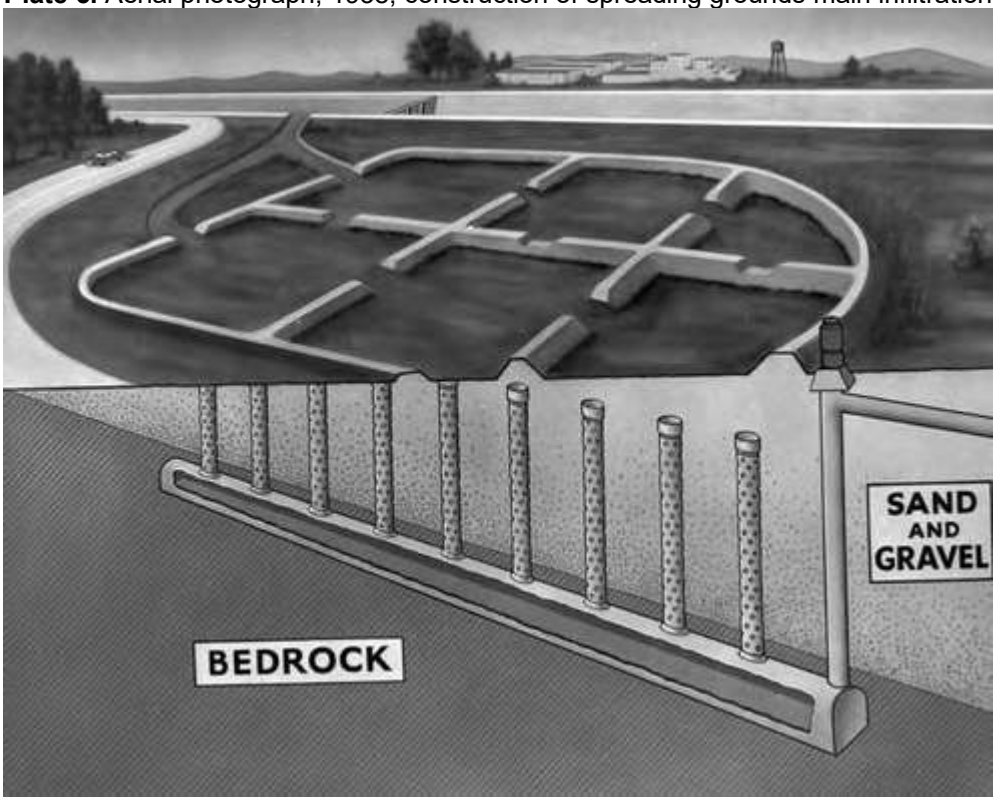


Plate 6. Sketch of rubber dam and spreading basin (LADWP n.d.[a])



Plate 7. Rubber dam on the Los Angeles River (LADWP n.d.[b])

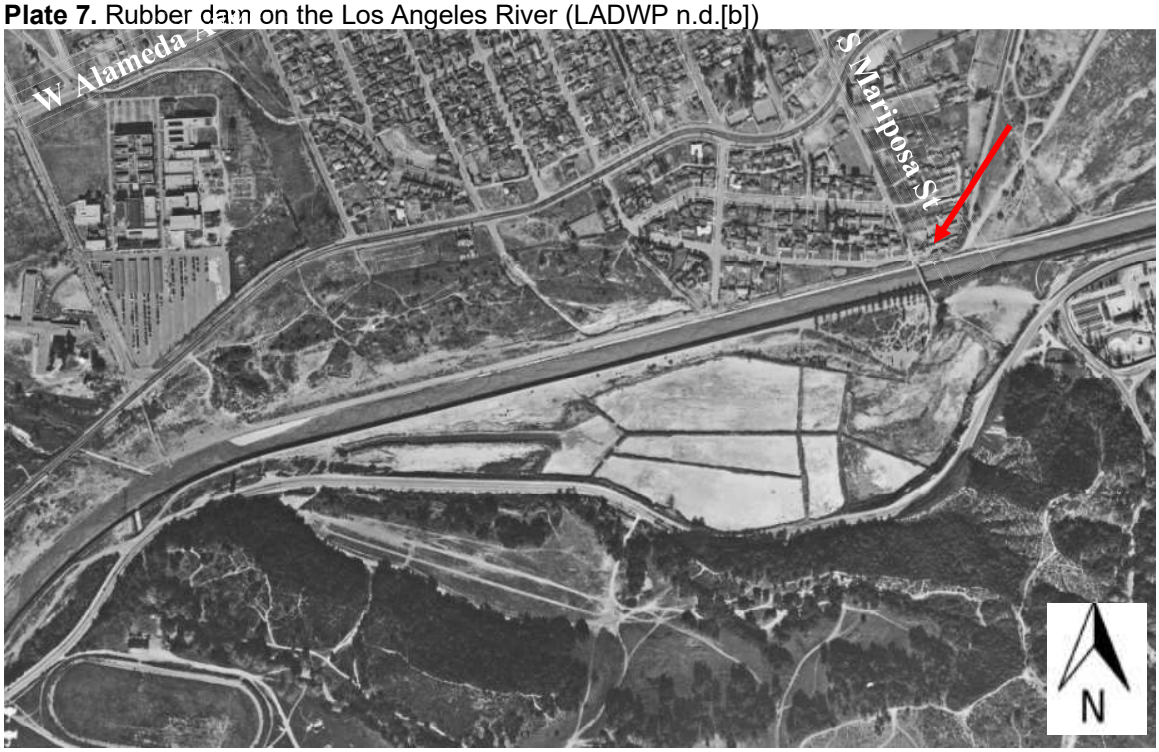


Plate 8. Aerial photograph, 1944, channelization of Los Angeles River is completed and original 1902 dam removed. Spreading grounds includes seven spreading basins; note Mariposa Street Equestrian bridge constructed (UCSB 1944)

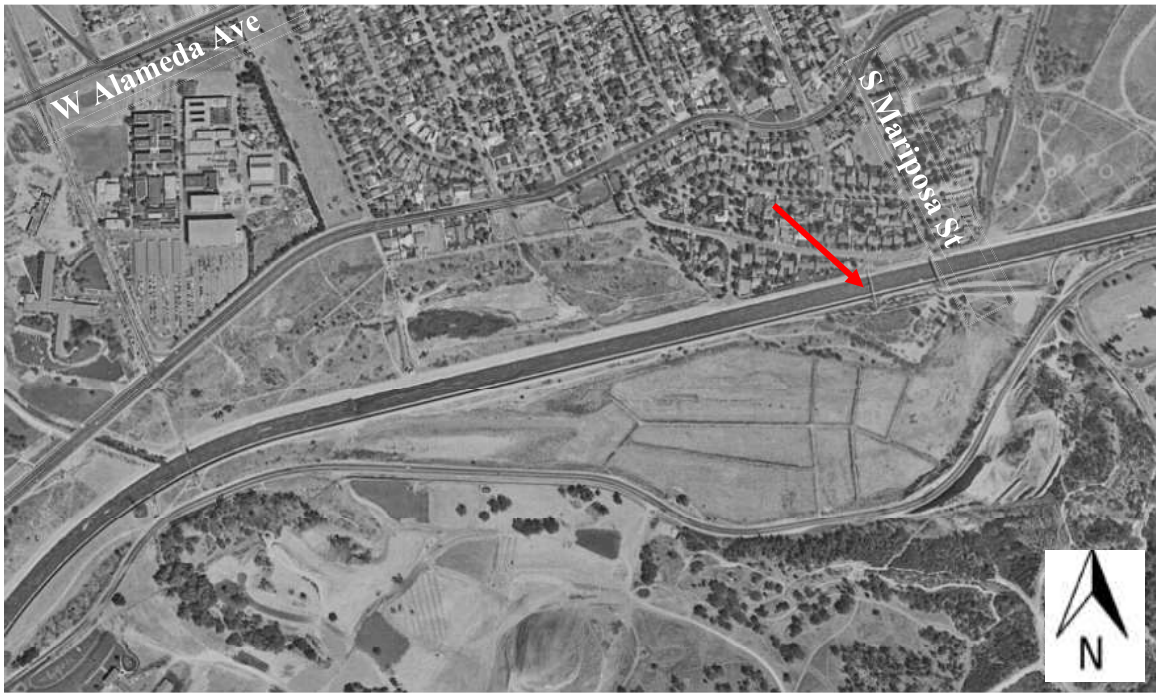


Plate 9. Aerial photograph, 1952; note steel pipe conduit from Headworks Spreading Grounds, west of the Mariposa Street Equestrian bridge is constructed, and additional spreading basins are constructed (UCSB 1952)

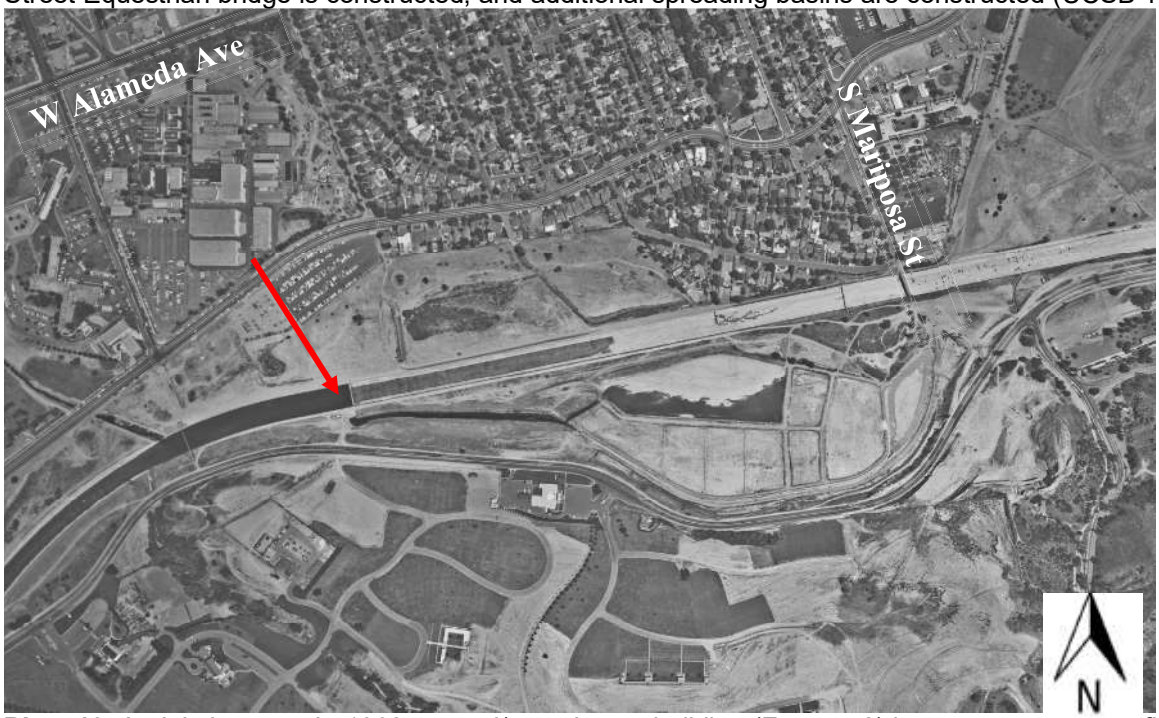


Plate 10. Aerial photograph, 1960, control/ gate house building (Feature 8) is constructed, and inflatable rubber dam across river bottom added (UCSB 1960)



Plate 11. Aerial photograph, 1971, Headworks Spreading Grounds, Ventura 134 Freeway constructed north of property (UCSB 1971)



Plate 12. Aerial photograph, 1979, Headworks Spreading Grounds (UCSB 1979)



Plate 13. Aerial photograph, 1983, Headworks Spreading Grounds (UCSB 1983)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

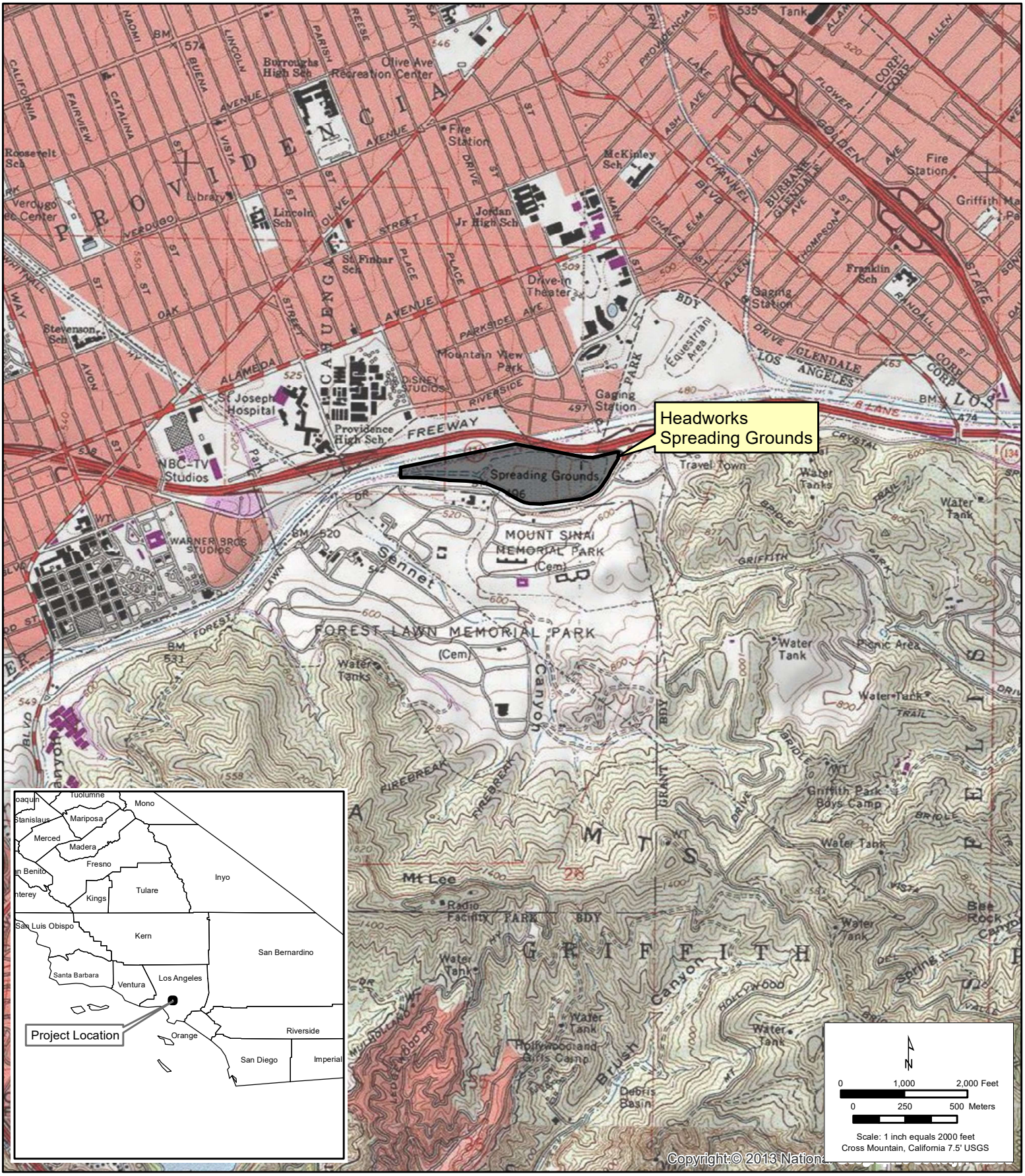
Page 19 of 19

*Resource Name or # (Assigned by recorder) Headworks Spreading Grounds

*Map Name: Burbank, Ca

*Scale: 1:24,000

*Date of Map: 1987



DPR 523J (1/95)

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial CA-LAN-4712H
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Headworks Spreading Grounds

P1. Other Identifier:

*P2. Location: ☐ Not for Publication ■ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: Burbank, CA Date: 1966 (Photo revised 1972; Minor revision 1994) Unsectioned Subdivision of Rancho Providencia and Scott Tract; S.B.B.M.

c. Address: 6001 West Forest Lawn Drive City: Los Angeles Zip: 90068

d. UTM: Zone: 11 S; 378640 mE/ 3779937 mN

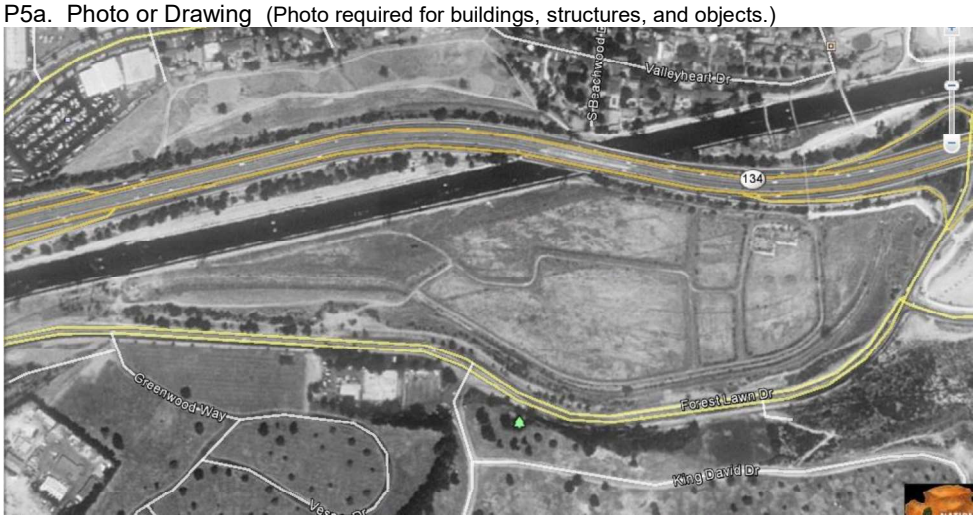
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
The Headworks Spreading Grounds is bounded on the north by the Los Angeles River and the 134 Freeway, and on the east and south by Forest Lawn Drive.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The Headworks Spreading Grounds (HWSG) covers approximately 43 acres. It formerly consisted of six spreading basins, ranging in size from 1 acre to more than 8 acres, and a channel from which water was diverted from the Los Angeles River. These had been largely destroyed by construction activities by the time of visit, but 7 historic features associated with the Headworks Spreading Grounds and apparently dating to the middle 20th Century were observed and documented.

*P3b. Resource Attributes: (List attributes and codes) AH6. Water Conveyance Systems

*P4. Resources Present: ☐Building ■Structure ☐Object ■Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #) None
Headworks Spreading Grounds as they existed in 1989 (Google Earth).

*P6. Date Constructed/Age and Sources: ■Historic
☐Prehistoric ☐Both
Ca. 1954-1964
(historicaerials.com)

*P7. Owner and Address:
City of Los Angeles
Department of Public Works
650 S. Spring St., Suite 574
Los Angeles, CA 90014

*P8. Recorded by: (Name, affiliation, and address)
Kyle Griffith, B.A.;
Marc A. Beherec, Ph.D., RPA
AECOM
515 S. Flower St., 8th Floor
Los Angeles, CA 90071

*P9. Date Recorded: October 6, 2015

*P10. Survey Type: (Describe) Pedestrian survey

*P11. Report Citation: Marc A. Beherec and Kyle Griffith. 2015. Phase I Cultural Resource Investigation for the Headworks West Reservoir Project,, Los Angeles County, California. Prepared for Los Angeles Department of Water and Power by AECOM. Los Angeles, California.

*Attachments: ☐NONE ■Location Map ■Sketch Map ■Continuation Sheet ■Building, Structure, and Object Record ■Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Primary # _____
HRI# _____

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status Code 6Z
*Resource Name or # (Assigned by recorder) Headworks Spreading Grounds

B1. Historic Name: Headworks Spreading Grounds

B2. Common Name: Headworks Spreading Grounds

B3. Original Use: Water acquisition and purification

B4. Present Use: Water acquisition and purification

***B5. Architectural Style:** Utilitarian

***B6. Construction History:** (Construction date, alterations, and date of alterations)

First dam headworks constructed 1902. Subterranean infiltration galleries added in 1905 and expanded in 1916 and 1920. Spreading grounds were developed at the facility in 1938, and redesigned between 1954 and 1964. Site abandoned 1987 due to water contamination. See A11 Continuation Sheet for further details.

***B7. Moved?** ■ No ☐ Yes ☐ Unknown **Date:** **Original Location:**

***B8. Related Features:** Los Angeles River, Dams, Diversion Structures, Pump Houses, Feeding Canal

B9a. Architect: Unknown. **B9b. Builder:** Los Angeles Department of Water and Power.

***B10. Significance: Theme Water Conveyance** **Area** Los Angeles River, Los Angeles, California
Period of Significance Middle 20th Century **Property Type** Spreading Grounds **Applicable Criteria** N/A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)
First constructed as a spreading ground in 1938, and then redesigned between 1954 and 1964, this spreading ground was used to channel water from the Los Angeles River to the city's drinking water supply. The spreading ground system is similar to spreading grounds constructed across Los Angeles County at the same time, but those spreading grounds were meant to replenish groundwater and control flooding.

The Headworks Spreading Grounds does not appear to meet the criteria for listing in the National register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR), primarily due to lack of integrity.

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:**
See Continuation Sheet.

B13. Remarks: Documented features anticipated to be destroyed by construction.

***B14. Evaluator:** Marc A. Beherec, Ph.D., RPA

***Date of Evaluation:**

(Sketch Map with north arrow required.)

See attached.

(This space reserved for official comments.)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHAEOLOGICAL SITE RECORD

Primary # _____
HRI # _____
Trinomial _____

***Resource Name or #** (Assigned by recorder) Headworks Spreading Grounds

***A1.** **Dimensions:** **a. Length** 3,570 feet (E/W) x **b. Width** 900 feet (N/S)
Method of Measurement: ☐ Paced ☐ Taped ☐ Visual estimate ■Other: Google Earth measurements
Method of Determination (Check any that apply): ☐Artifacts ☐Features ☐ Soil ☐ Vegetation ☐ Topography
☐ Cut bank ☐ Animal burrow ☐ Excavation ■ Property boundary ☐ Other (Explain):
Reliability of Determination: ■High ☐Medium ☐ Low Explain: Site limits of original Headworks property
Limitations (Check any that apply): ☐ Restricted access ☐Paved/built over ☐Site limits incompletely defined
■Disturbances ☐ Vegetation ☐Other (Explain):

A2. **Depth:** 150 feet ☐ None ☐ Unknown Method of Determination: Historic descriptions of depth of subterranean galleries.

***A3.** **Human Remains:** ☐ Present ■ Absent ☐ Possible ☐ Unknown (Explain):

***A4.** **Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):
Seven historic features were observed. See Continuation Sheet.

***A5.** **Cultural Constituents** (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.):
No other cultural constituents were observed.

***A6.** **Were Specimens Collected?** ■No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)

***A7.** **Site Condition:** ☐ Good ☐ Fair ■Poor (Describe disturbances): Site has been impacted by construction activities since at least 2007.

***A8.** **Nearest Water** (Type, distance, and direction): Los Angeles River, adjacent to site on north.

***A9.** **Elevation:** 500 feet.

A10. **Environmental Setting** (Describe vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc., as appropriate.):
The site is located on the south bank of the Los Angeles River, north of Griffith Park. Vegetation consists of native and imported weeds. Surface sediment consists of younger Quaternary alluvium.

A11. **Historical Information**:
See Continuation Sheet.

***A12.** **Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ■ 1880-1914 ■ 1914-1945 ■ Post 1945 ☐Undetermined
Describe position in regional prehistoric chronology or factual historic dates if known:
First dam headworks constructed 1902. Subterranean infiltration galleries added in 1905 and expanded in 1916 and 1920. Spreading grounds were developed at the facility in 1938, and redesigned between 1954 and 1964. Site abandoned 1987 due to water contamination.

A13. **Interpretations** (Discuss data potential, function[s], ethnic affiliation, and other interpretations):
The site has been heavily impacted. Further data potential appears very limited.

A14. **Remarks**: N/A

A15. **References** (Documents, informants, maps, and other references): N/A

A16. **Photographs** (List subjects, direction of view, and accession numbers or attach a Photograph Record.): Please see attached photo log.

Original Media/Negatives Kept at: AECOM 515 S Flower Street, 8th Floor, Los Angeles, CA 90071

***A17.** **Form Prepared by:** Marc A. Beherec, Ph.D., RPA **Date:** 4/30/2015
Affiliation and Address: AECOM
515 South Flower Street, 8th Floor
Los Angeles, CA 90071

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # _____
HRI# _____
Trinomial _____

***Recorded by:** Marc A. Beherec, Ph.D., RPA ***Date:** October 6, 2015 ■ Continuation ☐ Update

B10. Significance (Continued): Application of the NRHP and CRHR Criteria

NRHP Criterion A and CRHR Criterion 1
The HWSG is associated with water retrieval and conveyance systems of the 20th century. The first infiltration gallery at the HWSG site was built in 1902. Spreading grounds were added in 1938 and reworked between 1954 and 1964. The site was abandoned as a water retrieval site in 1987. However, although the site was important to the early development of the Los Angeles water supply, the surviving elements of the HWSG appear to date to the 1950s and not the facility's original construction. The HWSG and its wells and other features do not appear to have played a significant individual role in local, state, or national history individually because they are representative of such facilities constructed throughout California in the 20th century. They do not meet NRHP Criterion A or CRHR Criterion 1.

NRHP Criterion B and CRHR Criterion 2
The HWSG was first constructed under the direction of William Mulholland, the important city engineer more famous for his work in the construction of the Los Angeles Aqueduct. The facility is also associated with many organizations who contributed to the planning and implementation of their construction, including the Los Angeles Department of Water and Power. However, research has not revealed a direct association with any individuals involved with the construction or design of the facility's surviving elements, which appear to date to the middle of the 20th century. The HWSG has no direct association with important historic persons and, thus, do not meet NRHP Criterion A or CRHR Criterion 2.

NRHP Criterion C and CRHR Criterion 3
The HWSG is representative of common spreading grounds and their associated features throughout California. The HWSG is similar to many other facilities, such as the 28 spreading facilities that were built between 1917 and 1994 and owned and operated by LSDPW (Los Angeles County Department of Public Works n.d.; Gibson 2012). These spreading grounds were apparently designed from a standard set of plans, similar to that applied to spreading grounds in the Los Angeles Flood Control District. They have no known associations with individual engineers and do not represent the work of a master. The HWSG does not possess high artistic values because it consists of basic spreading grounds designed for function and utility and not for aesthetic quality. In summary, the HWSG does not have distinctive engineering or architectural features to meet NRHP Criterion C or CRHR Criterion 3.

NRHP Criterion D and CRHR Criterion 4
The HWSG is not likely to yield further information important to history or prehistory, because the construction history and use of these resources are known. Therefore, the HWSG does not meet NRHP Criterion D or CRHR Criterion 4.

Furthermore, the HWSG retains integrity of location but does not retain integrity of design, materials, workmanship, or setting. The HWSG is in its original locations but lacks feeling and association because it is not functional and has been heavily impacted by past construction. The design of the spreading grounds has been substantially altered. During its active use, the HWSG was actively maintained and upgraded, and at one point between 1954 and 1964 was redesigned on a large scale. Integrity of workmanship is also lost because the system has been altered with modern construction methods of the spreading grounds and water conservation system. Since its abandonment in 1987, and particularly since 2011, it has been massively impacted by construction associated with SLRC SRP, and the infiltration basins are no longer recognizable in aerial photographs.

In summary, the HWSG does not meet any NRHP or CRHR criteria for designation, and does not retain sufficient integrity to be eligible for the NRHP or CRHR in any case due to lack of integrity.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # _____
HRI# _____
Trinomial _____

 ***Resource Name or #:** (Assigned by recorder) Headworks Spreading Grounds

***Recorded by:** K. Griffith ***Date:** October 6, 2015 ■ Continuation ☐ Update

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):

Feature 1 consists of two vertical pipes, one inside the other. The outer pipe is corrugated iron or steel held together with rivets and measuring approximately 4 feet in dimeter. The inner pipe is made of iron, approximately 18 inches. The exposed portion of the pipes measures approximately 6 feet above the current surface grade.

Feature 2 consists of two vertical iron pipes, each measuring 18 inches in diameter and fastened together with a metal strap. The pipes are approximately 18 feet above current grade. The pipe to the west has corroded away in parts. This feature is located approximately 40 feet west of Feature 1.

Feature 3 consists of three concrete walls facing northeast and south; the west side is open. The feature measures 16 feet north to south by 12 feet east to west. Each concrete wall measures 2 feet wide and 2 feet high. A single large metal plate that measures approximately 6 feet by 6 feet lies within the middle of the concrete feature and possibly covers a hole.

Feature 4 consists of a concrete retaining wall surrounding a curved 24-inch steel pipe and I-beam on three sides. The feature measures 10 feet north to south by 10 feet east to west. The vertical iron I-beam is located on the southwest retaining wall, and a pulley and cog are attached to the I-beam. A maker's mark on the cog reads, "PAT'D - B. B BROS. ALL STEEL 2 TON / SEATTLE USA. BEEBE BROS." Beebe Bros., Inc., was incorporated in Seattle in 1942 to produce and market 5-ton capacity hand winches, and continued to produce until 1987, when it was acquired by Ingersoll Rand and became the Ingersoll Rand Material Handling Division (Ingersoll Rand 2015). A steel wire is connected from the curved pipe to the cog on the I-beam. A 12-inch steel pipe is located in the northwest corner of the retaining wall. The pipe extends vertically from the base of the retaining wall to the top, and then turns horizontally to the west, continuing underground for an unknown distance.

Feature 5 consists of a concrete block retaining wall running east to west for a distance of approximately 25 feet. Directly adjacent to the south side of the wall is an 18-inch vertical pipe with a metal box fixed on top that measures 2.5 feet north to south by 2.5 feet east to west. This feature is located approximately 10 feet west of Feature 4.

Feature 6 consists of an 18-inch-diameter horizontal steel pipe that runs in an east-to-west direction. The steel pipe empties into a trough that consists of a 12-inch-diameter steel pipe that is cut in half. The 12-inch-diameter pipe is laid on a slope and drains toward the east. The main pipe continues beneath a service road and is buried to a depth of 5 feet.

Feature 7 consists of a 12-inch-diameter pipe made of an alloy metal, which runs in a north-to-south direction beneath a service road (Plate 8). The pipe is laid on top of an 18-inch-diameter steel pipe that runs east to west (Feature 6). The 12-inch-diameter pipe is approximately 4 feet above the pipe beneath it.

Feature 8 consists of a concrete block building of unknown function. The building measures 15 feet east to west by 10 feet north to south and approximately 12 to 15 feet tall. The building is constructed of stucco with a door on the south side and a 2.5-foot-square hole that was cut into the building (covered with plywood) on the west side. The building is approximately 25 feet south of the Los Angeles River.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # _____
HRI# _____
Trinomial _____

 ***Resource Name or #:** (Assigned by recorder) Headworks Spreading Grounds

***Recorded by:** K. Griffith ***Date:** October 6, 2015 ■ Continuation ☐ Update

A11. Historical Information:

The site of the Headworks Spreading Grounds (HWSG) was included within the lands deeded by Mexican Governor Juan B. Alvarado to Vincente de la Osa in 1843. De la Osa sold the land to David W. Alexander in 1849, who subsequently sold it to David Burbank. In 1886, Burbank sold the land to the Providencia Land, Water, & Development Company, on the board of which he sat. The company developed Burbank in 1887, and the settlement incorporated as the City of Burbank in 1911 (City of Burbank n.d.). But the lands within the project APE, sitting as they did on the floodplain of the Los Angeles River, remained undeveloped and outside the City of Burbank.

The project APE is entirely within the historic property of the HWSG, located alongside the Los Angeles River between Los Angeles and Burbank. In 1898, the City of Los Angeles condemned a 2-mile-long strip of land alongside the Los Angeles River north of Griffith Park in order to build a new headworks for the city water system. In 1902, after legal settlements with the private Crystal Springs Land and Water Company, the city built a new diversion dam and water supply conduit at the site. Infiltration galleries, meant to divert water from the Los Angeles River, were added in 1905 and expanded in 1916 and 1920. By 1925 fourteen wells at the HWSG site fed the city water system (Gumprecht 1999).

Spreading grounds were developed at the facility in 1938 to capture further river water. Recharge water was collected in perforated pipes in the spreading basin, connected to pipe galleries approximately 150 feet below the ground surface (Karimi et al. 1998).

Pollution ultimately condemned the HWSG facility. The Headworks Deep Gallery was shut down in 1971. Diversions from the river into the HWSG were halted in 1982. Water was instead purified at the Donald C. Tillman Plant, opened in 1981, rendering the unsafe HWSG facility superfluous. Most of the wells near the Los Angeles River were closed in the 1980s due to industrial contamination originating in the San Fernando Valley, and the last well at the HWSG was closed in 1987 (Gumprecht 1999; Karimi et al. 1998).

In 2004, at the time of the SLRC SRP study, the HWSG had been abandoned for nearly two decades. The site encompassed a series of six dry shallow basins, ranching size from less than 1 acre to more than 8 acres. The group of basins took up a space measuring approximately 0.75 mile in length and 0.20 mile across at the widest point. The surface of the basins was at a depth of approximately 30 feet below the level of Forest Lawn Drive. An earthen channel approximately 15 feet in depth and ran east-west through the central section of the site. To the west of this channel, a concrete gate at one time allowed water from the Los Angeles River to flow onto the site. In 2004, the channel was dry with a large corrugated metal pipe dissecting it. The western basin measured approximately 500 feet across and the eastern basin was occupied by the actual spreading basins. These two basins were separated by a central, east-west running berm consisting of native sand and gravel. There was also a series of smaller basins to the east also divided by earthen berms. The eastern portion of the site has seen extensive filling, which has raised the ground level several feet above the spreading basin berms (Greenwood and Associates 2004:23).

City of Burbank
n.d. Burbank History. Available online: http://www.burbankca.gov/about-us/burbank-history Accessed October 23, 2015.

Greenwood and Associates
2004 *Silver Lake Reservoir Complex Storage Replacement Project Cultural Resources Assessment Report.* Report prepared by Greenwood and Associates for CH2MHill, Santa Ana, California.

Gumprecht, Blake
1999 *The Los Angeles River: Its Life, Death and Possible Rebirth.* John Hopkins University Press, Baltimore, MD.

Ingersoll Rand
2015 Ingeroll Rand material handling History. Available online: http://www.ingersollrandproducts.com/am-en/products/lifting/about. Accessed October 23, 2015.

Karimi, Ali A., Jeremy A. Redman, and Roberto F. Ruiz
1998 Ground Water Replenishment with Reclaimed Water in the City of Los Angeles. *Groundwater Monitoring and Remediation* 18(2):150–158.

Kry, Linda, Jill Gibson, Heather Gibson, and Trina Meiser
2013 *Phase I Cultural Resources Investigation, Basin No. 2 Inlet-Turn-out Structure, City of Pico Rivera, California.* Report prepared by AECOM for Water Replenishment District of Southern California, Lakewood, California.

Los Angeles County Department of Public Works
n.d. Index of Spreading Facilities Owned and Operated by the Department. Available online: http://dpw.lacounty.gov/wrd/spreadingground/information/ Accessed November 3, 2015.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # _____
HRI# _____
Trinomial _____

***Resource Name or #:** (Assigned by recorder) Headworks Spreading Grounds

***Recorded by:** K. Griffith

***Date:** October 6, 2015

■ Continuation ☐ Update

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):



Headworks Spreading Grounds as they existed in 2011 (Google Earth 2015).



Feature 1, View East to Northeast

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # _____
HRI# _____
Trinomial _____

***Resource Name or #:** (Assigned by recorder) Headworks Spreading Grounds

***Recorded by:** K. Griffith

***Date:** October 6, 2015

■ Continuation ☐ Update

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):



Feature 2, View Northwest, with Feature 1 in Background



Feature 3, View East

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # _____
HRI# _____
Trinomial _____

***Resource Name or #:** (Assigned by recorder) Headworks Spreading Grounds

***Recorded by:** K. Griffith

***Date:** October 6, 2015

■ Continuation ☐ Update

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):



Feature 4, View North



Feature 5, View Northwest

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # _____
HRI# _____
Trinomial _____

***Resource Name or #:** (Assigned by recorder) Headworks Spreading Grounds

***Recorded by:** K. Griffith

***Date:** October 6, 2015

■ Continuation ☐ Update

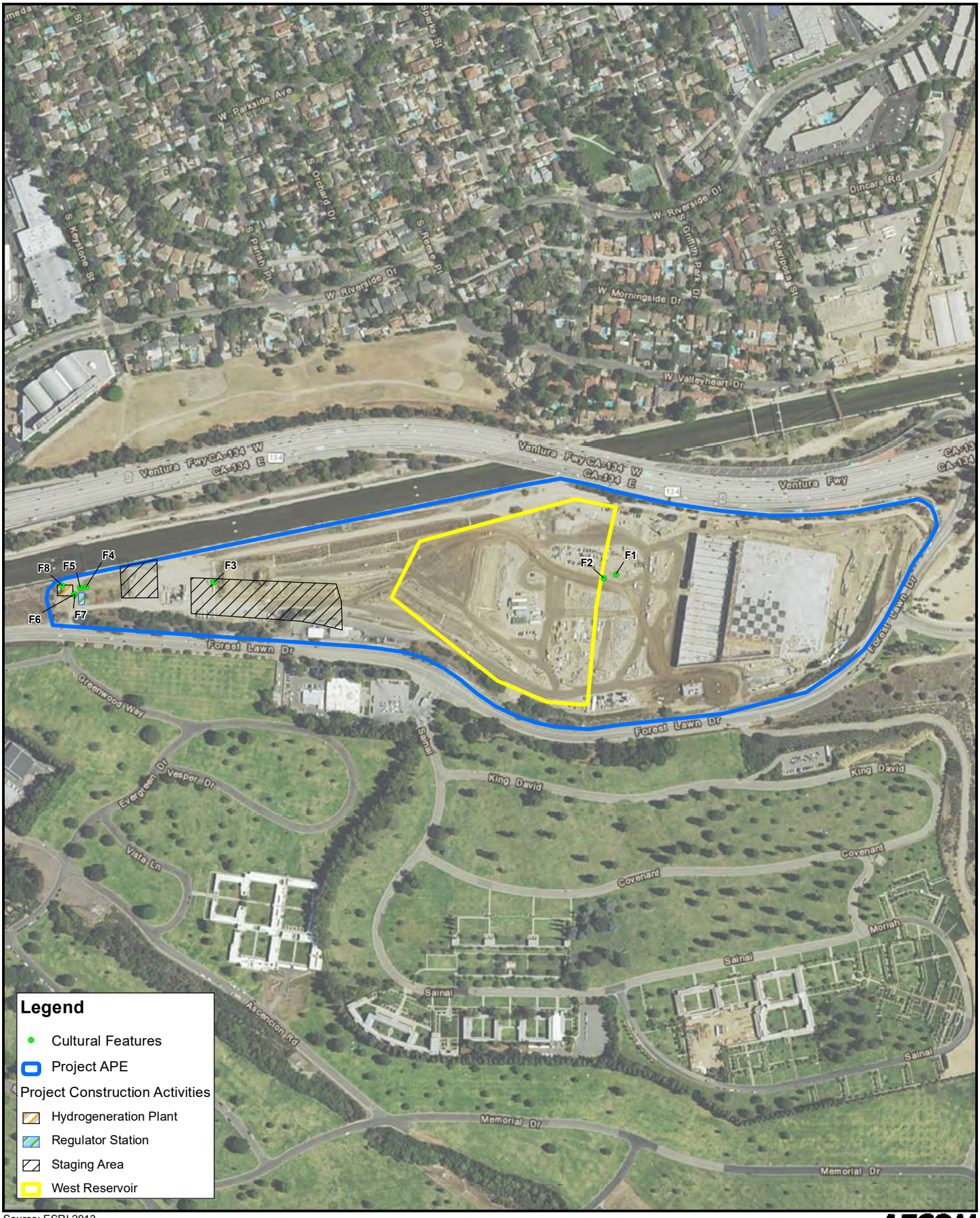
***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):



Feature 6 (Bottom) and Feature 7 (Top) Pipes, View South by Southeast



Feature 8, View Southwest



Source: ESRI 2013

AECOM

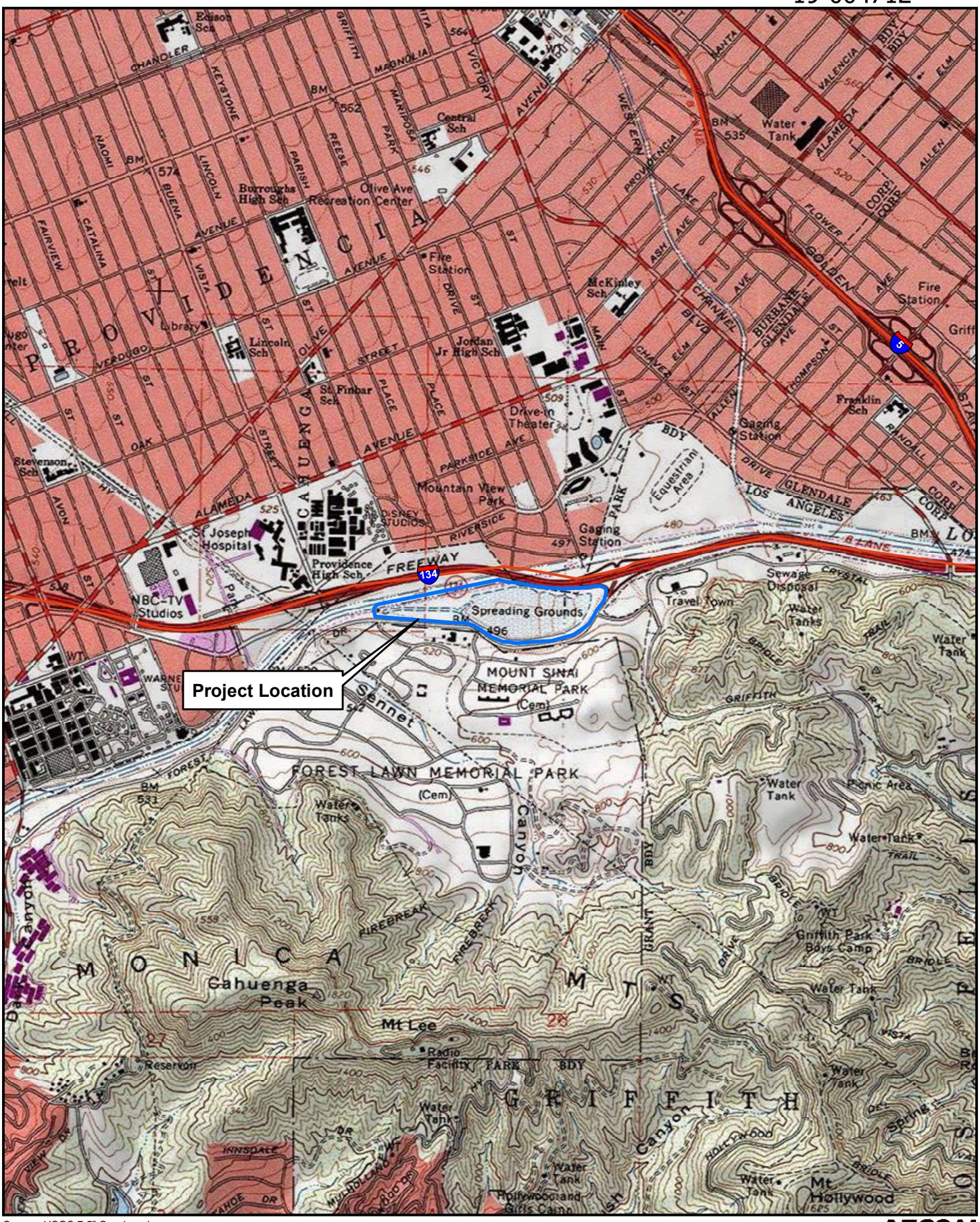
Sketch Map

0 250 500 1,000 Feet

Scale: 1:6,300

LADWP Headworks West Reservoir Project

Path: P:\2015\60443424_HeadworksWest\400 - Technical\Working Documents\Cultural Resources\GIS\Layout\Fig4_LADWP_Headworks-West_CulturalMapv2_20151011.mxd, 11/3/2015, Aziz_Bakkoury



Source: USGS 7.5" Quadrangle

AECOM

0 0.25 0.5 1 Miles

Scale: 1:24,000

Project Location Map

LADWP Headworks West Reservoir Project

Path: C:\Projects\60443424 LADWP Headworks West Reservoir Project\GIS\Maps\Fig2_LADWP_Headworks-West_LocationMap_20151007.mxd, 10/7/2015, StevensonA1

19-175297

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Prop 097813

Primary # _____
HRI # Hist Res Dol-M-94-0442-9999
Trinomial _____
NRHP Status Code 2S2

Page 1 of 13

Other Listings _____
Review Code _____ Reviewer Christy J. McAvoy Date _____

P1. Resource Identifier: GRIFFITH PARK

P2. Location: a. **County** Los Angeles and (**Address** and/or **UTM Coordinates**. Attach Location Map as required.)

b. **Address** RIVERSIDE DR

City Los Angeles **Zip** _____

c. **UTM: USGS Quad** _____ **(7.5'/15') Date** _____; **Zone** _____ , _____ **mE/** _____ **mN**

d. Other Location Data (e.g., parcel #, legal description, directions to resources, additional UTMs, etc., when appropriate):

P3. Description Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries):

P4. Resources Present: ☐ Building ☐ Structure ☐ Object ☐ Site ☒ District ☐ Element of District

P5. Photograph or Drawing (photograph required for buildings, structures, and objects.)

P6. Date Constructed/Age:
☐ Prehistoric ☒ Historic ☐ Both
1896-1944

P7. Owner and Address:

P8. Recorded by (Name, affiliation and address): Christy J. McAvoy
Historic Resources Group
1728 N. Whitley Ave
Los Angeles, CA 90028

P9. Date Recorded: 10/31/94

P10. Type of Survey: ☐ Intensive
☐ Reconnaissance ☒ Other
Describe: Survey of earthquake damaged properties for purposes of Section 106 Review.

P11. Report Citation (Provide full citation or enter "none."): _____
1994 Northridge Earthquake Project Review

Attachments: ☐ NONE ☒ Map Sheet ☒ Continuation Sheet ☐ Building, Structure, and Object Record
☒ District Record ☐ Linear Resource Record ☐ Other (List): _____

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
DISTRICT RECORD

Primary # 19-175297
HRI #
Trinomial

D1. **Resource Identifier:** Griffith Park

D2. Historic Name: Griffith Park

D3. Common Name: Griffith Park

D4. **Detailed Description** (Discuss overall coherence of the district, its setting, visual characteristics, and minor features. List all elements of district.): Griffith Park is located five miles west of Downtown Los Angeles and includes approximately 4,000 acres of natural and designed landscape features. For the most part, the Park is comprised of mountainous terrain suitable only for hiking; however, as stated by Charles Moore *et al* in Los Angeles: The City Observed, "it has many of the amenities traditionally associated with large American urban parks including: picnic areas, playing fields, tennis courts, bridle trails, golf courses, a merry-go-round, fountains, and a pleasant zoo." Contributing features of the Park include buildings, structures, and natural and designed landscapes. Those features which appear to be contributing or have been previously evaluated as individually significant include the following:
(See Continuation Sheet.)

D5. **Boundary Description** (Describe limits of district and attach map showing boundary and district elements.): The Park is bound on the east by the Golden State Freeway (I5); on the north by the Los Angeles River, although the Equestrian Center and Picnic Grounds are located between the River and Riverside Drive; on the west by Forest Lawn and Mount Sinai Memorial Parks and the Hollywood Hills; and on the south by a line one half mile north of and parallel to Los Feliz Boulevard. A small finger of land extends from the southeast corner of the park along Riverside Drive to Hyperion Avenue.

D6. **Boundary Justification:** Existing park boundaries.

D7. **District Attributes** (List major attributes and codes.): HP31--Public Park

D8. **Significance:** Theme Parks and Recreation Area Los Angeles
Period of Significance 1896-1944 Applicable Criteria A
(Discuss district's importance in terms of its historical context as defined by theme, period of significance, and geographic scope. Also address the integrity of the district as a whole.) Griffith Park is significant under National Register Criterion A as the largest urban park in the City of Los Angeles, and more importantly in the United States. The Park, as well as many of its individual features, has figured prominently in the history of the city. It has provided recreational space for the community since 1898 and is home to the Los Angeles Zoo, the Griffith Park Observatory, and the Planetarium. The Park was also regularly used as an unofficial "backlot" for the early motion picture industry located in nearby Burbank and Hollywood.

As is the history of virtually every public park in Los Angeles, Griffith Park was not reserved by city fathers for public use. Traditionally public (See Continuation Sheet.)

D9. **References** (Give full citations including the names and addresses of any informants, where possible.): Lynn Bowman, Los Angeles: Epic of a City, 1974; George Hjjelte, Footprints in the Park, 1977; "Mayor Acts to Save Adobe House" in Los Angeles Times, 12/2/1921, pt. II, p. 7; "Unique Swimming Pool Being Built by City" in Los Angeles Times, 6/5/1927, pt. V, p. 3; "City's Largest Swimming Pool Opened" in Los Angeles Times, 8/4/1927; "Landscape Design for Playground" in American City, June 1930, pp. 90-92; Historical Society of Southern California Journal, vol. 43, 1961, pp. 192-94.

D10. **Evaluator:** Christy Johnson McAvoy **Date:** 9/30/94
Affiliation and Address: Historic Resource Group, 1728 N. Whitley Avenue, Hollywood, CA 90028

Hist Res DOE-19-94-0442- NR:202

D4 DESCRIPTION (Continued from District Record)

Prop-100859 -0001 Contributing: Prop-100860 -0002

Ferndell and **Mt. Hollywood** are two notable natural landscape features. As stated by Charles Moore *et al* in Los Angeles: The City Observed, "Ferndell, a year-round spring has caused fragrant sycamores and soft green ferns to crowd the bottom of a steep ravine, a place that has been cool and refreshing since prehistoric times, when it was the site of a Gabrielino Indian village." The **Bird Sanctuary** is a third notable landscape feature of the Park. It features wide parallell paths separated by trees and ferns and a double row of narrow, cascading fountains.

Prop 100861 -0003

-0004 Prop-100862

Previously surveyed in 1976, the **Griffith Park Observatory and Planetarium** was deemed individually eligible for listing in the National Register and given a Status Code of 3s. The **Astronomers' Monument**, which stands directly opposite the main entrance to the Observatory and Planetarium was erected in 1934 and designed by Archibald Garner. It features likenesses of the astronomers Herschel, Newton, Kepler, Galileo, Copernicus, and Hipparchus.

Prop 100870 -0005

Prop-100871 -0006

The **Los Feliz Adobe** is believed to have been constructed in 1853 by Paco and Antonio Feliz. Altered in the 1920s, to be the Park Rangers Headquarters, it is significant for its association with recreational uses as well as for being the only remnant of the park's 19th century rancho history.

Prop-100872 -0007

The **Merry-Go-Round** was constructed in 1926 and moved to its current location in 1936.

Prop-100873 -0008 Prop-100874 -0009 Prop-100875 -0010

The **Harding Golf Course Clubhouse**, the **Swimming Pool and Building**, and the **Boys' Camp** (the old Girls' Camp) were constructed in 1927 and all appear to be substantially intact.

Prop-100876 -0011

Dedicated in 1940, **Mulholland Fountain** honors William Mulholland (1855-1935), whose brainchild, the Owen's River Aqueduct allowed for the development of not only the Los Angeles Municipal water system, but also of the modern Los Angeles metropolis.

NON-CONTRIBUTING features are as follows: NR:602

Prop 100877 -0012

Founded in 1885, the **Los Angeles Zoo** was originally located adjacent to East Lake Park (now Lincoln Park). It was moved to Griffith Park in 1914; however, the current zoo opened in 1966.

Prop-100878 -0013

The **Greek Theater** was designed by a staff architect for the City of Los Angeles in 1930, and was significantly altered in 1956 based upon designs by William Woollett. These alterations may assume significance over time. The Theater is culturally significant and may qualify as a local landmark.

Prop-100879 -0014

The new **Girls' Camp** (AKA Hollywoodland Camp) includes a post and beam structure by the architecture firm Smith, Jones and Contini. It is Modern in style and dates from 1949. The structure may eventually be considered significant once it achieves fifty years of age. Its integrity is unknown at this time.

Prop-100880-0015

In the northeast edge of the park is **Travel Town**, a transportation museum which dates from December of 1952. It is located on 40 acres of land donated by W.I. Hollingsworth, a real estate developer. Forest Lawn Drive originally bore the name Hollingsworth Drive in honor of his gift. It may eventually be considered significant when once it achieves fifty years of age.

The **Gene Autry Western Heritage Museum** was constructed in the 1980s.

Prop-100881 -0016

D8 SIGNIFICANCE (Continued from District Record)

parks in Los Angeles have either been developed on unwanted land or, as is the case with Griffith Park, donated by a prosperous citizen. The benefactor of Griffith Park was Griffith J. Griffith who purchased the northern 4,071 acres of Rancho Los Feliz in 1882 and four years later, donated 3,015 of those acres to the City of Los Angeles for use as a public park. The gift was not originally accepted by the City Council, whose members thought that land five miles from the downtown district was a poor location for a public park. They were also concerned about the fiscal impact to the city of removing such a large parcel from the property tax rolls and some even suspected that Griffith had donated the land to avoid paying taxes. Two years later, however, the City accepted title to the property and began to develop it for park purposes.

Griffith J. Griffith was born in Glamorganshire, South Wales in 1850, but left as a child to live with relatives in the United States. He eventually settled in California and his first occupation was journalism, although it was through speculation on gold mining property that he prospered. He had amassed a small fortune by the time he married, but the wealth that financed the purchase of Rancho Los Feliz came to him via his new bride, Christina Mesmer.

Since Griffith's original gift of 3,015 acres, approximately 1,000 acres have been added to the Park. The flat land between the base of the Park's mountains and the Los Angeles River was not originally part of the Park, but rather was sold to the City by Griffith for the purpose of creating recreational area, golf courses, and a zoo. This land also contains the underground water supply which is used to irrigate the golf courses and planted areas and to supply fire protection.

After being released from prison for attempting to murder his wife, the aforementioned Christina Mesmer, Griffith donated $100,000 to the City for the construction of an observatory. Viewed by many as an attempt to regain an honorable position in the community, the donation was rejected. The gift of $1,000,000 for park improvements and the erection of the Greek Theater and the Observatory was eventually accepted, but only as a posthumous bequest in 1919.

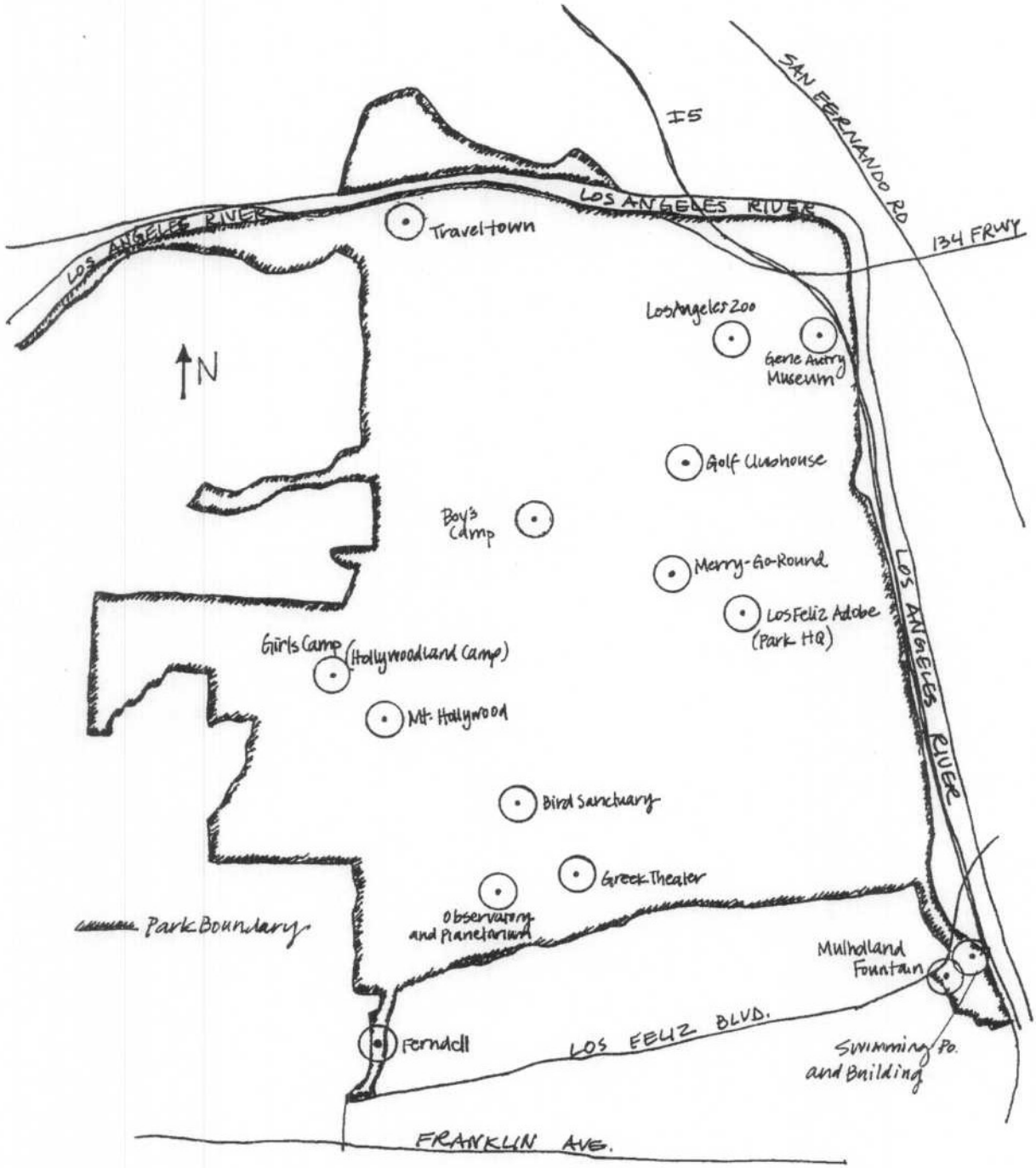
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

MAP SHEET

Primary # 19-175297
HRI#/Trinomial

Resource Identifier: Griffith Park
Map Name: Boundary and Features **Scale:** **Date:** 09/30/94

Note: Include bar scale and north arrow on map.



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

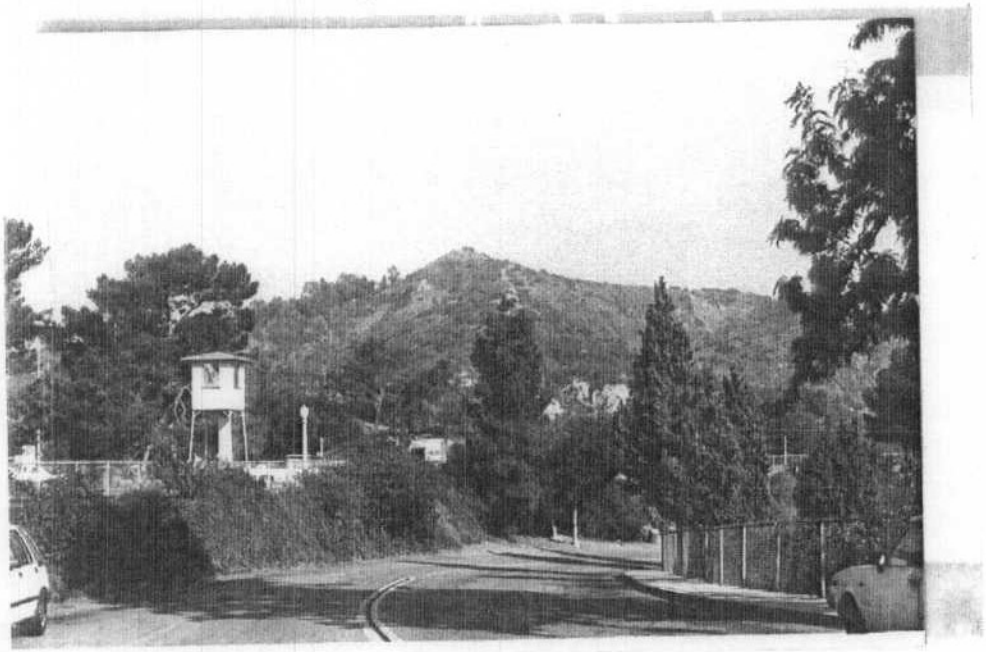
Primary # 19-175297
HRI #/Trinomial

☒ Continuation ☐ Update
Resource Identifier: Griffith Park



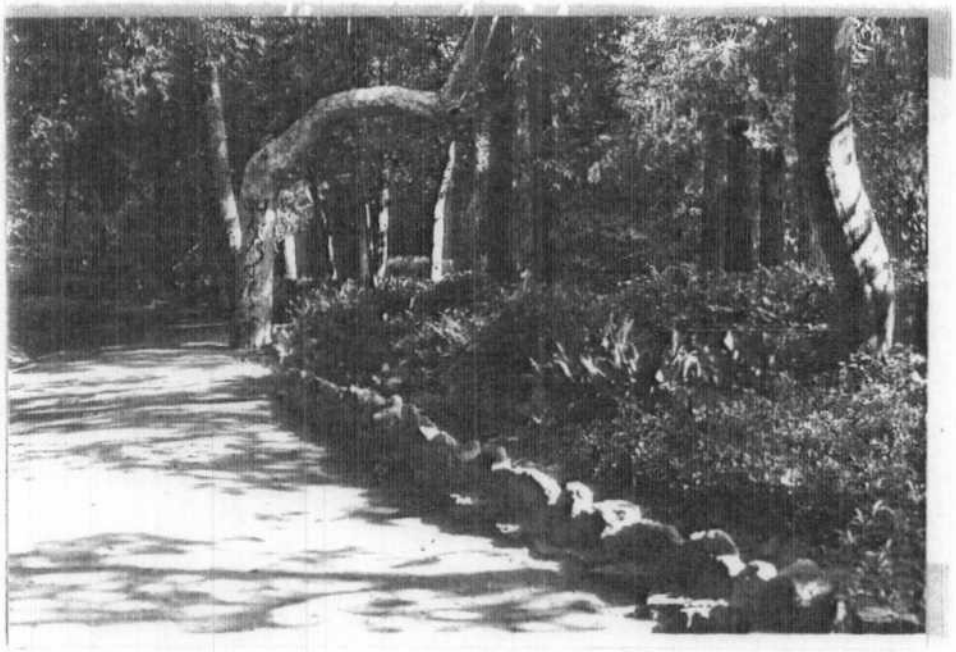
19-176293
100859

Ferndell-S - Contributing



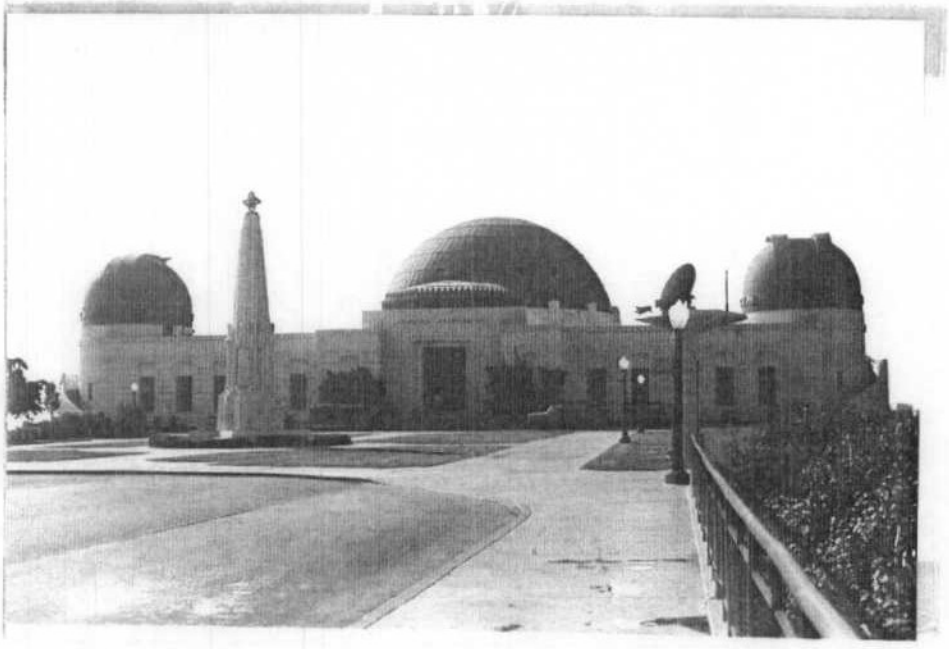
19-176294
100860

Mt. Hollywood-N - Contributing

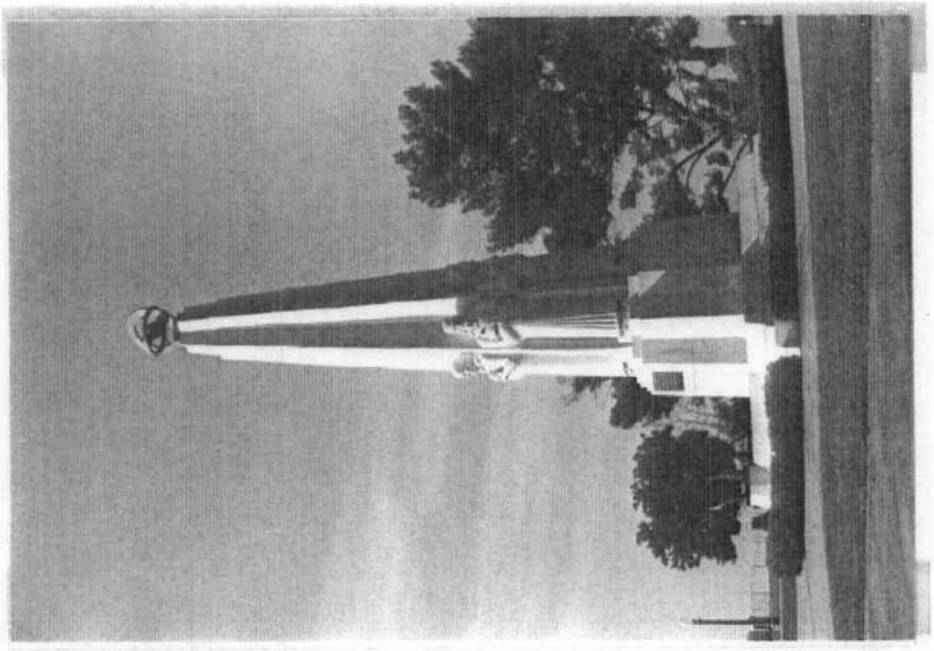


19-176295
100861

Bird Sanctuary-NE - Contributing



Observatory and Planetarium-S - Contributing



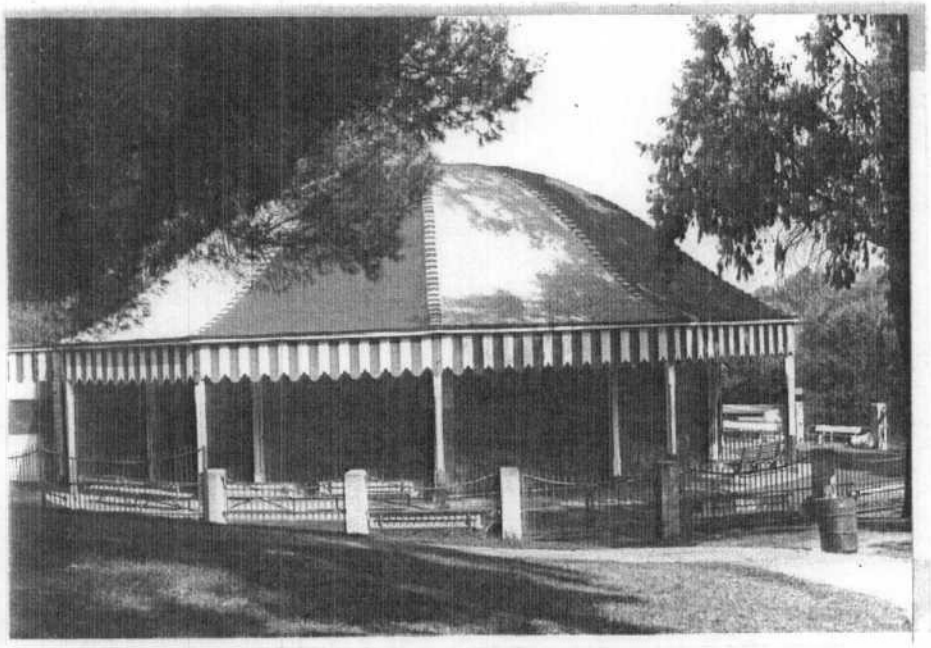
19-176296
100870

Astronomers' Monument-SW - Contributing



19-176297
100871

Los Feliz Adobe (Park Rangers Headquarters)- NE - Contributing



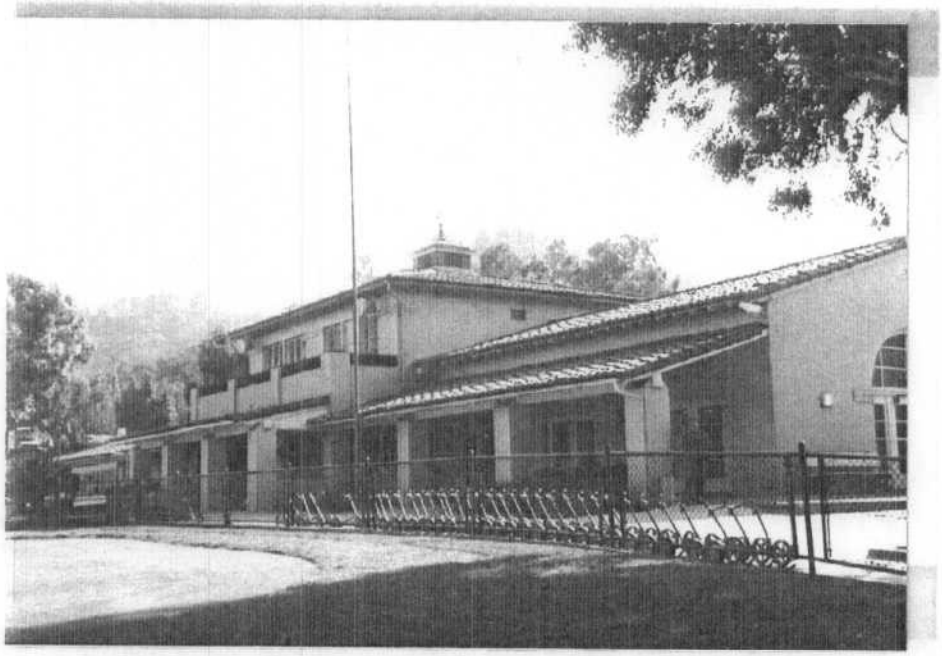
19-176298
100872

Merry-Go-Round-N - Contributing

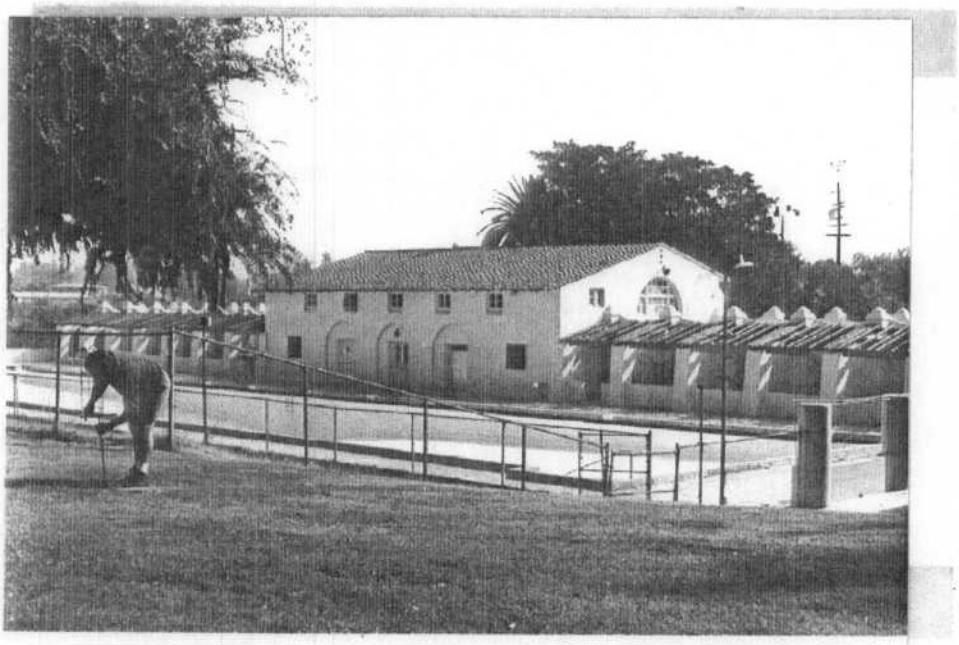


19-176299
100873

Harding Golf Clubhouse- NW - Contributing



Harding Golf Clubhouse-SW - Contributing



Swimming Pool and Building-SE - Contributing

19-176300
100874



19-176302
100876

Mulholland Fountain-E -Contributing



19-176304
100878

Greek Theater-E - Non-contributing



19-176306
100880

Traveltown, Los Feliz Passenger Station-NE - Non-contributing



Traveltown-SE - Non-contributing

No Photographs Are Available For:

Boys' Camp - Contributing 19-176301, 100875
Los Angeles Zoo - Non-contributing 19-176303, 100877
Girls' Camp - Non-contributing 19-176305, 100879
Gene Autry Western Heritage Museum - Non-contributing 19-176307, 100881

HISTORIC RESOURCES GROUP 19-175297

April 11, 1994

Sandro Amaglio
Regional Environmental Officer
Federal Emergency Management Agency
Disaster Field Office
150 East Colorado Boulevard, Suite 303
Pasadena, California 91105-1937

Re: Greek Theater, 2600-2700 N. Vermont Av., Los Angeles
FEMA 1008-DR-CA, P.A. 037-91081
FEMA Memorandum Dated March 11, 1994

Dear Mr. Amaglio:

We have reviewed the above-referenced memorandum and a preliminary field survey was performed on March 15, 1994. We find the following:

1. The Greek Theater is not eligible for listing in the National Register pursuant to 36 CFR Section 60.4.

   It was designed by staff of the City of Los Angeles and constructed in 1930. Alterations designed by architect William Woollett were implemented in 1956, obscuring much of the original stage area. These alterations may assume significance over time. Substantial support functions are uniquely located under the amphitheater seating. However, the Greek Theater is culturally significant and may qualify as a local landmark. The Los Angeles Cultural Heritage Commission utilizes the Secretary of the Interior's Standards in reviewing proposed alterations to landmarks. The applicant is encouraged to rehabilitate the theater using the Secretary of the Interior's Standards.

2. Photodocumentation of the before and after conditions should be required of the project applicant.

1728 N. Whitley Ave., Hollywood, California 90028 (213) 469-2349

Should you have any questions, please contact me.

Sincerely,

Cherilyn Widell, SHPO

Christy Johnson McAvoy

By: Christy Johnson McAvoy, Principal
Historic Resources Group as
SHPO Representative

cc: Thomas Ottoman

Attachment 3

City of Los Angeles Historic-Cultural Monument Documentation for Griffith Park

DEPARTMENT OF
CITY PLANNING
OFFICE OF HISTORIC RESOURCES
200 N. SPRING STREET, ROOM 620
LOS ANGELES, CA 90012-4801
(213) 978-1200

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VICE-PRESIDENT

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www.lacity.org/PLN

November 12, 2008

Los Angeles City Council
Room 395, City Hall
200 North Spring Street
Los Angeles, California 90012

CD4
CD8

ATTENTION: Barbara Greaves, Legislative Assistant
Planning and Land Use Management Committee

CASE NUMBER: **CHC-2008-2724-HCM**
GRIFFITH PARK
4730 Crystal Springs Drive, 3201/3210/3401 Riverside Drive, 2715 Vermont Avenue, 5333 Zoo Drive

At the Cultural Heritage Commission meeting of October 30, 2008, the Commission moved to include the above property in the list of Historic-Cultural Monuments, subject to adoption by the City Council.

As required under the provisions of Section 22.171.10 of the Los Angeles Administrative Code, the Commission has solicited opinions and information from the office of the Council District in which the site is located and from any Department or Bureau of the city whose operations may be affected by the designation of such site as a Historic-Cultural Monument. Such designation in and of itself has no fiscal impact. The scope of the designation encompasses the City-owned area within the property lines identified in the attached application as "City of Los Angeles Park Boundary."

The City Council, according to the guidelines set forth in Section 22.171 of the Los Angeles Administrative Code, shall act on the proposed inclusion to the list within 90 days of the Council or Commission action, whichever first occurs. By resolution, the Council may extend the period for good cause for an additional 15 days.

The Cultural Heritage Commission would appreciate your inclusion of the subject modification to the list of Historic-Cultural Monuments upon adoption by the City Council.

The above Cultural Heritage Commission action was taken by the following vote:

Moved:	Commissioner Scott
Seconded:	Commissioner Louie
Ayes:	Commissioner Barron
Noes:	Commissioner Dake
Absent:	Commissioner Lehrer
Vote:	3-1

James Williams, Commission Executive Assistant I
Cultural Heritage Commission

Attachment: Staff Report with Findings

c: Councilmember Tom LaBonge, Fourth Council District
City of Los Angeles, Department of Recreation and Parks: Owner
Griffith Van Griffith, The Griffith J. Griffith Charitable Trust: Applicant

PLANNING & LAND USE MANAGEMENT
NOV 13 2008

Los Angeles Department of City Planning
RECOMMENDATION REPORT

CULTURAL HERITAGE COMMISSION

DATE: October 30, 2008
TIME: 10:00 AM
PLACE: City Hall, Room 350
200 N. Spring Street
Los Angeles, CA 90012

CASE NO.: CHC-2008-2724-HCM

Location: 4730 Crystal Springs Dr., 3201/3210/3401 Riverside Dr, 2715 Vermont Ave, 5333 Zoo Drive
Council District: 4
Community Plan Area: Hollywood
Area Planning Commission: Central
Neighborhood Council: Greater Griffith Park
Legal Description: Tract Rancho Los Felis

PROJECT: Historic-Cultural Monument Application for the GRIFFITH PARK

REQUEST: Declare the property a Historic-Cultural Monument

APPLICANT: Griffith Van Griffith
The Griffith J. Griffith Charitable Trust
2430 Juniper Ave
Morro Bay, CA 93442

OWNER: City of Los Angeles
Department of Recreation and Parks
1200 W. 7th Street Suite 748
Los Angeles, CA 90017

RECOMMENDATION **That the Cultural Heritage Commission:**

1. **Declare** the property a Historic-Cultural Monument per Los Angeles Administrative Code Chapter 9, Division 22, Article 1, Section 22.171.7

2. **Adopt** the report findings.

S. GAIL GOLDBERG, AICP
Director of Planning

Ken Bernstein, AICP, Manager
Office of Historic Resources

Prepared by:

Edgar Garcia, Preservation Planner
Office of Historic Resources

Attachments: April 19, 2008 Historic-Cultural Monument Application
ZIMAS Report

FINDINGS

1. The subject property "embodies the distinguishing characteristics of an architectural type specimen, inherently valuable for a study of a period style or method of construction" for its numerous buildings and structures representing various architectural styles including Spanish Colonial Revival, Moderne, Second Greek Revival, Moderne, and the "Park Style."

2. The subject property reflects "the broad cultural, economic, or social history of the nation, State or community" for its association with the growth and development of the City of Los Angeles from a small city to a major metropolitan area.

3. The subject property is identified with several historic personages such as the original owner of the subject area, Jose Vicente Feliz; the original donors of the parkland, Griffith J. Griffith and his wife; and Walt Disney, who donated buildings and structures to the site.

4. The subject property is identified with "important events in the main currents of national, State or local history" for the original donation of the parkland by Griffith J. Griffith on December 16, 1896 as a "Christmas gift" to the City of Los Angeles.

CALIFORNIA ENVIRONMENTAL QUALITY ACT ("CEQA") FINDINGS

The Commission hereby recommends that Council find the proposed designation of Griffith Park as a Historic-Cultural Monument to be exempt from further analysis under the California Environmental Quality Act pursuant to Title 14 of the California Code of Regulations, Sections 15308 (Class 8) and 15331 (Class 31).

CRITERIA

The criterion is the Cultural Heritage Ordinance which defines a historical or cultural monument as any site (including significant trees or other plant life located thereon) building or structure of particular historic or cultural significance to the City of Los Angeles, such as historic structures or sites in which the broad cultural, economic, or social history of the nation, State or community is reflected or exemplified, or which are identified with historic personages or with important events in the main currents of national, State or local history or which embody the distinguishing characteristics of an architectural type specimen, inherently valuable for a study of a period style or method of construction, or a notable work of a master builder, designer or architect whose individual genius influenced his age.

SUMMARY

Established in 1896, this 4,218-acre City of Los Angeles park is one of the largest interurban parks in the nation. The park is located within the eastern edge of the Santa Monica Mountains, northwest of downtown Los Angeles, and adjacent to a 4.9 mile stretch of the Los Angeles River. The majority of the subject area consists of rocky hills, canyons, gullies, and large areas of open, rugged, natural landscape. Seven peaks in the subject area exceed 1,000 feet. Plant species include coastal native trees, shrubs, vines, herbs, riparian vegetation, and non-native species. Throughout Griffith Park are lawns, picnic areas, camp grounds, landscaped areas, infrastructural buildings, recreational, entertainment, and educational amenities, as well as trails, roadways, and signage.

The proposed Griffith Park historic monument was formed in 1896 by the donation of private land owned by Colonel Griffith J. Griffith and his wife Mary Agnes Christina Mesmer to the City of Los Angeles as a gift for use as parkland. This land was originally a portion of the Rancho Los Feliz, owned by José Vicente Feliz of Sonora, Mexico. As a corporal for the Spanish Crown, on June 1781 Feliz escorted the original eleven families from Sonora to the settlement that would become the *Pueblo de la Reina de Los Angeles sobre el Rio de la Porciúncula* ("Los Angeles"). Feliz became the pueblo's *Commisionado*, the highest political authority at the time. Some time between 1795-1800, the Spanish Crown granted 6,647 acres of land to Feliz for his public service and loyalty, establishing the Rancho Los Feliz. In the 1830s, the Feliz family constructed an adobe residence in the Rancho. The Feliz family later willed the Rancho to their family lawyer, Don Antonio Coronel, an early Justice of the Peace for Los Angeles. After California came under United States rule, Coronel became the area's first County Assessor and later Mayor of Los Angeles, establishing the City's first Department of Public Works. Coronel would also go on to become State Treasurer of California. In 1883, Coronel helped establish the Historical Society of Southern California. Helen Hunt Jackson developed the idea of writing her famed novel Ramona, while staying with Coronel on her visit to Los Angeles. Coronel would later sell the Rancho to John Baldwin, after which it was sold to Thomas Bell.

An immigrant from Wales, Griffith J. Griffith settled in San Francisco in the 1870s where he became wealthy investing in mining activities throughout the Southwest. After visiting Los Angeles in the 1870-80s, he resettled in Los Angeles and purchased a 4,071 acre portion of the original Rancho Los Feliz from Thomas Bell in 1882. Griffith began developing and selling sections of the southern portion of the Rancho land, establishing the residential communities of Los Feliz, Ivanhoe, and Kenilworth. On December 16, 1896, Griffith presented to the City Council a property deed and letter donating 3,015 acres of the Los Feliz Rancho as a "Christmas present." To secure water rights for the City, Griffith later donated an additional 1,000 acres alongside the Los Angeles River.

Because of the size, complexity, and diverse uses of the subject area, the application identified more than 30 key features as "Historically Sensitive Resources and Areas" that appear to be historically significant and serve as contributing elements or character-defining features of the proposed Monument. Six of these are recognized historic resources that are locally designated Historic-Cultural Monuments (HCMs). Other buildings and structures in the subject area have been determined eligible for listing in the National Register of Historic Places and California Register of Historical Resources. Throughout the subject area are park infrastructural elements such as walls, barriers, drainage canals, stoppage dams, and water fountains constructed in the "Park style" between the 1930s-50s. In a style adopted by the Department of Recreation and Parks for most of the 1950s, rubble rock and ashlar set in mortar is used as a consistent design theme throughout Griffith Park.

Major alterations to the subject area include the placement of the Interstate 5 and 134 freeways through parkland in the 1950s-60s and the introduction of the Toyon Landfill in 1958. With the establishment of the park in 1896, these two developments frame the time period establishing the period of significance for the subject area, 1896-1958. The application does identify some contributing elements prior to and after the stated period of significance; these include the Feliz Adobe (HCM #401;1853), the LA Shares Warehouse (1961), the Train Ride (1947/1963), and Travel Town (1962). The Feliz Adobe is a locally designated landmark and built prior to the subject area's establishment as a park. The Train Ride was constructed during the period of significance yet contains buildings and structures from 1963. Travel Town has a collection dating to the period of significance but was moved to its current location after the period of

significance. The LA Shares Warehouse, designed by noted architect William Pereira, was built just immediately after the period of significance.

Character-Defining Features/Contributing Elements

The nomination identifies the following as character-defining features or contributing elements to the proposed Griffith Park monument. After review and analysis, staff concurs with the listed resources provided by the application. Some of these contributing elements are already individually designated Historic-Cultural Monuments (HCM).

1. Former Costume Workshop and Surroundings/LA Shares Warehouse 1961
This facility consists of a primary building built in an expressionist Modern style attached to two extensions that wrap around in a helical fashion. In addition to being the LA Shares charitable facility warehouse, it once served as the costume workshop for the Griffith Park Children's Theater.

2. Ranger House, c. 1938
The "Ranger House" is a one-story residence with a front elevation that features four windows, a concrete stairwell, and a small front-facing pop-up gable. It served as a clubhouse for the "Breakfast Rangers," a group of horsemen within the Los Angeles Breakfast Club.

3. Municipal Plunge and Associated Buildings, 1927
The "Plunge" is the largest public pool in the City of Los Angeles, and lies on the backside of a two-story rectangular-plan Spanish Colonial Revival style pool house. In addition to Spanish-tile roofing, the building features decorative Spanish tile and two *corredors* covered by arches and wooden trellises. In addition to recreation, this facility was used for canoe paddling and pageants.

4. Pony Ride, 1947 & Train Ride, 1947, 1963
The prominent features of the Pony Ride are the square plan canopy, the oval pony track directly to the east, and the ticket kiosk to the west. The kiosk has an eastern elevation recessed beneath an overhanging roof and is clad in a barn-style design.

The primary building in the Train Ride facility is a square-plan one-and-a-half story ticket kiosk.

5. 1920s era DWP Building (I)
This City infrastructure building is a rectangular-plan, one-story side-gabled building that features Colonial Revival elements topped by a red asphalt shingle.

6. 1920s era DWP Building (II)
The DWP Building is a rectangular plan concrete building that is five bays long by three bays wide. Each of these bays features a large inset with molded surrounds, and most feature a large covered window.

7. Feliz Adobe, 1853, 1934 (HCM #401)
This Spanish Revival-style adobe is the earliest building in Griffith Park. It was built by José Paco Feliz, the son of José Vicente Feliz, to whom the Spanish Crown granted the 6,647 acre Rancho Los Feliz. The property was later renovated and enlarged in 1934.

8. Sycamore Grove
This grove of sycamore trees is on the western side of North Zoo Dr. and appears to be original to the park.

9. Riverside Drive Bridge, 1938 (HCM #910)
This five-bay concrete span crossing the Los Angeles River was constructed as a Public Works Administration project. The bridge is supported by concrete piers between arches that underscore each bay. Stylized light fixtures and railing line the four-lane bridge.

10. L.A. Live Steamers
The Los Angeles Live Steamers Railroad Museum is an open-air collection of rideable 1/8 scale miniature steam, electric, and diesel trains around various steel tracks. Among these is a main line donated by Walt Disney that runs a circuit around the perimeter of the museum.

11. Walt's Barn, 1950
Walt's Barn features a roof featuring a sinking ridgeline with a dovecote and an exposed wood ridgebeam that extends out of the southern façade. The barn once belonged to Walt Disney and served as his workspace for his model train line that is now a part of Live Steamers.

12. Travel Town Transportation Museum (Collection, 1952-1962)
Travel Town features an assortment of buildings and features, including actual examples of transportation such as steam locomotives, cabs, and railway cars. The structural elements of the museum include an entry kiosk constructed of metal columns and a cross-gabled roof, a metal frame bridge, and a small rectangular waiting canopy. The site Travel Town now occupies served as a POW camp during World War II.

13. "Little Nugget" Railcar, 1937 (HCM #474)
"Little Nugget" is a Union Pacific Railroad passenger car built in 1937 by Pullman-Standard Car Manufacturing Co. It is among the features on exhibit at the Travel Town Transportation Museum.

14. Wilson & Harding Golf Courses, 1923-1924
The Wilson & Harding Golf Courses were first developed in the 1920s and were improved by the WPA in 1937. The courses served the public for a nominal cost (in keeping with Colonel Griffith's stipulation that the park serve those of modest means), and because they were considered so well-designed, also hosted several national tournaments.

15. Wilson & Harding Golf Clubhouse, 1937
This is a two-story irregular-plan clubhouse with a Spanish Eclectic design, and was a product of the WPA in 1937.

16. Old Zoo Buildings, 1914-c. 1937
The most prominent features of the Old Zoo are a series of cave-like spaces recessed into the side of a hill with an irregular arrangement of boulders that gives them a prehistoric appearance. It was one of the nation's few free admission zoos in the 1930s. The structures now serve as mostly a landscaping element and are not actively used.

17. Wilson-Harding Turf Maintenance Facility, 1927
Twelve single-story rectangular-plan buildings make up this facility. All are gabled and primarily clad in corrugated metal and topped by corrugated metal roofs.

18. Merry-Go-Round, 1926, installed 1937
The current Merry-Go-Round was relocated from San Diego's Mission Beach Park in 1937. It was often visited by Walt Disney and his children, and was influential in the creation of Disneyland.

19. Los Feliz Café and Signage, 1948, 1956
The Los Feliz Café was constructed by converting a Quonset hut, retaining the interior barrel vaulted supports. It features window panes that slant upward and outward, as well as a 1950s-era neon pole sign.

20. Central Service Yard Administration Building, 1958
This building has a T-shaped plan: the long leg of the T is one story tall, and the cross is two stories. It is of Mid-Century Modern design and features ribbon windows and large glazing units covered by decorative metal screens.

21. Former Cricket House, c. 1933
The former Cricket Clubhouse is a one-story rectangular-plan building with an overhang porch and French doors. It is now a part of the Los Angeles Equestrian Center.

22. Vermont Tennis Courts, c. 1927
This facility is made up of three sets of four tennis courts set upon irregular boulder work and masonry representing the park style.

23. Nursery and Horticulture Center, 1927
This facility was establishment with the intent of reforesting Griffith Park.

24. Greek Theatre, 1930
The Greek Theatre is a two-story performance venue designed in a Second Greek Revival style. It was home to free marionette shows for children, as well as the Federal Theatre Project's "living newspaper" productions of various current issues of the 1930s.

25. Bird Sanctuary, 1922-c. 1937
The Bird Sanctuary is an open area with recently-built low park-style walls bordered by a wood post and beam fence. It designed by the Los Angeles Chapter of the Audubon Society and constructed by Boy Scouts in 1922.

26. Griffith Observatory, 1935 (HCM #168)
The Observatory was designed in the classically-inspired PWA Moderne style. It, along with the Greek Theatre, was built with funds donated by Colonel Griffith. The building is one of the most significant visual icons of the City and has been recently restored and expanded.

27. Mt. Hollywood Tunnel, 1927
The Mt. Hollywood Tunnel runs east-west and is a segment of Mt. Hollywood Drive. It has a square-shaped, smooth concrete face at each entrance, while the tunnel itself is a barrel vault of roughly-finished concrete poured in placed concrete.

28. Fern Dell Nature Area, 1914/1937/Gabrielino Indian Site (HCM #112)
The focal point of the Fern Dell Nature Area is a secluded grouping of below-grade pedestrian trails and streams bordered by rock walls and ferns. The development of Fern Dell spurred the

creation of trails toward the western side of Griffith Park. The site that Fern Dell now occupies was formerly a Gabrielino Indian site.

29. Bronson Caves, c. 1909-1920
The Bronson Caves are the openings of a man-made tunnel, with one large opening on the west side and three smaller openings facing east. The caves have been featured in many major films.

30. Hollywood Sign, 1923, reconstructed 1978 (HCM #111)

31. Hollywood Sign Viewshed

This series of 50-foot high letters once read "HOLLYWOODLAND" and served as an advertisement of the residential tract of the same name. Along with the Griffith Observatory, it is the most visible and recognized landmark in the subject area. The Hollywood Sign Viewshed includes only the land within park boundaries and not privately-owned properties surrounding the sign.

32. 1930's era Stoppage Dam
Though many of the stoppage dams in Griffith Park have now been covered by over-growth, this one east of the Roosevelt Golf course has been exposed by the recent fire. It features scored concrete embedded with boulders in a mandala-like pattern.

33. Cedar Grove
The Cedar Grove is an oblong-shaped, 225 feet by 240 feet grove of cedar trees, with foot trails passing through and benches throughout.

34. Early Water Tower, c. 1927
This early water tank located across from Cedar Grove is set into the hillside. It is made of sheet metal studded together and topped with exposed rafter tails and a sheet metal roof.

35. Bee Rock
Originally known as "Griffith's Altar," this was a common destination of Colonel Griffith when showing off the park to reporters and dignitaries. It has a large exposed sandstone northward face and is covered with mixed scrub on other faces.

36. Bee Rock Trail, 1903
Bee Rock Trail was one of the first trails cleared in Griffith Park. It begins due east of Bee Rock in front of the Old Zoo Picnic Area, and presents a view of the exposed face of Bee Rock.

In addition to these contributing elements, another character-defining feature located throughout the subject area is a collection of retaining walls, drainage ditches, stoppage dams, culverts, barriers, and drinking fountains (1930-1950) constructed in the "Park style."

The natural features of the subject area, the extensive undeveloped natural features of Griffith Park, are also identified as a major character-defining feature/contributing element of the proposed designation.

Non-Contributing Elements

37. Los Angeles Zoo and Autry National Center, 1966/1987
38. Freeways and All Associated Ramps, 1957
39. Toyon Landfill/Reclamation Project, 1958
40. Marty Tregnan Golf Academy, 2000
41. Roosevelt Municipal Golf Course, 1966

DISCUSSION

Significance

Griffith Park successfully meets four of the specified Historic-Cultural Monument criteria: 1) "embodies the distinguishing characteristics of an architectural type specimen, inherently valuable for a study of a period style or method of construction," 2) reflects "the broad cultural, economic, or social history of the nation, State or community," 3) is associated with several historic personages, and 4) is associated with "important events in the main currents of national, State or local history." As a park associated with various historical figures that was donated in 1896 by Griffith J. Griffith to the City of Los Angeles and containing buildings, structures, and infrastructure of various architectural styles as well as natural wilderness areas and designed landscapes, the subject property qualifies for designation as a Historic-Cultural Monument based on these criteria.

Significant for its architectural and built resources, Griffith Park contains numerous buildings and structures representing various architectural styles including Spanish Colonial Revival, Moderne, Second Greek Revival, and Moderne, as well as infrastructural elements designed in the "Park Style." The establishment of Griffith Park in 1896 was a significant event in the history of the City of Los Angeles and its creation is linked to the broader social history and cultural movements of the late 19th century City Beautiful Movement and large-scale philanthropy. The historical figures associated with the founding of Griffith Park, particularly Colonel Griffith J. Griffith, and the personages associated with the later development of the land into a public park, also qualifies Griffith Park for designation as a Historic-Cultural Monument.

Natural Features ("Wilderness Area")

As one of the largest municipal parks in the United States, the 4,218 acre subject area possesses a multitude of resources and uses, including natural features, such as acres of undeveloped open space and designed landscapes, spaces used for active recreation and sports, as well as a significant built environment consisting of buildings, structures, and infrastructure.

Since its establishment in 1896 as a City park, the undeveloped natural features of Griffith Park, frequently referred to as the "wilderness area," has been a major character-defining feature of the subject area. In his original letter detailing his intent to donate the area to the City of Los Angeles, Griffith called out the subject property's "diversity of picturesque valley, hill, river and mountain, with its many varieties of trees and its rich undergrowth." While it does not appear that it was his intention to have the new park consist entirely of open spaces and devoid of buildings and recreational uses, a significant portion of the subject area remained purposely undeveloped to retain a natural setting. These areas of Griffith Park also remained open space as much of their topography consists of steep hills, canyons, and gullies, making development

physically difficult or almost impossible. Although it is difficult to delineate precise boundaries for the park's natural features, patterns of development from the period of significance allow some guidance to distinguish the open space areas from sections of the park that have a higher concentration of buildings, structures and associated uses. Based on the application and staff analysis, areas along the perimeters of the subject property (alongside Riverside Drive, Crystal Springs Drive, and Zoo Drive) exhibit a large concentration of built resources, leaving most of the interior of the park as natural features. In some cases, a built resource with a high level of use, such as the Griffith Observatory, may be located amongst large sections of natural features and in some isolation from other built resources. Therefore, it does not appear that the natural features of the park, the undeveloped open space areas, are exclusive and segregated from the built environment of Griffith Park.

Designed Landscapes

Distinguishable from the natural features of Griffith Park are landscaped areas from the period of significance that feature designed landscape elements using tree and plant species, structures, trails, and walkways. These landscape features can be in proximity to both the "wilderness areas" as well to areas with built resources. The Wilson & Harding Golf Courses (1923-1924) are an example of a designed landscape intended for a specified sports use and appear to be the largest such contributing element in the subject area. Because designed landscapes consist of natural features that can be of an evolving and ephemeral nature over time, some landscaped areas, like the identified Cedar Grove, may no longer have defined boundaries.

On October 20th, 2008, the application preparer (ICF Jones & Stokes) submitted an addendum to the Griffith Park application titled "Landscape Elements of Griffith Park." The report seeks to further identify and illustrate the character-defining features of the natural features and designed landscapes components of Griffith Park and provide a context for their establishment and development. The report also highlights the work of individuals, such as City of Recreation and Parks Superintendent Frank Shearer (1875-1971), who have contributed to the development of the Griffith Park landscape.

Built Environment

The built environment of the proposed Griffith Park monument contains buildings and structures from the period of significance that serve as character-defining features of the park and further contribute to the eligibility of the subject property as an HCM. Identifying nearly thirty different buildings and structures in the application, this diverse collection of built elements include the Merry-Go-Round (1924), Spanish Colonial Revival Style Municipal Plunge pool house and pool (1927), the Second Greek Revival style Greek Theater (1930), the Old Zoo structures (1914-1937), and dating from later in the period of significance, the Travel Town buildings (1952-1962) and the Pony Ride and Train Ride complex (1946/1963).

The application also identified some infrastructural components of the subject area that date to the period of significance and are designed in a consistent "Park Style." These primarily consist of retaining walls, drainage ditches, stoppage dams, barriers, and drinking fountains built between 1930 and 1950 in a rustic design using rubble rock or ashlar set in mortar.

Operational Considerations

In response to management and operational issues related to the subject area, OHR staff has determined that most infrastructural elements, with the exception of the "Park style" components noted above, are not character-defining features of the proposed Griffith Park monument. These include subsurface utilities such as water pipes, drainage systems, sewer lines, and surface utilities, such as water hydrants, storm drains, catch basins, electrical equipment and poles. Staff would not review, monitor, or oversee any required maintenance to these components of the park. In cases of emergencies, fire hazards and issues of public safety, the Cultural Heritage Ordinance exempts work on Historic-Cultural Monuments that "is immediately necessary in the interest of the public health, safety, or general welfare" as determined by the Superintendent of Building and Safety or the City Engineer. (Chapter 9, Division 22, Article 1, Section 22.171.14

Designation as a Historic-Cultural Monument (HCM) does not substitute for a master plan process that could better potentially determine the extent of the natural features of the subject area; rather, designation as a local historic resource would help inform future planning and policy processes regarding Griffith Park's future development. The identification of the natural features as character-defining/contributing elements by the HCM designation does not preclude construction activity, landscape work, or other types of projects from taking place in this area. Possible HCM review would also not render the Office of Historic Resources as the primary decision-maker regarding issues concerning reforestation, native versus non-native plant species, seeding, wildlife habitats, biodiversity, and other issues of ecological concern.

It should be noted that staff review by the Office of Historic Resources is already triggered for some sections of the subject area as some elements were determined eligible for the National Register of Historic Places as a result of a FEMA-related historic assessment following the 1994 Northridge earthquake. These elements include Fern Dell, Mount Hollywood, the Bird Sanctuary, the Merry-Go-Round, Boys Camp, Astronomers Monument, Los Feliz Adobe, Harding Golf Course, and the Swimming Pool/Plunge.

The staff of the Office of Historic Resources has continued to meet with various City departments responsible for the subject area to discuss the potential impact of HCM designation on management and operational activities. It is not the intention of the staff report to serve as a treatment plan or substitute for a potential master plan for Griffith Park. Staff will report on the outcome of these meetings at the scheduled public hearing of the Cultural Heritage Commission.

Non-Contributing Elements

Based on the application, input from stakeholders and other City departments, the staff of the Office of Historic Resources concludes that certain areas of the subject property are not character-defining features/contributing elements of the proposed HCM and would be excluded from Cultural Heritage Commission review.

<u>Freeways and All Associated Ramps (1957)</u>

Portions of the original parkland now dedicated to the Interstate 5 freeway and all associated infrastructure including ramps and bypasses are excluded.

Toyon Landfill/Reclamation Project (1958)

The area now occupied by the Toyon Landfill/Reclamation Project is excluded.

Los Angeles Zoo and Autry National Center (1966/1987)

The northwestern portion of the proposed HCM occupied by the Los Angeles Zoo, the Autry National Center, and all associated uses such as the automobile parking areas, fall outside of the period of significance for the proposed HCM.

Roosevelt Municipal Golf Course (1966)/Marty Tregnan Golf Academy (2000)

The Roosevelt Municipal Golf Course (1966) and the Marty Tregnan Golf Academy (2000) are designed landscapes that fall outside of the period of significance and are not character-defining features of the subject property.

BACKGROUND

At its meeting of August 21, 2008, the Cultural Heritage Commission voted to take the application under consideration. On September 4, 2008, the Cultural Heritage Commission conducted an extensive tour of the subject property.

CALIFORNIA ENVIRONMENTAL QUALITY ACT ("CEQA") REVIEW

State of California CEQA Guidelines, Article 19, Section 15308, Class 8 "*consists of actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment.*"

State of California CEQA Guidelines Article 19, Section 15331, Class 31 "*consists of projects limited to maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation or reconstruction of historical resources in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic buildings.*"

The designation of Griffith Park as a Historic-Cultural Monument in accordance with Chapter 9, Article 1, of The City of Los Angeles Administrative Code ("LAAC") will ensure that future construction activities involving the subject property are regulated in accordance with Section 22.171.14 of the LAAC. The purpose of the designation is to prevent significant impacts to a Historic-Cultural Monument through the application of the standards set forth in the LAAC. Without the regulation imposed by way of the pending designation, the historic significance and integrity of the subject property could be lost through incompatible alterations and new construction and the demolition of irreplaceable historic structures. The Secretary of the Interior's Standards of Rehabilitation are expressly incorporated into the LAAC and provide standards concerning the historically appropriate construction activities which will ensure the continued preservation of the subject property.

The use of Categorical Exemption Class 8 in connection with the proposed designation is consistent with the goals of maintaining, restoring, enhancing, and protecting the environment through the imposition of regulations designed to prevent the degradation of Historic-Cultural Monuments.

The use of Categorical Exemption Class 31 in connection with the proposed designation is consistent with the goals relating to the preservation, rehabilitation, restoration and reconstruction of Historic buildings in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving Rehabilitating, Restoring, and Reconstructing Historic Buildings.

CULTURAL HERITAGE COMMISSION

HISTORIC-CULTURAL MONUMENT APPLICATION

HISTORIC-CULTURAL MONUMENT APPLICATION

TYPE OR PRINT IN ALL CAPITAL BLOCK LETTERS

IDENTIFICATION

1. **NAME OF PROPOSED MONUMENT**: GRIFFITH PARK
2. **STREET ADDRESS**: 4730 CRYSTAL SPRINGS DRIVE

   CITY: LOS ANGELES **ZIP CODE**: 90027 **COUNCIL DISTRICT**: 4
3. **ASSESSOR'S PARCEL NO**: PLEASE SEE ATTACHMENT A
4. **COMPLETE LEGAL DESCRIPTION**: PLEASE SEE ATTACHMENT B
5. **RANGE OF ADDRESSES ON PROPERTY**: (SITE ADDRESSES): 4730 CRYSTAL SPRINGS DRIVE; 3210 RIVERSIDE DRIVE; 3201 RIVERSIDE DRIVE; 2715 VERMONT AVE; 3401 RIVERSIDE DRIVE; 5333 ZOO DRIVE
6. **PRESENT OWNER:** CITY OF LOS ANGELES DEPT OF RECREATION AND PARKS

   STREET ADDRESS: 1200 WEST 7TH STREET

   CITY: LOS ANGELES **STATE**: CA **ZIP CODE**: 90017 **PHONE**: (213) 928-9033

   OWNER IS: PUBLIC
7. **PRESENT USE**: PARK , RECREATION, EDUCATION. **ORIGINAL USE**: PARK

DESCRIPTION

8. **ARCHITECTURAL STYLE**: VARIED INCLUDING SPANISH ECLECTIC, SPANISH REVIVAL, CLASSICAL MODERNE, MODERN, MINIMAL TRADITIONAL, RANCH, VERNACULAR, WITH PARK STYLE OBJECTS, AMONG OTHER STYLES.
9. **STATE PRESENT PHYSICAL DESCRIPTION OF THE SITE OR STRUCTURE** (SEE OPTIONAL DESCRIPTION WORKSHEET) PLEASE SEE ATTACHMENT C

HISTORIC-CULTURAL MONUMENT APPLICATION

NAME OF PROPOSED MONUMENT: GRIFFITH PARK

10. **CONSTRUCTION DATE: FACTUAL:** 1853- 2007

    ARCHITECT, DESIGNER, OR ENGINEER: VARIED
    (CITY OF LOS ANGELES DEPT OF RECREATION AND PARKS)

11. **CONTRACTOR OR OTHER BUILDER:** VARIED
    (CITY OF LOS ANGELES DEPT OF RECREATION AND PARKS)

12. **DATES OF ENCLOSED PHOTOGRAPHS:** MARCH, 2008

13. **CONDITION:** VERY GOOD

    ALTERATIONS: MAJOR ALTERATIONS, WHICH INDICATE THE END OF THE PERIOD OF SIGNIFICANCE (1896-1957) INCLUDE THE ADDITION OF THE 5 AND 134 FREEWAYS THROUGH GRIFFITH PARK AND THE INTRODUCTION OF TOYON LANDFILL.

14. **THREATS TO SITE:** DEVELOPMENT

15. **THE STRUCTURE IS:** ON ITS ORIGINAL SITE

SIGNIFICANCE

16. **BRIEFLY STATE HISTORICAL AND/OR ARCHITECTURAL IMPORTANCE; INCLUDE DATES, EVENTS, AND PERSONS ASSOCIATED WITH SITE.**

    PLEASE SEE ATTACHMENT D

SOURCES PLEASE SEE ATTACHMENT E

17. **DATE FORM PREPARED:** APRIL 19, 2008
    PREPARER'S NAMES:
    ICF JONES & STOKES: DANIEL PAUL, MEGHAN POTTER, ELIZABETH WEAVER,
    PROJECT MANAGER: CHRISTOPHER J. HETZEL
    WITH CONTRIBUTIONS BY DR. MICHAEL EBERTS

18. **SUBMITTED BY:** GRIFFITH VAN GRIFFITH **ORGANIZATION** THE GRIFFITH J. GRIFFITH CHARITABLE TRUST
STREET ADDRESS: 2430 JUNIPER AVENUE **CITY** MORRO BAY **STATE** CA **ZIP CODE** 93442
PHONE (805) 772-0582

Attachment A: **GRIFFITH PARK: Assessor's Identification Numbers**

Los Angeles County Assessor, Property Data Sales, ITD. DS04-SBF abstract based on given map: Excel Format. 9 Apr 2008.

AIN:

5581001001	5593002908
2443022901	5593002910
5434016901	5593002912
5434039901	5593002913
5581017900	5593002917
5581010900	5593030903
5581010901	5593030904
5581010902	5581001903
5581011900	5593002902
5581012900	5434016900
5581013900	5587027900
5581013901	5434038901
5581008900	5582001900
5581001905	5581026900
5581001906	5583025900
5581005901	5593002905
5581005902	5593002907
5581006900	5593002909
5588036900	5593003908
5588001900	5581016900
5587025901	5581011901
5594016901	5581014900
5594016902	5581001904
5593002904	5587025900
5593002906	5593002911

Attachment B: **GRIFFITH PARK: Legal Descriptions** Los Angeles County Assessor, Property Data Sales, ITD. DS04-SBF abstract based on given map: Excel Format. 9 Apr 2008.

AIN	Legal Description Line (LDL) #1	LDL #2	LDL #3
5581001001	TRACT # 9766 EX OF FLOOD CONTROL	EASEMENT L A RIVER CHANNEL LOT	
2443022901	*TR=SUBDIVISION OF RANCHO PROVIDENCIA	AND SCOTT TRACT*LOT (EX OF ST) COM N	39›42'58" W 20 FT FROM MOST S COR OF
5434016901	IVANHOE LOT COM NE ON SE LINE OF LOT 36	150 FT FROM MOST S COR OF SD LOT TH NE	ON SE LINES OF SD LOT AND LOT 37 TO SW
5434039901	IVANHOE EX OF STS LOTS 1,2,3,4,5,6,7 AND	LOT 8 BLK 1	
5581017900	EX OF ST LOT 2 TR NO 10781 AND ALL OF	LOTS 28 AND 29 BLK 4 TR NO 9367	
5581010900	LOT COM AT SW COR OF LOT 2 IN SEC 26 T	1N R 14W TH N ON W LINE OF SD LOT 440 FT	TH E 900 FT TH N 92 FT TH E 1200 FT TH
5581010901	*LOT COM N 89›49' E 2199.99 FT AND N	398.92 FT FROM SW COR OF LOT 2 IN SEC	26 T 1N R 14W TH N 34.68 FT TH W 100
5581010902	*LOT COM AT SE COR OF SEC 26 T 1N R	14W TH W 679.90 FT TH N 395.51 FT TH	W 645.75 FT TH N 925.41 FT TH SE
5581011900	TRACT NO 10781 LOT 6		
5581012900	THAT PART DESC IN OR22071-300 S AND E	OF TR NO 10781 E NE 1/4 OF	SEC 35 T 1N R 14W
5581013900	TRACT NO 10781 LOT 5		
5581013901	TRACT NO 10781 LOT 8		
5581008900	LICENSED SURVEYOR'S MAP AS PER BK 22	PG 32 OF L S LOT COM AT MOST N COR OF	LOT 5 TH S 21›24' W 2949.20 FT TH N 13›
5581001905	LAND DES IN DOC 1990, 74-4-18 TRACT	NO 9766 (EX OF ST) LOTS 181, 182,	183, 184, 185, 186, 187, 188, 189, 190,
5581001906	M R 43-47-59 FOR DESC SEE ASSESSOR'S	MAPS POR OF SD RO	
5581005901	L S 22-32 FOR DESC SEE ASSESSOR'S MAPS	POR OF LOT 3	
5581005902	POR OF LOTS 2 AND 3 L S 22-32 AND POR OF	PROVIDENCIA PARK TRACT M R 43-47-59	
5581006900	M R 43-47-59 FOR DESC SEE ASSESSOR'S	MAPS POR OF SD RO	
5588036900	HILLHURST PARK 2.69 MORE OR LESS ACS	COM AT MOST W COR OF LOT 103 TRACT	NO 27460 TH W ON W PROLONGATION OF N
5588001900	HILLHURST PARK 4.79 MORE OR LESS ACS	BEING EX OF ST COM AT NE COR OF LOT 114	TH SW ON NW LINE OF SD LOT TO W LINE
5587025901	GRIFFITH'S SUB OF THE SOUTHERN SLOPE	OF THE RO LOS FELIZ AND OF LOTS 15 AND	17 LICK TRACT LOT BD E AND NW BY FERN
5594016901	LOT COM AT INTERSECTION OF NW LINE OF	RANCHO SAN RAFAEL PER FM12325 WITH W	PROLONGATION OF N LINE OF LOT 2 WATTS
5594016902	LOT COM S 89›52'15" W 284 FT AND N 0›	08' W 150 FT FROM SW COR OF LOT 11 TR	# 11437 TH N 0›08' W 460 FT TH S 89›52'
5593002904	RANCHO LOS FELIS COM AT SW COR OF SEC 29	T 1N R 13W TH E TO NE LINE OF RO LOS	FELIS PER F M 12325 TH NW THEREON TO W
5593002906	RANCHO LOS FELIS EX OF ST AND EX LAND	DESC IN DDS 1900-274 TO L A CITY	SEC 31 T 1N R 13W
5593002908	RANCHO LOS FELIS LOT COM AT NW COR OF	SEC 5 T 1S R 13W TH S TO A PT S 81›54' W	FROM MOST N COR OF TR # 9050 TH N 81›
5593002910	RANCHO LOS FELIS LOT EX OF STS COM AT SE	COR OF SEC 24 T 1N R 14W TH N TO SW LINE	OF SUBDIVISION OF RANCHO PROVIDENCIA AND
5593002912	RANCHO LOS FELIS SEC 36 T 1N R 14W		
5593002913	RANCHO LOS FELIS LOT COM AT NW COR OF	SEC 1 T 1S R 14W TH S ON W LINE OF SD	SEC TO NW COR OF HILLHURST PARK PER
5593002917	RO LOS FELIS FOR DESC SEE ASSESSOR'S	MAPS POR OF SEC 19 T 1N R 13W	
5593030903	LOT COM AT NW COR OF LOT 14 TR # 5673 TH	N ON W LINE OF SD TR 369.96 FT TH S 89›	52' W TO SW LINE OF RANCHO SAN RAFAEL
5593030904	LOT COM AT NW COR OF LOT 14 TR # 5673	TH S 610.09 FT TH N 89›52' E 100 FT TH S	190.04 FT TH N 89›52' E 100 FT TH S 0›
5581001903	SUBDIVISION OF RANCHO PROVIDENCIA	AND SCOTT TRACT THAT PART DESC IN	DOC NO 2801, 6-24-71 OF PROVIDENCIA
5593002902	RANCHO LOS FELIS THAT PART DESC IN	DDS1900-274 IN GRIFFITH PARK	
5434016900	IVANHOE LOT COM AT NW COR OF LOT 30	BLK 3 TH N 86›30' E TO SW LINE OF	RIVERSIDE DR TH SE THEREON 28.06 FT TH
5587027900	HILLHURST PARK LOT COM AT NE COR OF	LOT 25 TR # 4040 TH S ON E LINE OF SD	TR TO NE LINE OF BLACK OAK DR TH SE
5434038901	RANCHO LOS FELIS LOT COM AT INTERSECTION	OF N LINE OF IVANHOE WITH NE LINE OF	RIVERSIDE DR TH N 86›09' E TO SW LINE OF
5582001900	TRACT NO 10781 EX OF ST	LOT 1	
5581026900	TRACT NO 10781 LOT COM AT NE COR OF	LOT 2 BLK 19 TR NO 6450 TH S 78›49'19" E	56.43 FT TH NE ON A CURVE CONCAVE TO SE
5583025900	LOT COM AT E 1/4 COR OF SEC 35 T 1N R	14W TH S 0›02'30" E TO S LINE OF SD SEC	TH W ON SD S LINE TO A PT E THEREON 60
5593002905	LOT EX OF ST COM AT NW COR OF SEC 30 T	1N R 13W TH S TO SW COR OF SD SEC TH E	TO SE COR OF SD SEC TH N TO NE LINE OF
5593002907	RANCHO LOS FELIS 72.39 MORE OR LESS ACS	BEING EX OF STS LOT COM AT SW COR OF	SEC 32 T 1N R 13W TH N TO NW COR OF SD
5593002909	RANCHO LOS FELIS LOT COM AT NW COR OF	SEC 6 T 1S R 13W TH E TO NE COR OF SD	SEC TH S TO A PT S 81›54' W FROM MOST N
5593003908	THAT PART IN GLENDALE CITY OF LOT COM SE	ON SW LINE OF S P R R R/W 924.56 FT	FROM MOST N COR OF LOT 6 TR NO 646 TH S
5581016900	LOT 3 TRACT NO 10781 AND LOT 26 BLK 6	TRACT NO 9367	
5581011901	TRACT NO 10781 LOT 7		
5581014900	TRACT NO 10781 LOT 4		
5581001904	LAND DES IN DOC 1990, 74-4-18 SUBDIVI-	SION OF RANCHO PROVIDENCIA AND SCOTT	TR AS PER BK 43 PGS 47 TO 59 OF M R
5587025900	LOT COM AT MOST E COR OF LOT 8 TR # 4040	TH SW AND FOLLOWING BDRY LINE OF SD TR	TO W LINE OF LOT 1 SD TR TH S 89›55'30"
5593002911	RANCHO LOS FELIS LOT COM AT STA 23 TH N	21›42'55" E TO N LINE OF SEC 25 T 1N R	14W TH E AND FOLLOWING BDRY LINE OF SD

GRIFFITH PARK: Legal Descriptions (CTD: LDL #4, #5, LAST). Los Angeles County Assessor, Property Data Sales, ITD. DS04-SBF abstract based on given map: Excel Format. 9 Apr 2008.

AIN	LDL #4	LDL #5	LDL Last Line
5581001001			
2443022901	LOT 6 TR NO 9213 TH N 39›42'58" W TO	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	PARK TRACT
5434016901	LINE OF RIVERSIDE DR TH NW THEREON TO NW	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 37
5434039901			
5581017900			
5581010900	S 92 FT TH E 100 FT TH S TO S LINE OF	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	PART OF N 1/2 OF SEC 35 T 1N R 14W
5581010901	FT TH N 92 FT TH W TO W LINE OF LOT 3	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	SEC 26 T 1N R 14W
5581010902	1330.90 FT TH S 1230.47 FT TO BEG POR	OF SE 1/4 OF SE 1/4 OF	SEC 26 T 1N R 14W
5581011900			
5581012900			
5581013900			
5581013901			
5581008900	12'27" W TO NW LINE OF SD LOT TH N 57›	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 5
5581001905	AND LOT 191		
5581001906			
5581005901			
5581005902			
5581006900			
5588036900	LINE OF SD LOT TO E LINE OF FERN DELL	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 115
5588001900	OF SD LOT TH S THEREON TO N LINE OF RED	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 114
5587025901	DELL DR AND SE BY LOS FELIZ BLVD PART	OF LOTS 2 AND LOT 3 BLK 82	
5594016901	SUB OF A PART OF THE RANCHO SAN RAFAEL	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	THE RANCHO SAN RAFAEL
5594016902	15" W TO NW LINE OF RANCHO SAN RAFAEL	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	T 1N R 13W RANCHO LOS FELIS
5593002904	LINE OF SD SEC TH S TO BEG PART OF	SEC 29 T 1N R 13W	
5593002906			
5593002908	54' E TO SD MOST N COR TH S 22›20'55" E	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	SEC 5 T 1S R 13W
5593002910	SCOTT TR TH NW AND FOLLOWING BDRY LINE	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	TO BEG PART OF LOT BLK 24
5593002912			
5593002913	MB22-190-191 TH N 72›25'40" E TO E LINE	OF SD SEC TH N TO NE COR OF SD SEC TH W	TO BEG PART OF SEC 1 T 1S R 14W
5593002917			
5593030903	PER F M 12325 TH S 51›30' E TO STA 12	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	13W RANCHO LOS FELIS
5593030904	08' E 150 FT TH S 89›52' W 373.99 FT TH	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOS FELIS
5581001903	PARK TRACT		
5593002902			
5434016900	SW ON SE LINE OF LOT 33 SD BLK 415.58 FT	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 33 BLK 3
5587027900	THEREON AND N ON W LINE OF FERN DELL DR	AND SW ON SE LINE OF RED OAK DR TO BEG	PART OF LOT 114
5434038901	GOLDEN STATE FRWY TH NW AND FOLLOWING SD	FRWY TO E LINE OF LOS FELIZ BLVD TH S	THEREON AND SE ON SD NE LINE TO BEG
5582001900			
5581026900	RADIUS EQUALS 65 FT 43.51 FT TH N 53›	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 9
5583025900	FT FROM NW COR OF LOT 1 BLK 15 TR	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	SEC 35 T 1N R 14W
5593002905	RO LOS FELIS PER F M 12325 TH NW THEREON	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	RANCHO SAN RAFAEL
5593002907	SEC TH E TO NE LINE OF RO LOS FELIS PER	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	PART OF SEC 32 T 1N R 13W
5593002909	COR OF TR # 9050 TH S 81›54' W TO A PT S	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	TO BEG PART OF SEC 6 T 1S R 13W
5593003908	71›46'06" W 169.34 FT TH S 73›26' W	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	TRACT NO 646
5581016900			
5581011901			
5581014900			
5581001904	LOT COM AT MOST S COR OF TR NO 9766 TH	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	THEREON TO BEG
5587025900	49.94 FT TH S 0›04'30" E 244.37 FT TH	SEE ASSESSOR MAPBOOK FOR MISSING PORTION	FELIZ AND OF LOTS 15 AND 17 LICK TRACT
5593002911	SEC TO BEG PART OF	SEC 25 T 1N R 14W	

ATTACHMENT C: Griffith Park Description

Summary

The largest interurban wilderness park in the United States, Griffith Park is a 4,218-acre City of Los Angeles public park located within the eastern edge of the Santa Monica Mountains, due northwest of downtown Los Angeles and adjacent to a 4.9 mile stretch of the Los Angeles River. Most of Griffith Park is a chaparral wilderness of rocky hills, canyons, and gullies with large portions of open, rugged natural landscape. Plant species within the Park include an abundance of coastal native trees, shrubs, vines, and herbs, and riparian vegetation, including small quantities of threatened Manzanita and Berberis species. Non-native specimens are also well-represented, including numerous eucalyptus and redwood specimens. Griffith Park features seven peaks that exceed 1,000 feet. These upper elevations provide panoramic viewsheds of the greater Los Angeles metropolis and the Pacific Ocean under certain circumstances. Likewise, Griffith Park's hilly, natural terrain is visible for miles, and this upper viewshed is accentuated by two of the City's most iconic treasures: City Historic Cultural Monument (HCM) No. 111: the Hollywood Sign and HCM No 168: the Griffith Observatory.

Throughout Griffith Park are lower lying areas that feature lawns, picnic areas, infrastructure buildings, various recreational and educational amenities, and previously declared City of Los Angeles HCMs . Some of these resources represent the City's early cultural history, including City HCM No.112: the Gabrielino Indian Site, which is the only archeological landmark in Los Angeles and City HCM No. 401: the 1853 Feliz Adobe, which is the oldest building within Griffith Park. Many of the buildings in Griffith Park are excellent examples of a number of architectural styles, including the Classical Moderne Griffith Observatory of 1935; the 1927 Spanish Colonial Revival Municipal Plunge; the Wilson & Harding Golf Club House of 1937; the 1930 Second Greek Revival Greek Theatre, and the Mid-Century Modern Girls' Camp by Jones, Emmons & Contini completed in 1952. City HCM No. 474: the "Little Nugget"

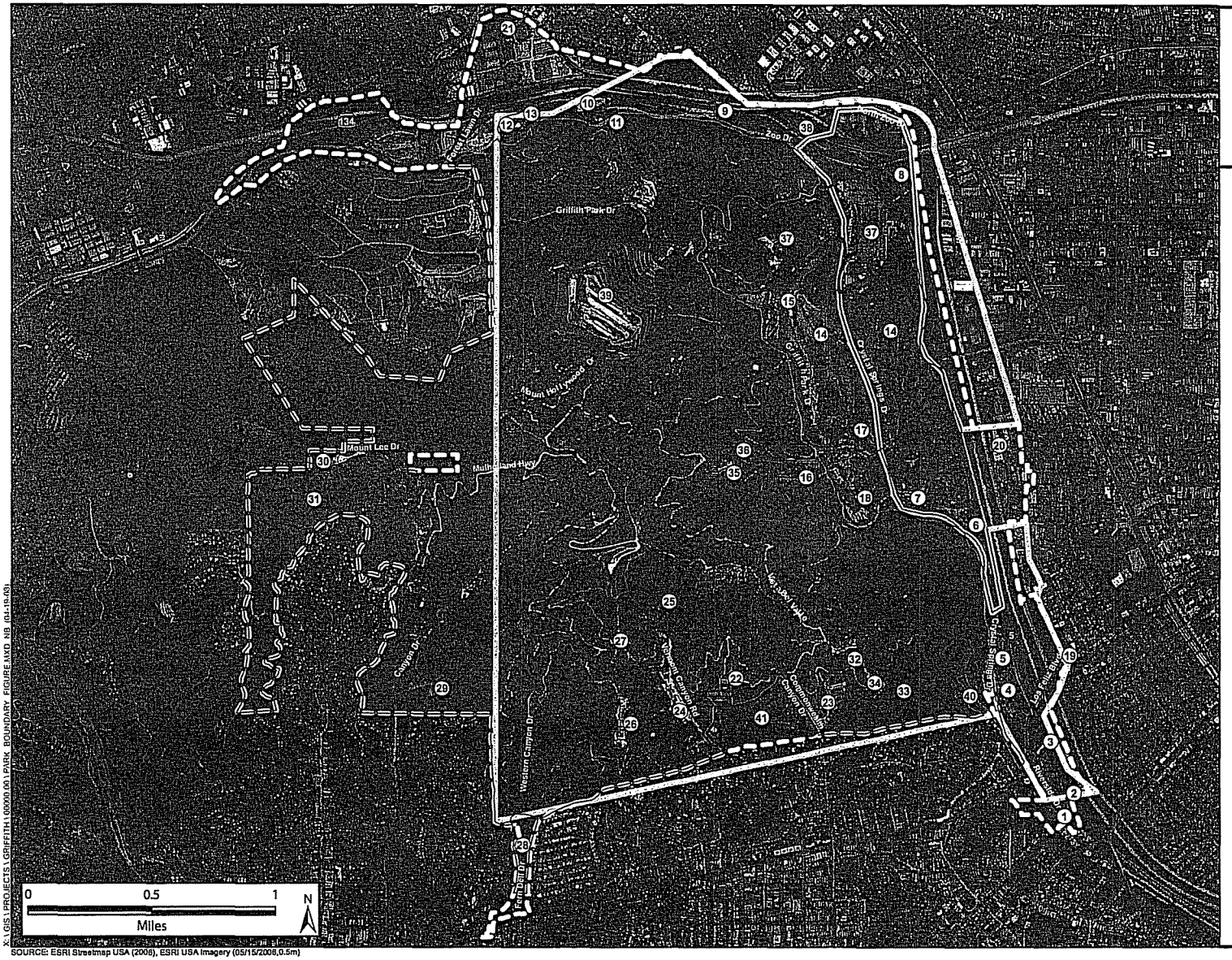
is a custom 1941 Union Pacific Club Car. Railroading as an educational, hobbying, and recreational activity is well represented in Griffith Park. Griffith Park also contains important objects and landscapes such as the Griffith Park Merry-Go-Round, Fern Dell, and abundant other examples within the terrain of rusticated Park Style infrastructure built by federal assistance programs in the 1930s.

Circulation through Griffith Park is achieved through 53 miles of hiking and bridle trails, in addition to various automobile roads which integrate and correspond to the natural terrain of the Park. The majority of the built amenities in the Park are located off of the auto roads, which themselves are primarily located at the lower lying perimeter areas of the Park. The primary entrance into Griffith Park is on Crystal Springs Drive, which enters the Park at its southeast portion near the Griffith Park & Southern Miniature Railroad (1947,1961), and the Pony Rides (1946).

Crystal Springs Drive is the primary auto route running parallel to the Park through its northeast, flatlands portion, changing its name briefly to Western Heritage Way as it passes the Autry National Center, and again changing its name to become Zoo Drive as it runs north of the Los Angeles Zoo. Both the later-era Autry National Center (1988) and Los Angeles Zoo (1966) are located within Griffith Park at its northeast portion, and are important cultural destinations for Los Angeles residents. The Los Angeles Live Steamers Museum and Travel Town Transportation Museum are present along Zoo Drive in the northwest portion of the Park. Griffith Park Drive runs through the hilly portion of the Park in a manner loosely parallel to Crystal Springs Drive, and located along it are the Wilson and Harding Golf Courses with a 1938 Clubhouse built by the Public Works Administration (PWA), the Boys' Camp, the Old Zoo, and Park Center with its various amenities. The Wilson and Harding Golf Courses are two of five municipal golf courses throughout the Park. Major automobile roads into the park accessed at the Park's southern portion include Vermont Canyon Road, which passes the Greek Theatre, the Bird Sanctuary, and leads to the Observatory, Fern Dell Drive, and Canyon Drive, which leads to the Hollywoodland Girls' Camp. Commonwealth Drive ends at a gateway into the park, yet this road is not open to the public.

The Los Angeles River serves as a historic boundary for the north and east sides of Griffith Park. Portions of Griffith Park are located north of the Los Angeles River, and these include amenities such as the Los Feliz Golf Course, North Atwater Park, the Griffith Park Equestrian Center, the Central Service Yard, the Bette Davis Picnic Area, and an open, undeveloped flatlands riparian area called the Pollywog. Additionally, a portion of Griffith Park is located east of the Crystal Springs Drive entrance, and includes amenities such as Friendship Hall, a former clubhouse for the Los Angeles Breakfast Club called the "Ranger House," the Municipal Plunge and the rest of the multi-resource Griffith Park Recreation Center. The following page is a GIS map highlighting areas and resources of particular historic sensitivity in addition to areas that have been altered. Appendix 4 is a spreadsheet with GPS points for the vast majority of the resources discussed in the description essay, including all of the features highlighted upon the attached map.

GRIFFITH PARK HISTORIC RESOURCES MAP



Non-Contributing or Altered Components
Historically Senistive Resources and Areas
Wilderness Area
Griffith Reservation
City of Los Angeles Park Boundary
1897 Park Survey Boundary

Historically Sensitive Resources and Areas:

1- Former Costume Workshop and Surroundings/ LA Shares Warehouse, 1961
2- Ranger House, c.1938
3- Municipal Plunge and Associated Buildings, 1927
4- Pony Ride, 1947 & Train Ride, 1947, 1963
5-1920's era DWP Building (I)
6-1920's era DWP Building (II)
7- Feliz Adobe, 1853, 1934 (City HCM No. 401)
8- Sycamore Grove
9- Riverside Drive Bridge, 1938
10- L.A. Live Steamers, 1956
11- Walt's Barn, 1950
12- Travel Town Transportation Museum (Collection), 1952-1962
13- "Little Nugget" Railcar, 1937 (City HCM No.474)
14- Wilson & Harding Golf Courses, 1923, 1924
15- Wilson & Harding Golf Clubhouse, 1937
16- Old Zoo Buildings, 1914- c.1937
17- Wilson Harding Turf Maintenance Facility, 1927
18- Merry-Go-Round, 1926, installed 1937
19- Los Feliz Cafe and Signage, 1948, 1956
20- Central Service Yard Administration Building, 1958
21- Former Cricket House, c.1933
22- Vermont Tennis Courts, c.1927
23- Nursery and Horticultural Center, 1927
24- Greek Theatre, 1930
25- Bird Sanctuary, 1922-c.1937
26- Griffith Observatory, 1935 (City HCM No.168)
27- Mt. Hollywood Tunnel, c.1927
28- Fern Dell Nature Area, 1914 -c.1937/ Gabrielino Indian Site (City HCM No.112)
29- Bronson Caves, c.1909-1920
30- Hollywood Sign, 1923, reconstructed 1978 (City HCM No.111)
31- Hollywood Sign Viewshed
32- 1930's era Stoppage Dam
33- Cedar Grove
34- Early Water Tower, c.1927
35- Bee Rock
36- Bee Rock Trail, 1903

The Wilderness Area is a Historically Sensitive Resource

Non-Contributing or Altered Components:

37- Los Angeles Zoo and Autry National Center, 1966, 1987
38- Freeways and All Associated Ramps, 1957
39- Toyon Landfill/ Reclamation Project, 1958
40- Marty Tregnan Golf Academy, 2000
41- Roosevelt Municipal Golf Course, 1966

X:\GIS\PROJECTS\GRIFFITH\00000.001\PARK_BOUNDARY_FIGURE.MXD JAB (01-19-06)

SOURCE: ESRI Streetmap USA (2006), ESRI USA Imagery (05/15/2006,0.5m)

SECTION 1: Built Recreation and Amenities

Introduction: How the Description is organized

The vast majority of the built recreational and educational amenities, along with most infrastructure related buildings and structures, are primarily located off of various named roads. Because of the scale of Griffith Park as a whole, these roads are used as the organizing device through which the description of built amenities proceeds. This description begins at the southeastern corner of Griffith Park along Riverside Drive, in front of what is considered the primary entrance into the Park itself: the Crystal Springs Drive entrance. The various resources as seen entering in and driving through the Park upon Crystal Springs Drive are then described. The road that is Crystal Springs Drive briefly changes names to Western Heritage Drive, before becoming Zoo Drive—all as one travels northwest upon this alignment, which is the primary road through the north portion of Griffith Park. The resources along Zoo Drive are described and where Zoo Drive crosses Griffith Park Drive just beyond the Travel Town Transportation Museum (Travel Town), at that point the resources associated to Griffith Park Drive are then described. This includes resources located just off of Griffith Park Drive that may have spur roads with different names, in which case the name of the spur road will be indicated along with the name of the primary access road that feeds it. The Griffith Park Drive resources are described in a manner moving northwest to southeast, completing a loop that ends near the Crystal Springs Drive entrance. After the Griffith Park Drive resources are described, those resources located in the small sections of the park due east and north of the Los Angeles River are described, in a manner moving from southeast to northwest parallel along the River.

Finally, the built resources along the southern portion of Griffith Park are described, and are done so in a manner moving generally east to west: Vermont Canyon Road (which feeds Commonwealth Canyon Drive), followed by Fern Dell Drive, itself followed by Canyon Drive. Unlike Crystal Springs and Griffith Park Drives that loosely parallel the northeastern curve of Griffith Park, the southern portion streets all enter Griffith Park in a manner perpendicular to the Park's southern boundary line. An arrow symbol (→) is used to describe the instances when one road either spurs off of another or changes name. Mt. Hollywood Drive and Vista Del Valle Drive will be described in the second section of the description, which will be primarily devoted to Griffith Park's trails, landscape, and various plant types, both indigenous and introduced. The last portion of this description discusses the various barriers, culverts, drainage channels, and other infrastructure components that are park-wide and are consistently integrated into the natural landscape.

Riverside Drive

The far eastern edge of Griffith Park is located upon either side of Riverside Drive due east of the Crystal Springs Drive entrance. Beginning east and moving

west, the portion of the Park off the north side of Riverside Drive features a mowed grass park area with mature jacaranda, pine, sweet gum, cypress and fir trees (Figure 1).



Figure 1: Landscaped area due south of the Shrine of Friendship Building. View E. Photo: ICF Jones & Stokes, March 2008

Just above this area is "The Shrine of Friendship," (Figure 2) a two-story, rectangular-plan, low-pitch side-gabled meeting hall done in a Modern Mission Revival design system. Friendship Hall has an arcaded front elevation topped by an arcaded clerestory. This building is the former headquarters for the Los Angeles Breakfast Club. Horseshoe embellished wrought iron, decorative light fixtures which date from c.1927 are located within the lower level arcade. The cladding of the structure is white stucco. This structure dates from 1965.

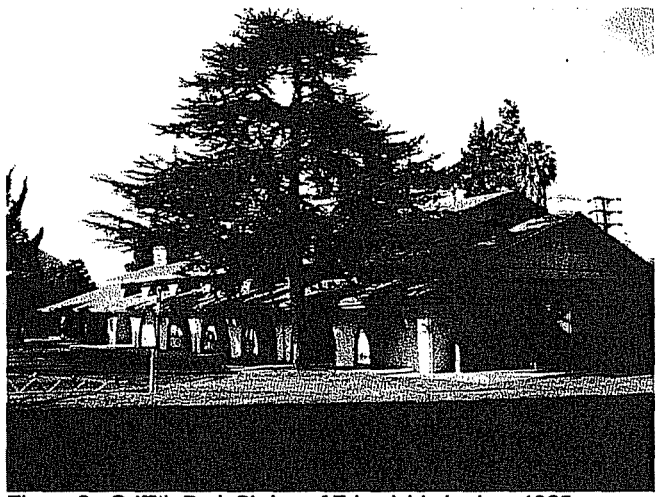


Figure 2: Griffith Park Shrine of Friendship Lodge, 1965. View N, Photo: ICF Jones & Stokes, March 2008

West of the Shrine of Friendship Lodge is a semi-circular landscaped area with mowed lawn and Ponderosa pine trees. Due northwest of this is a large parking area which itself contains mature pacfic bayberry, sycamore, and pine trees. Other mature tree specimens border this parking area in the area where it nears and parallels Riverside Drive (Figure 3). Many of these trees appear to be over 50 years old and are likely part of the original, pre-existing terrain. In the rear portion of the parking area is a grouping of portable trailers that is presently called the Griffith Park Adult Community Center.

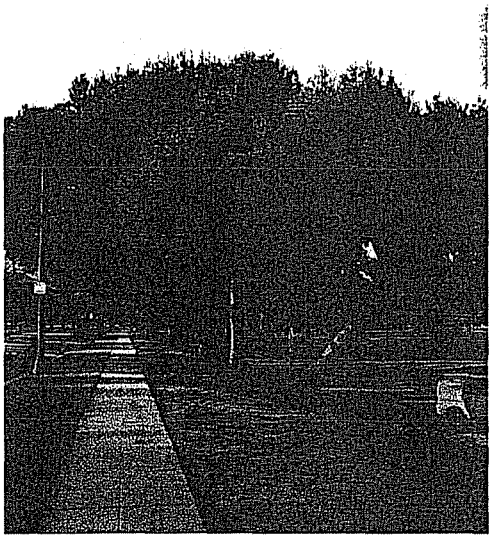


Figure 3: Griffith Park Recreation Center:
Landscaped Area paralleling Riverside Drive.
View W. Photo: ICF Jones & Stokes, March 2008

Within the northwest corner of this parking area just south adjacent the sound wall for the Interstate 5 freeway is an early, rectangular plan, one-story residence called the "Ranger House" (Figure 4) with wood shiplap siding, cornerboards, and low-pitch side gabling. The front entrance, which faces southeast, is elevated off the ground and is accessed by a concrete stairwell. Above the entrance is a small front facing pop-up gable. Four windows, including a grouping of three identical windows, are present at the front elevation. The rear elevation of the Ranger House features a centered, shed roofed pop-up with woodframe sixteen-unit glazing in a large, 8x8 squares. This building was a clubhouse for the "Breakfast Rangers," a group of avid horsemen within the Los Angeles Breakfast

Club. The Ranger House was constructed in the 1930s during a three-year period when the Breakfast Club was meeting at the Ambassador Hotel.

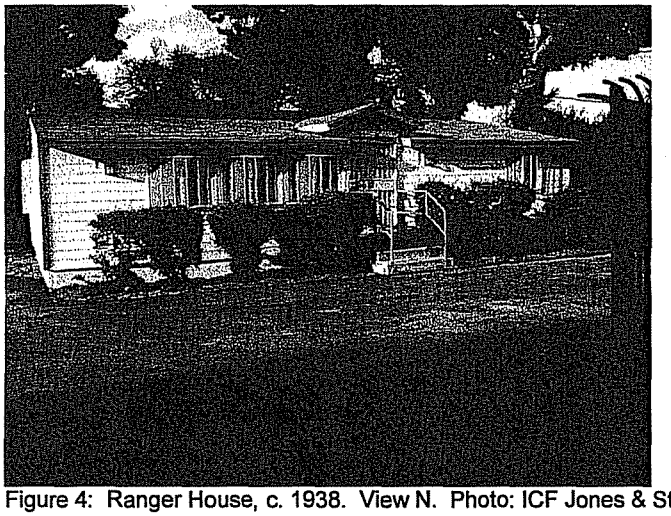


Figure 4: Ranger House, c. 1938. View N. Photo: ICF Jones & Stokes, March 2008

Griffith Recreation Center

West of the parking area in which the Ranger's House resides are two recent soccer fields (Figure 5), which run roughly parallel to the nearby U.S. Interstate 5 freeway. This was formerly an archery range.



Figure 5: Griffith Park Recreation Center: Soccer Fields, c.1990. View N. Photo: ICF Jones & Stokes, March 2008

Due southwest of the soccer fields, between them and Riverside Drive, is a landscaped front parking area, itself fronted by a strip of lawn with eucalyptus and other tree specimens adjacent to Riverside Drive. Adjacent directly above

these soccer fields is a set of three tennis courts, each with a green face and terra cotta trim (Figure 6). Each tennis court is surrounded by a chain link fence.

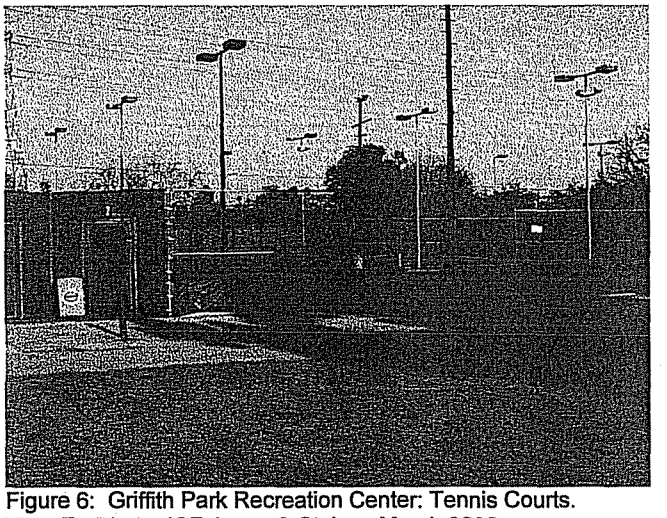


Figure 6: Griffith Park Recreation Center: Tennis Courts. View E. Photo: ICF Jones & Stokes, March 2008

Due south of these three affixed tennis courts is a Spanish Revival rectangular-plan, single-story, side-gabled tennis clubhouse completed c. 1927 (Figure 7). The roof of the structure is of red Spanish tile, and is underscored by wide, shaped rafter tails of wood. The front elevation of this building features an aluminum storefront entry door, a large picture window, and a roll-up metal door. The cladding of the resource is of thick, rough, hand troweled stucco. Wood lintel beams, currently painted over, are inset above the pedestrian entries within this resource. Inset within the side gabling at the west side-end of the building are two circular openings, one placed atop the other. Across this side elevation is also a flat roofed overhang that wraps around the southwest corner to the front elevation. The east side of this building features a later, circa 1946 Ranch style addition that is itself side gabled.

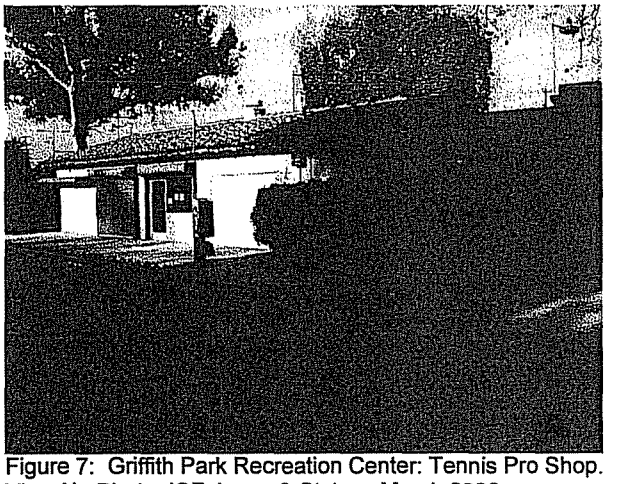


Figure 7: Griffith Park Recreation Center: Tennis Pro Shop. View N. Photo: ICF Jones & Stokes, March 2008.

Due northwest directly above the engaged set of three tennis courts and the tennis club facility are an additional eight tennis courts in two parallel rows of four. A separate tennis court, which appears to be the main court (Figure 8), is located just south, southwest of the group of eight tennis courts.

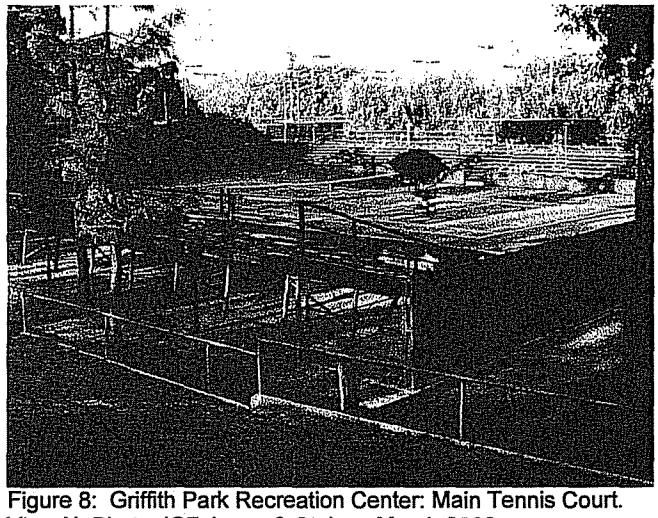


Figure 8: Griffith Park Recreation Center: Main Tennis Court. View N. Photo: ICF Jones & Stokes, March 2008.

This tennis court is acclimated in the same direction as the others, and features wood bleachers on either lengthwise side of it. The court itself is enclosed by a wood, shiplap sided fence roughly 4 feet high. Both this fence and the bleachers are painted a dark evergreen. This tennis court is inset below a landscaped berm between it and Riverside Drive. This lawn covered berm has mature tree specimens, including canary pine.

Due immediately northwest of this court is a single-story square-plan tennis reservations kiosk (Figure 9), circa 1959. This small kiosk has a low-pitched pyramidal shaped, asphalt shingle roof with a cupola style, flat-sided vent atop its apex. The roof has wide eaves on all four sides that extend well past the front service counter, which runs full length and is presently enclosed by a metal security mesh. Horizontally acclimated, full-length louvered vents traverse the length of all four sides of this building in the area just below the roof and directly above the service counter. The building is clad in smooth stucco, and is beveled inward at all four sides.

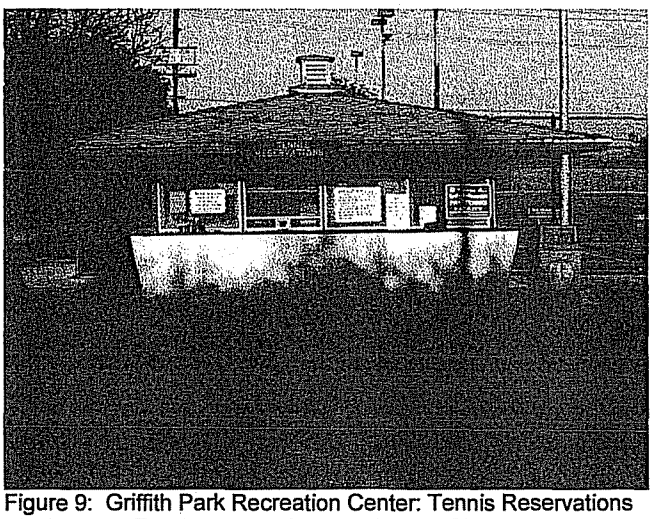


Figure 9: Griffith Park Recreation Center: Tennis Reservations Kiosk. View E. Photo: ICF Jones & Stokes. March 2008



Figure 10. Griffith Park Recreation Center: Park activity area due N of Tennis Courts. View SW. Photo: ICF Jones & Stokes, March 2008

Above the tennis courts area is a section of rolling park space consisting of mowed lawn and mature tree specimens (Figure 10). Above these sections of green space are the "Plunge" Swimming Pool and its associated buildings (Figure 11). This complex is acclimated north-south, and is fronted by elm, bottle brush trees in addition to a large rubber tree. The pool house itself is a two-story rectangular-plan, side-gabled Spanish-style building with thick, troweled stucco exterior walls, and Spanish tile roofing. Decorative Spanish tile and decorative masonry pattern window baffles are part of the design. The front, south facing elevation of the pool house features a large, centered, two-story arch with two window bays on either side. At either side of the front elevation is a tall stucco wall with periodic piers each with a decorative cap. The front and rear elevations of this building consist of five bays—at the rear elevation the building features three arches at the lower level with a window bay at each outer level.

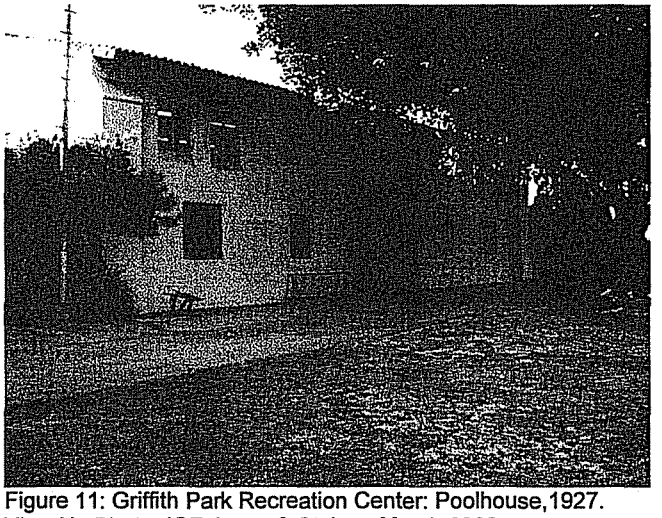


Figure 11: Griffith Park Recreation Center: Poolhouse,1927.
View N. Photo: ICF Jones & Stokes, March 2008

The two symmetrical *corredors* protruding from either side of the pool house each consist of a row of freestanding arches covered with a wood trellis. The rear of the pool house opens up onto the pool itself: a large-scale rectangular plan pool. This pool is the largest public pool in the City of Los Angeles (Figure 12).

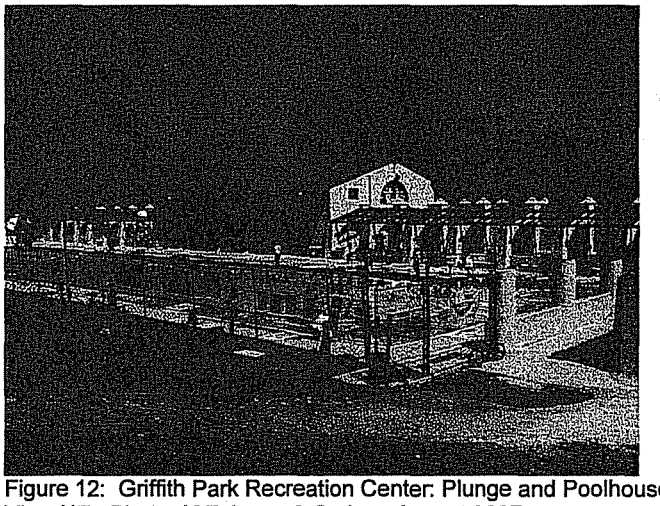


Figure 12: Griffith Park Recreation Center: Plunge and Poolhouse, 1927.
View NE. Photo: ICF Jones & Stokes, August 2007

Due south of the pool and perpendicular to the pool house is a rectangular plan 4 x 1 bay, single-story Spanish-style building that presently serves as a day care center (Figure 13). This building has Front gabling, Spanish tile, and stucco walls. The entry is topped by a transom window, and is located at the south elevation of the building. Exposed rafter tails, a stucco chimney with a masonry apex cap, an arch window at the side elevation, and inset peep-hole attic vents are part of the design.

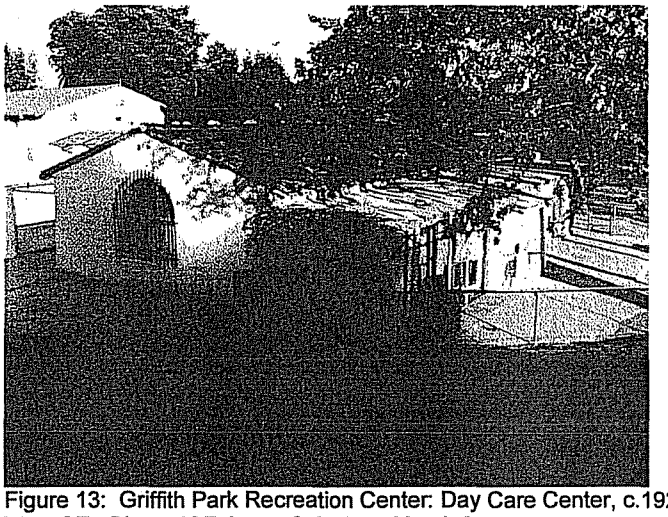


Figure 13: Griffith Park Recreation Center: Day Care Center, c.1927.
View SE. Photo: ICF Jones & Stokes, March 2008

The immediate setting surrounding the pool house complex is a low, rolling landscape of mowed lawn and mature Chinese elm and sycamore trees (Figure 14). The pool house complex as a whole is slightly lowered into the landscape from the surrounding streets, including Riverside Drive. Low hills and berms buffer the complex at the edges where it meets the street.

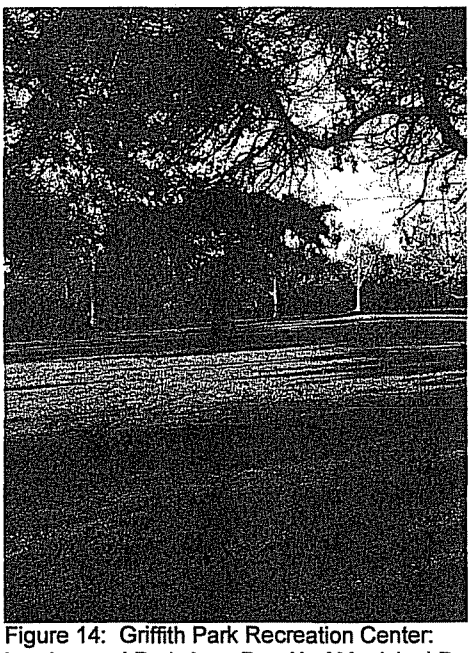


Figure 14: Griffith Park Recreation Center:
Landscaped Park Area Due N of Municipal Pool.
View E. Photo: ICF Jones & Stokes, March 2008

Across Riverside Drive due southwest of the pool complex is the 1940 William Mulholland Memorial Fountain, which is City of Los Angeles Historic Cultural

Monument #162. The fountain is technically not in Griffith Park, but is upon DWP owned property.

Within the Griffith Park Boundary, due south of the Mulholland Fountain along the west side of Riverside Drive is the "LA Shares" charitable facility warehouse (Figure 15).

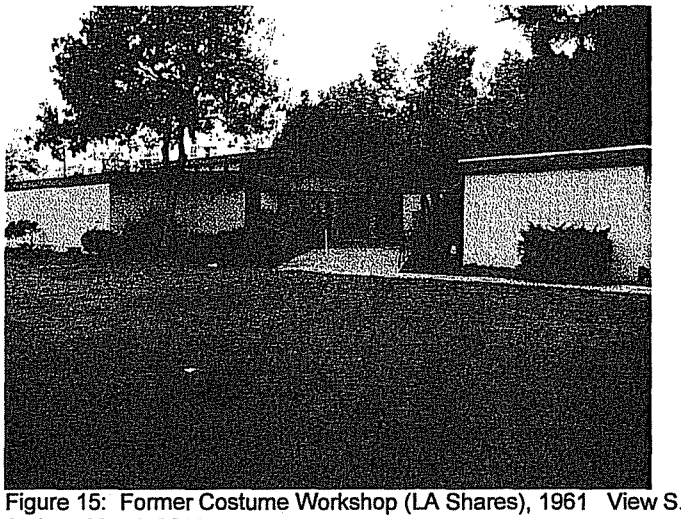


Figure 15: Former Costume Workshop (LA Shares), 1961 View S. Photo: ICF Jones & Stokes, March 2008

The primary building of LA Shares is an expressionist Modern design. The floorplan is hexagonal. Two wrap-around extensions are affixed to the hexagonal shaped building in a helical pattern, and a hexagonal-shaped concrete patio and flagpole program is present immediately off of Riverside Drive. Exposed wood beams protrude out around the base of the building. This facility is located in a flat area nestled into a hill just south of it. The LA Shares facility is surrounded by mature elm, cypress, sugar pine and eucalyptus trees. The parking lot for the facility is itself six sided; an extruded hexagon. The hexagon motif is a character defining feature of this resource and the surrounding landscape program. A sidewalk with crooks identical in angle to the building itself connects the parking lot to the building. This building was the former Costume Workshop for the Griffith Park Children's Theater, which was located immediately north of the Workshop and burned in the late 1980s. This resource and the Children's Theater were designed by the noted Modernist firm of William L. Pereira and Associates.

Crystal Springs Drive

The Pony Rides, The Miniature Train, and the DWP Structure

As Riverside Drive crosses Los Feliz Boulevard due west, it becomes Crystal Springs Drive: the primary entrance into Griffith Park proper. Driving northwest on Crystal Springs Drive, the southern portion of this entrance features a large

corner area of mowed lawn canopied with cedar and willow trees. At the northern portion of this primary entrance, within a landscaping that appears relatively recent, is a bronze statue upon a square base of Colonel Griffith Jenkins Griffith that was finished in 1996 by the sculptor John Bickart and was a gift of the Griffith J. Griffith Charitable Trust (Figure 16). Behind this statue is a biomorphic-shaped planter of single course irregular boulders of various colors set in concrete. Within it are specimens of miniature palm, ferns, and flowers.

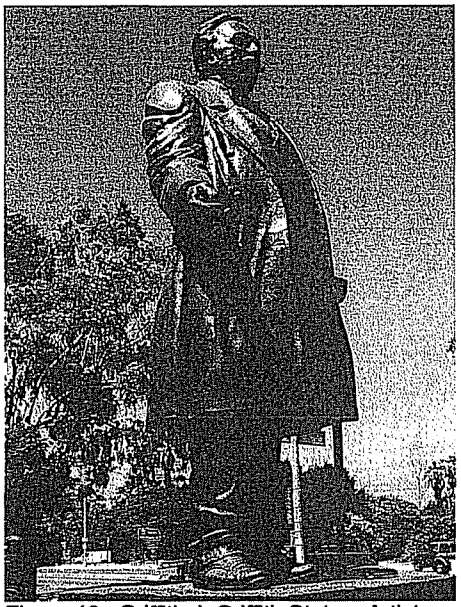


Figure 16: Griffith J. Griffith Statue, Artist: John Bickart, 1996. View NE. Photo: ICF Jones & Stokes, August 2007

Continuing northwest upon the Crystal Springs alignment into Griffith Park, most of the built recreational amenities are located along the northern shoulder of the road. The sidewalk along Crystal Springs Drive adjacent to this grassy area features irregular course boulders laid flat into concrete in the Park style. Driving westward, a grouping of rectangular plan, one- and two-story metal-clad, auxiliary sheds buildings is present behind mature tree specimens. Adjacent to these buildings are fenced holding facilities for horses and the ponies that are presumably used as part of the nearby pony ride. Further westward upon Crystal Springs Drive are concessions and other buildings related to a miniature train ride and a pony ride. The pony ride features a square plan, hipped roof waiting canopy (Figure 17), acclimated north-south, supported by 4x4 painted wood columns. The roof of this canopy is clad in asphalt shingle, and is underscored with painted wood fascia. The wood plank rafters within the canopy are exposed. Fixed, pipe metal stanchions are present beneath this waiting canopy.

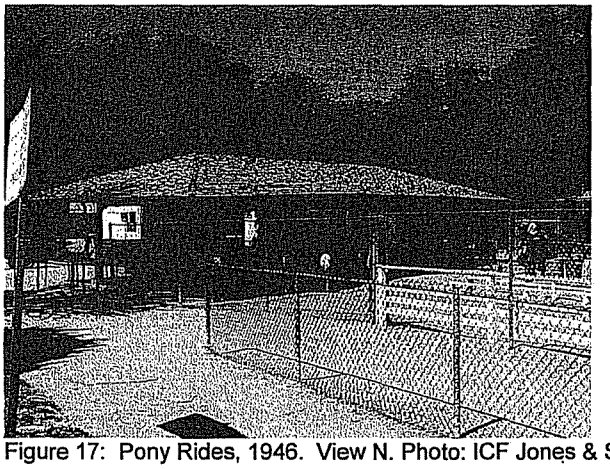


Figure 17: Pony Rides, 1946. View N. Photo: ICF Jones & Stokes, August 2007

Due immediately east of this canopy is an oval-shaped pony track with wood plank fences. Due immediately west of the waiting canopy is a small, square-plan, single-story ticket kiosk with an asymmetrical, side-gabled roof (Figure 18).

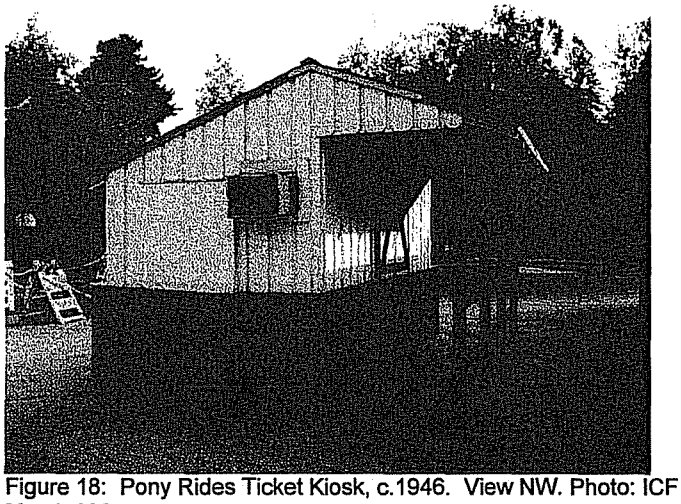


Figure 18: Pony Rides Ticket Kiosk, c.1946. View NW. Photo: ICF Jones & Stokes. March 2008.

This kiosk features an open full-length ticket counter at its east elevation that is inset into a small porch supported by wood columns at its outer corners. The kiosk has a painted wood wainscot across the side and rear elevations, a door at its rear elevation, and a covered window at its south-side elevation. The gable ends are clad in scalloped vertical boards spaced slightly apart from one another. The service counter within this kiosk is covered by a pair of barn style board and batten shutters. The rear, west facing door of this kiosk also features this pattern upon its door. Immediately north of the waiting canopy and the pony track is a small, circular "pony-go-round" covered with a circular canvas canopy supporting a metal pipe framework. Just south of the waiting canopy and pony

Ride

oval track are a row of three single slab, unpainted concrete benches with rounded sides. A star pattern that was the insignia of the 1984 Los Angeles Olympics, underscored by the five Olympic Rings, is embedded into the sides of these benches (Figure 19).

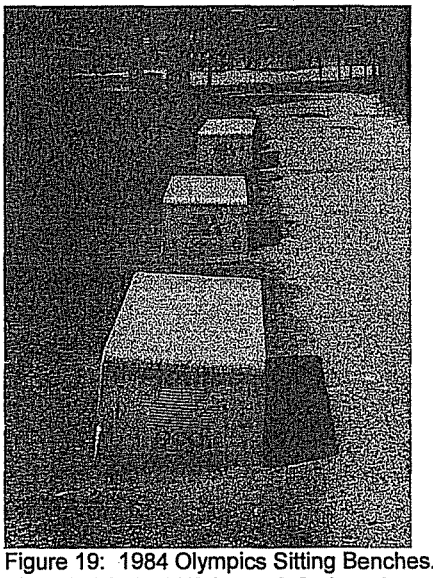


Figure 19: 1984 Olympics Sitting Benches.
View N. Photo: ICF Jones & Stokes, August 2007

Due immediately north of the Pony Rides complex is a single-story, rectangular-plan refreshment stand and bathroom structure constructed of running course cinder brick (Figure 20). The walk-up service area is three bays wide set back into the building. Each bay features a small service window, and is glass infilled, underscored by a scalloped, vertical board wainscot. The restroom facilities are located at either side of the building. The rear portion of the building is covered with a shed roof, and the frontal portion is flat roofed. All the roofing is underscored with fascia boards. Upon the roof of the building are a backlit sign and row metal panels with an embossed diamond design running lengthwise behind the sign.

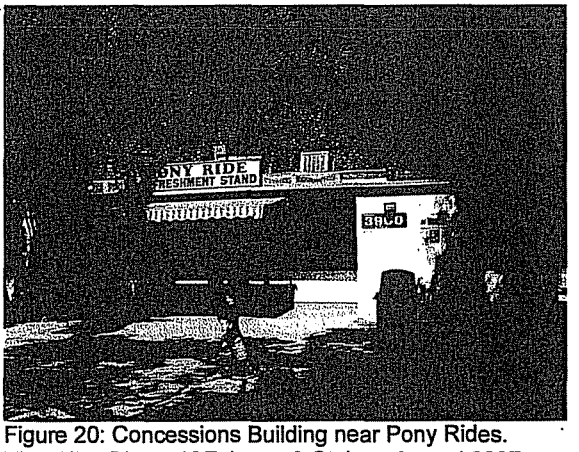


Figure 20: Concessions Building near Pony Rides.
View NE. Photo: ICF Jones & Stokes, August 2007

Ride

Griffith Park & Southern Railroad Train Complex

Located off of Crystal Springs Drive, just northwest of the pony rides complex is a grouping of buildings and structures dedicated to the Griffith Park & Southern Railroad miniature train ride. The primary building among these is a 1.5-story square-plan ticket kiosk with false bevel wood siding and a cross-gable roof clad in staggered course asphalt shingle (Figure 21). The front entry faces south, and is located off-center its elevation adjacent a bay window consisting of four window bays each with 4/4 woodframe double hung sash. A similar sash is present upon the side elevations of this building. The building features a variety of eclectic revival elements including half-timbering, in the gables, elongated decorative roof brackets, and beadboard wainscots. An extended full-length wraparound eave with visor roof and exposed rafter tails is present across all four elevations. Directly behind the themed ticket kiosk is a side gabled loading canopy of rectangular plan supported by wood, T-post and beam columns affixed directly to the canopy itself. A metal bell is affixed to the east-side elevation beam. Customers riding the train enter onto the train below this canopy.

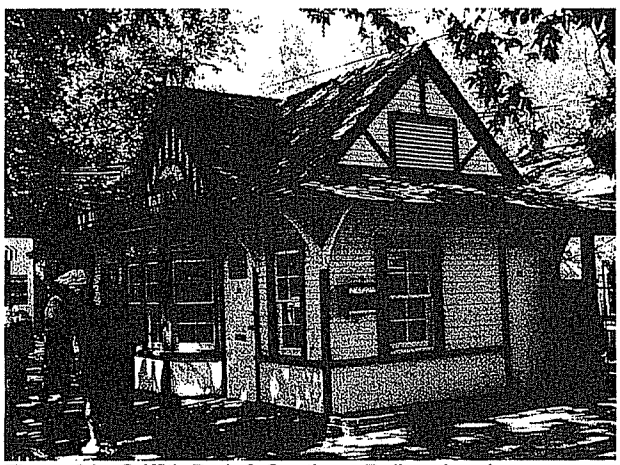


Figure 21: Griffith Park & Southern Railroad and Associated Buildings. View NW. Photo: ICF Jones & Stokes, August 2007

A small scale rectangular plan pitched roof concession stand is immediately east of the entrance canopy. This concessions stand has a single panel door at its side-elevation and a full-length service window at its front elevation. The roof is underscored with wood rafter tails.

Due northeast of the canopy in the middle area of the train track right of way is a ¾ scale water tower supported by cross-braced wood columns and two lintels. The water tower tank is circular and is clad in four wide bands of standing seam metal. The roof upon it is a circular, low-pitched roof with a centered peak. A measuring gauge numbered one to 10 is affixed to the side of the tank. A long metal pour spout of the type seen on watering cans is affixed to the side of the tank, presumably for its novelty value. Directly behind this building is the train ride itself, set within a landscape dotted with various ¾ scale buildings and structures. These themed structures include: a rectangular plan clapboard train storage shed, three bays long and one bay wide, with 4/4 woodframe double hung

windows with a pair of arched doors of painted wood board. A full length lean-to is affixed to the side of this structure. One track spur runs inward through each of the doorways. Just northeast of the train storage structure is a small, rectangular plan hut with false bevel cladding, cornerboards, and a tall, steep pitched front gable with fascia boards and asphalt shingles. Two doors are present at the east-side elevation. The front and east-side elevations each feature off-center 8-unit glazing windows that meet near the southeast corner of the structure.

The train tracks themselves are narrow gauge, with wood ties underscoring the tracks themselves. The path of the miniature train is a roughly 600' long narrow oval The alignment moves southbound behind the pony rides to a point just north of the landscaped area at the front entrance to Griffith Park at the northern shoulder of Crystal Springs drive. At this section, the train route turns eastbound and then winds back up in a northwestern-western direction parallel to Los Feliz Boulevard and then against the southbound Interstate 5 off ramp from Griffith Park. Where the right of way crosses behind the pony rides, there is a miniature train signal of the type commonly seen on typical roads. This signal features a vertical metal pole on which are two symmetrical red lights, a white "X" sign that says "railroad crossing," and a red- and white-striped arm that lowers when triggered. Where the train runs against Los Feliz Boulevard, it crosses over a miniature Pratt truss bridge (Figure 22) with diagonal members of cable and vertical members of metal column. This bridge, which is four full bays wide with an additional half bay at either end, is only slightly elevated off the ground, and is constructed entirely of metal. Within the inner circle of the train's oval path are numerous mature tree specimens, mowed lawn, and various mature cactus and succulent specimens.

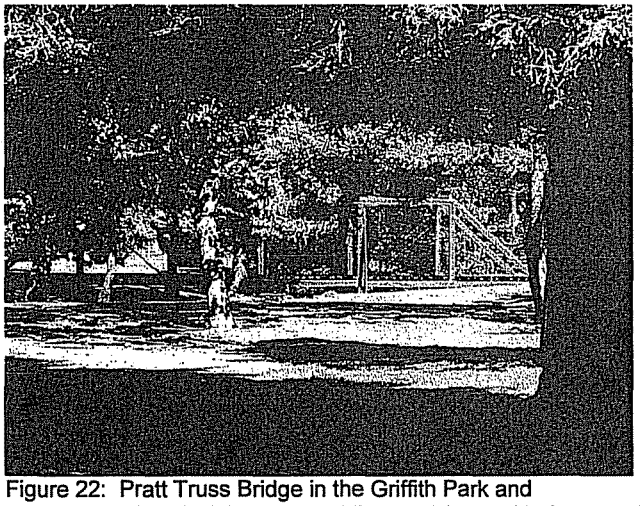


Figure 22: Pratt Truss Bridge in the Griffith Park and Southern Railroad Right of Way. View E. Photo: ICF Jones & Stokes, August 2007

Along Crystal Springs Drive in the area just above the miniature train complex is a c.1926 City infrastructure building (Figure 23). This building is a one-story, rectangular-plan, side-gabled building with red asphalt shingle, and Colonial Revival elements. The centered entry to the building is accessed by a set of three

concrete stairs, faces southwest, and is surrounded by a quoin-like articulated masonry molding around the doorframe. The jack arching above the door is slightly peaked. A 1/1 wood frame double hung window covered with a metal security screen is also present at the front elevation, as are two decorative modillions at the upper corners. Molding is present across the front and rear elevation, and it forms gable returns at the side of the structure.

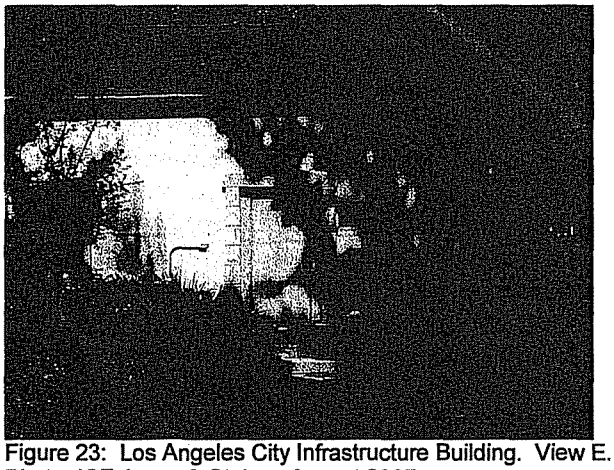


Figure 23: Los Angeles City Infrastructure Building. View E.
Photo: ICF Jones & Stokes, August 2007

The Crystal Springs Picnic Area, Pote Field, Ranger's Station, and Visitor's Center

Moving northwest along Crystal Springs Drive, the next cluster of visible built amenities, located off of the east shoulder of Crystal Springs Drive, is the Picnic Area and Pote Field, the Rangers Station, and other structures included therein. The Crystal Springs Picnic Area and Pote Field are located immediately off Crystal Springs Drive roughly 1.5 miles northwest into Griffith Park due north along Crystal Springs Drive. This picnic and ball field area includes other buildings, some of which serve an infrastructure function. The entirety of this complex and its associated resources is set below grade from Crystal Springs Drive and is separated from it by a continuous berm. The first of these buildings, which is due north on Crystal Springs Drive, is a rectangular plan, City of Los Angeles Department of Water and Power powerhouse building that dates from the 1920s (Figure 24).

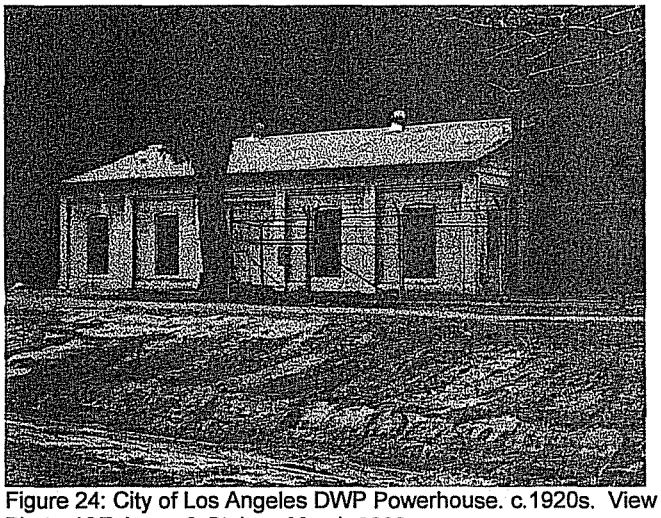


Figure 24: City of Los Angeles DWP Powerhouse. c.1920s. View SE.
Photo: ICF Jones & Stokes, March 2008.

Constructed of concrete, this building is side gabled and is five bays long by three bays wide. Each bay is a large inset panel with molded surrounds. Most of the bays feature large 1/1 window covered with wire security and topped with low arching.

Due east/northeast of this structure is a single-story, square-plan building that is similar in design to a Minimal Traditional residence (Figure 25). This building has a low, pyramidal roof, clapboard baseboards, and a symmetrical front elevation with a single panel wood door and 6/6 woodframe double hung windows at either side of it. This structure was a restroom facility relocated from the adjacent picnic area that was redeveloped in the 1980s.

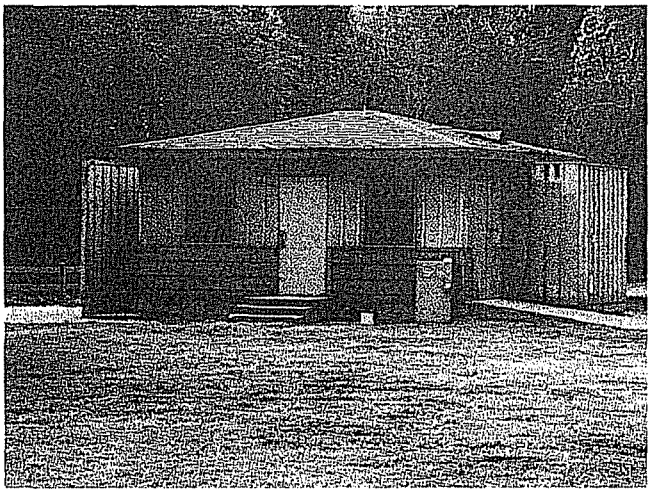


Figure 25: Restroom building, c.1948. View SE. Photo: ICF Jones & Stokes, March 2008.

Immediately west of the DWP switching station is a grouping of buildings that appear to date from the late 1950s of a complex formerly called the "Pettigrew" (Figure 26). The Pettigrew complex is immediately below Crystal Springs Drive and features three buildings each with a low pitch shed roof, wood clapboard cladding, and fascia boards.

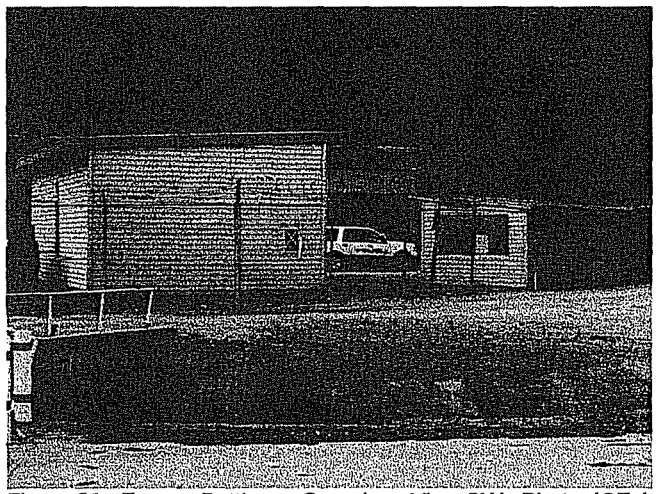


Figure 26: Former Pettigrew Complex. View SW. Photo: ICF Jones & Stokes, March 2008.

One of these buildings is a long, single-story building that is four bays long by one bay wide. At its rear elevation, these three bays feature four unit fixed wood frame windows. The second building, located adjacent north the previous, is considerably smaller than the first and is of a single-story rectangular plan and is two bays long by one bay wide. At the northernmost portion of the Pettigrew is a two-story clapboard-clad, rectangular plan building with wood fascia boards. The Pettigrew complex was originally an educational complex to teach grade school children about animal life. A two-story flat-roofed, corrugated metal open shed, a recent addition, is located immediately south of the Pettigrew buildings. Just north of the Pettigrew complex is a single-story, rectangular-plan front-gable-forestation building clad in painted corrugated metal with two garage bays at its north-west facing front elevation.

East of the Pettigrew is an open lawn covered area with mature sycamore trees. In the center of it is a fire circle made of boulders. A single-story complex of recent, metal clad shed buildings serves as a fire station and is located adjacent the picnic area. Due immediately north of the Pettigrew complex is a large grouping of picnic tables atop a large concrete pad in the shape of a trefoil. Each of the picnic tables is a single, folded piece of painted concrete with round edges. The benches that accompany them are of the same design. This picnic area was developed in preparation for the 1984 Olympics. The northern and eastern portion of the Crystal Springs area is a park setting with mowed lawn, narrow blacktopped streets, and numerous mature sycamore, elm, fragrant ash, eucalyptus and other tree specimens.

Low, rolling, mowed lawn hills are part of the design and this picnic area continues north and westward up to the 5 freeway, to which it runs parallel for a couple hundred feet. Within this portion of Griffith Park, the 5 freeway is often baffled by a row of eucalyptus trees, and is elevated above the grade of the park. Present in the middle of the Crystal Springs Picnic Area is a bathroom building that dates from c. 1951 (Figure 27).



Figure 27: Crystal Springs Picnic Area restroom structure, c. 1951. View NE. Photo: ICF Jones & Stokes, March 2008.

This building is of rectangular plan with cinder brick construction with a framed vertical-lap siding. A wood, wraparound louvered screen is used for ventilation and serves as a clerestory. The structure's roof is gabled and is underscored with long, extended eaves. The rear/ upper portion of the picnic area arcs northwest in a manner parallel to the 5 freeway, which serves as the northern boundary for this entire area. This upper picnic area features additional picnic benches of the design prior described and also a sand-covered volleyball court. Where it meets the road, the entire border of this picnic area is lined with either repeating wood posts with chamfered tops or is lined with old telephone poles laid horizontally at the shoulders of the road. The picnic area does not abut the berm that supports the 5 freeway, though it does closely parallel it. Running directly parallel against the 5 freeway is a continuous dirt equestrian trail that doubles as a jogging path. Just west of the Pettigrew and the southern portion of the picnic area is a baseball diamond called Pote Field (Figure 28), the entirety of which is lined with a tall chain link fence.

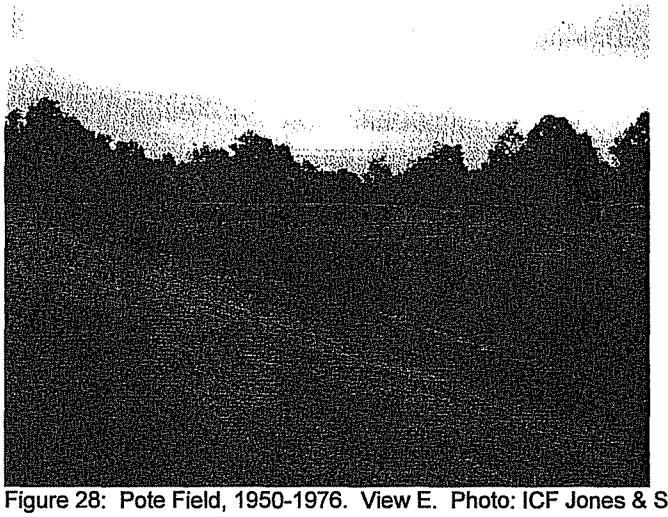


Figure 28: Pote Field, 1950-1976. View E. Photo: ICF Jones & Stokes, March 2008.

The taller, chain link backstop of this baseball field is located at the northwest corner of the field and it faces southeast. Wood bleachers are present at either side of it, and are inset in front of a roughly 13' tall grass berm that runs along the first and third base sides of the field, and gives Pote Field the impression of being sunken into the ground. Pote Field was originally installed in 1950. In 1976, the ball field underwent many renovations and improvements. The original materials and construction from1950 is non-extant. Immediately southeast of Pote Field just outside the fence of the left field portion is a rectangular-plan, single-story, 1951 Ranch-style "Field House & Comfort Station" of painted, running course brick and overlapping gabling (Figure 29).

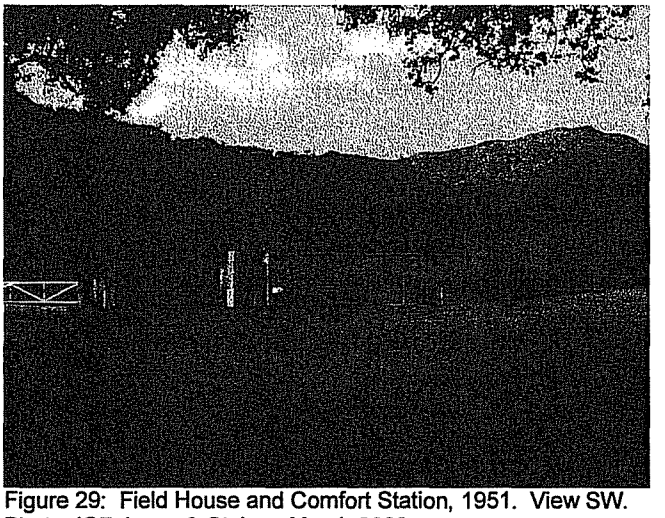


Figure 29: Field House and Comfort Station, 1951. View SW.
Photo: ICF Jones & Stokes, March 2008.

The building features extended eaves and large exposed wood rafter tails with rounded ends. Aside from the restrooms, there are two entries into this structure and each is covered by a small pitched roof overhang that is supported by untreated tree trunk columns. A roll-up metal garage door is present at its south

elevation. Symmetrically placed men's and women's restrooms are present at either end of the east elevation, as is a ribbon-row of seven bays each with jalousie windows. Part of the design are 1/1 horizontally acclimated windows and paired casement windows. Due northwest of Pote Field, the grade rises behind the berm running east-west along the first base line. Behind this berm is a single row of blacktopped parking spaces. Beyond Pote Field due northwest and paralleling Crystal Springs Drive is a series of structures primarily used as both a Visitors Center and Ranger Station.

Ranger Station and Visitor's Center Area

The area of Griffith Park devoted to the Ranger Station and Visitor's Center is located just off Crystal Springs Drive due immediately west of Pote Field. The first of these structures, which is closest to Crystal Springs Drive, is the "Adobe of the Ranch Los Feliz" (Figure 30). This adobe structure is of rectangular plan with thick, adobe walls, and a cross gabled roof clad in Spanish tile. The structure is of the Spanish Revival design system. The structure features woodframe multi-unit windows that are, like the doorways, recessed into the deep adobe walls. Banana trees and birds of paradise are present at the south-facing front elevation. The western portion of the front elevation is a 3-bay, front gabled unit with a decorative attic vent of square brick with large openings. The eastern portion of the front elevation contains the front entrance, is side gabled, and is of four window bays in addition to the entry. At either shoulder in front of the entry is a low solid adobe balustrade. Upon the northern balustrade is an early decorative wrought iron light pole with lantern fixture. A mowed grass front yard is present in front of this building. Within this front yard is a recent planter of boulders in concrete topped by a cap of flat, header course bricks. Within this planter are flowering bushes and recent signs that read "Park Ranger Headquarters" and "Griffith Park Visitor's Center." This building, which underwent a substantial renovation in the 1940s, dates from 1853 and is the earliest building in Griffith Park.



Figure 30: Feliz Adobe, 1853, exterior renovation in 1940s.
View NE. Photo: ICF Jones & Stokes, March 2008.

Sunken behind the Feliz Adobe is a square plan, single-story Ranger Station Visitor's Center complex with smooth stucco cladding and a flat roof. This structure, which was completed in 1980, is done in a Modern style. The roof is underscored by an oversized, painted, rectangular box eave that wraps around all four elevations. The entrance to the Visitor's Center features a pair of aluminum shop doors. Five bays of bronze framed pairs of casement windows are also present at the front elevation that faces southwest. Directly in front of the Visitor's Center is an enclosed patio with floor of concrete and also of an inlaid brick pattern. A wood trellis is present at the northern portion of this patio. A tapered steel flagpole is present in the middle of this patio, which is enclosed by stucco walls and partitions roughly 8' tall. Various fired ceramic decorative panels by the artist Elaine Katzer and Biologist Judith Hopkins are present along the walls inside the patio (Figure 31).

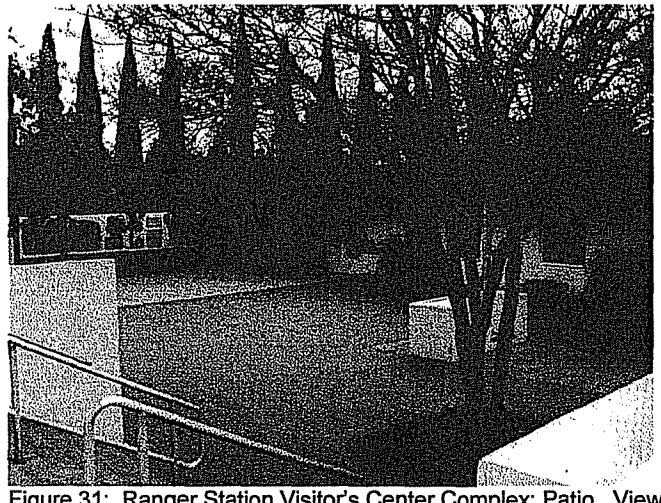


Figure 31: Ranger Station Visitor's Center Complex: Patio. View NW.
Photo: ICF Jones & Stokes, March 2008.

The flagpole base is of an abstracted series of planes, which also surround a minimalist style painted wood bench within the patio. Due east of the Visitor's Center is a small, rectangular plan building of the same design as the Visitor's Center. This structure is acclimated northeast to southwest. Its entry faces north, is recessed, and features a pair of single panel painted metal doors topped by a metal transom. An open concrete floored picnic area with concrete picnic tables is present between the Visitor's Center and its auxiliary building to the south of it.

Across a two-lane driveway due northeast/east behind the Visitor's Center is a rectangular plan single-story front gabled double-wide portable building, which serves as the Park Ranger administrative offices. The sides of this building are clad with scored plywood siding and the roof is of rolled asphalt shingle. Seven bays of aluminum sliding windows, each with a simple wood surround, are present at either side of it. The front elevation features a metal shed roof canopy overhang. The front entry beneath it features a pair of metal doors with a single glass panel at each upper portion. As Crystal Springs Drive continues northwest,

through the Wilson-Harding Golf Course, it then turns east and changes name to Western Heritage Drive.

Western Heritage Drive

Auxiliary area

At the south shoulder of Western Heritage Drive is a large, semi-circular blacktopped parking area, which is but one component of a larger blacktopped area that contains a variety of permanent and temporary structures that appear to be for educational, auxiliary, and support uses for the park. These buildings include the Griffith Observatory Reservations Center, the Griffith Park Visitor Services Warehouse, three long 1960s era rectangular plan school buildings, three recent portable structures, and two large open storage areas that are enclosed with chain link fencing, located at the southern and eastern perimeters of the property. The above mentioned school buildings are part of the Griffith Park Zoo Magnet School. All of these buildings and their associated resources appear to have been completed after the period of significance (1896–1957) for the park.

Western Heritage Drive → North Zoo Drive

Western Heritage Way passes through the Autry National Center to its east and the parking lot of the Los Angeles Zoo to the west (Figures 32 and 33). Both resources, which are destinations for both local residents and tourists, post-date the period of significance.

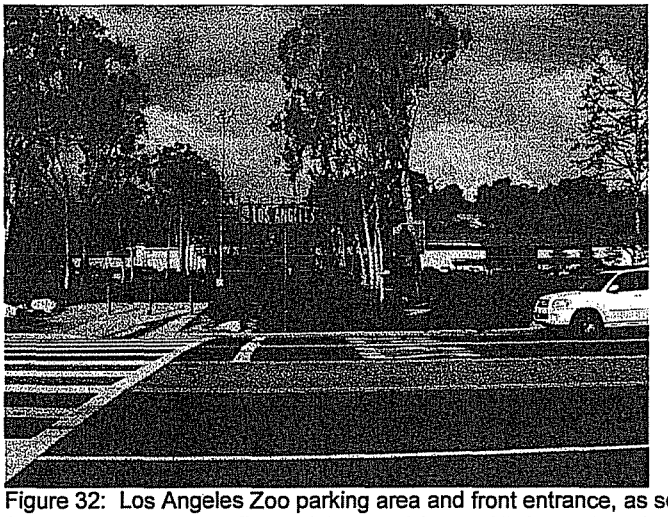


Figure 32: Los Angeles Zoo parking area and front entrance, as seen from Western Heritage Drive. View W. Photo: ICF Jones & Stokes, March 2008.

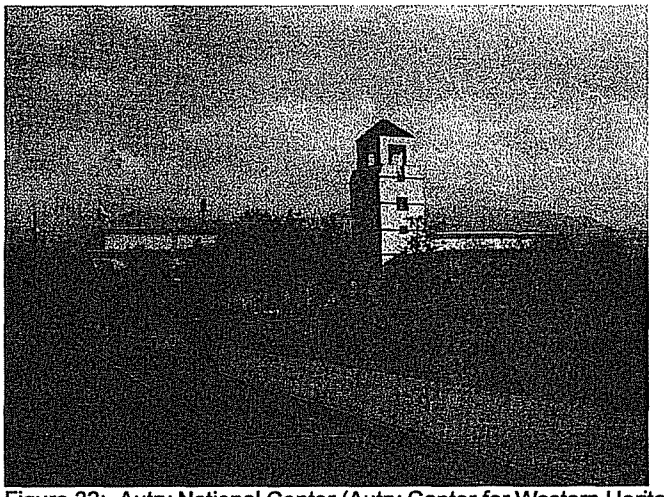


Figure 33: Autry National Center (Autry Center for Western Heritage), 1987. View NE. Photo: ICF Jones & Stokes, March 2008.

The street curves westward and changes name to Zoo Drive. An arm of Zoo Drive winds east over the 134 freeway, curves northward and then westward immediately parallel to where the Los Angeles River forms a sharp angle as it flows from eastward to southward. This section of road is called "North Zoo Drive." A small grove of sycamore trees, which appears to be original to the park, is present due looking west of Zoo Drive near State Highway 134 on and off ramps (Figure 34).

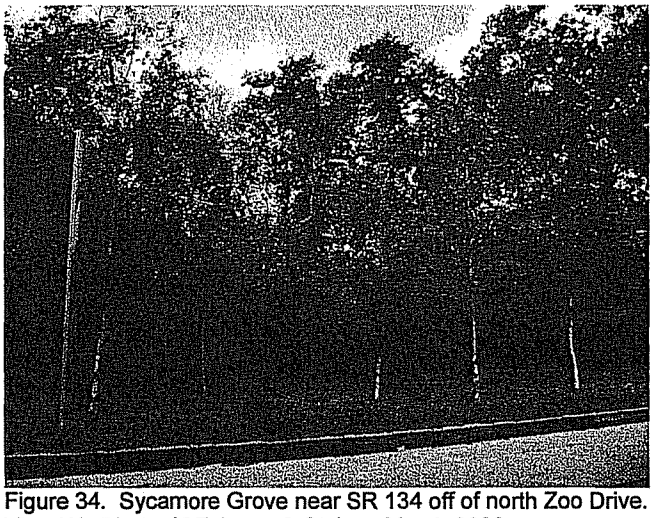


Figure 34. Sycamore Grove near SR 134 off of north Zoo Drive. View W. Photo: ICF Jones & Stokes, March 2008.

This setting of this section of Griffith Park, its northeasterly most corner, is largely industrial, with tall power lines running parallel just north of North Zoo Drive, and numerous large scale, aging industrial buildings off San Fernando Road due immediately north and east of the Los Angeles River, which in this portion is paved. Further west on North Zoo Drive are the Ferraro Soccer fields: five regulation soccer fields and two practice/ rugby fields, the majority of which

are acclimated east-west. A rectangular plan, single-story restroom building is present at the northeast portion of the athletic fields complex. This building, which is recent and of post-modern design, is made of cinder block and has a butterfly roof. Six restroom entries are located at the west elevation. Just beneath roof, inset into all four elevations, is a continuous band of horizontally acclimated milled aluminum vents. Affixed to the south-west elevation of this building is a one-story, metal frame geodesic dome with black and white infill paneling designed to look like a soccer ball. A recent circular irregular course rock planter with rock and plant specimens and a wood sign that reads "John Ferraro Athletic Fields Welcomes You..." is present in front of the building facing North Zoo Drive, as is a mowed lawn area with mature palm specimens. Immediately east of the restroom structure is a recent playground.

Each of the soccer fields is surrounded by tapered steel column stadium lights that run roughly 10 stories tall. Each light standard features six large halogen bulbs. Due immediately west of the soccer complex is a dog park upon a triangular plot of land that is wedged between the Ventura Freeway at its south side, and North Zoo Drive at its north side. This dog park is covered with earth and gravel, is enclosed with a chain link fence, and features mature tree specimens. The dog park is divided into two sections: the eastern section is for regular dogs and the smaller western section is for "Small or timid dogs only." The Zoo Drive Extension runs parallel along the northern edge of this dog park, which is bounded by a row of parking spaces. The far western end of the dog park is paralleled by the terminus of North Zoo Drive.

Zoo Drive

The Pecan Grove Picnic Area

The Pecan Grove Picnic area runs adjacent to Zoo Drive due immediately east of it for roughly ½ mile, ending at Riverside Drive and the exit ramp off of the 5 Freeway. The Pecan Grove picnic area features a small, grassy area that angles upward to meet the road to a low berm that runs immediately parallel to the road's east shoulder. Thirteen concrete picnic tables in four diagonally acclimated rows are present, as are steel, elevated hibachi style barbeques at the southern portion of the picnic area. In the center of this southern portion is a mature live oak Tree set into the landscape in a sunken planter circle bordered by vertical wood plank wall (Figure 35). The Pecan Grove Picnic Area features an assortment of oak, sycamore, pine and eucalyptus trees.

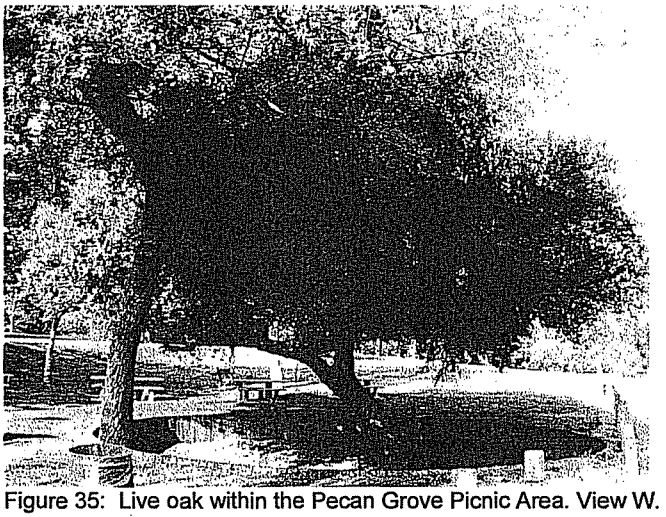


Figure 35: Live oak within the Pecan Grove Picnic Area. View W. Photo: ICF Jones & Stokes, March 2008.

The eastern edge of the Pecan Grove Picnic area features a continuous row of low, wood posts. Just west of the Pecan Grove Picnic Area parking lot is a boulder with a 1996 plaque commemorating the Juan Bautista De Anza Historic Trail (Figure 36). Immediately north of the parking area is the equestrian trail (Figure 37) and immediately beyond that is a tall, bush-covered berm on the other side of which is the State Route 134 freeway.

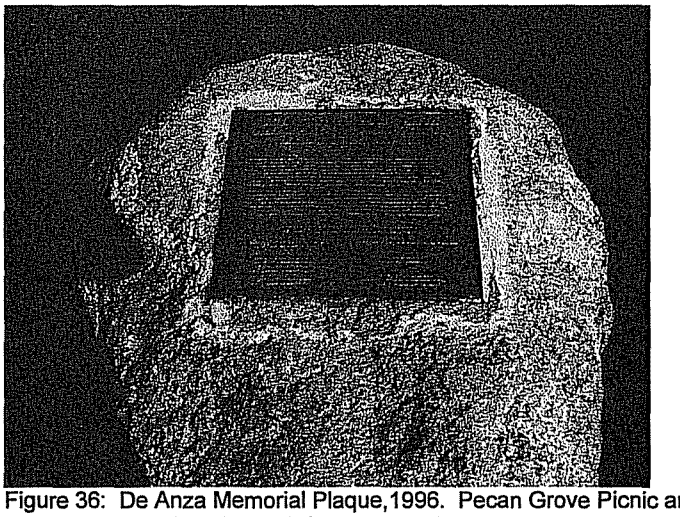


Figure 36: De Anza Memorial Plaque,1996. Pecan Grove Picnic area. View W. Photo: ICF Jones & Stokes, March 2008.

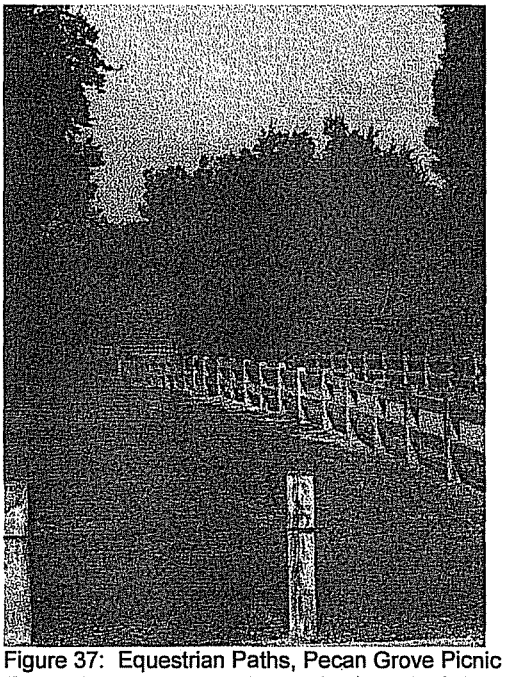


Figure 37: Equestrian Paths, Pecan Grove Picnic Area, c.1959. Equestrian trails run continuously along the I-5 and SR-134 freeways within Griffith Park.

Zoo Drive→ Riverside Drive

A small section of Riverside Drive is present off of Zoo Drive just west of the Pecan Grove Picnic Area. Before it enters into the Bette Davis Picnic Area, which will be described later in the text, it crosses the Los Angeles River via the Riverside Drive Bridge. Constructed in 1938 as a Public Works Administration project, the Riverside Drive Bridge is of a 5-bay, concrete span. Each bay is underscored by a segmental arch supported by a large concrete pier between each arch. Each pier runs the width of the bridge, and each forms a water channel. Each pier has rounded edges with a scored line detailing the upper portion. The railing of the bridge is also concrete and consists of an A-B pattern of open and closed vertical rectangles with pointed headers. At either side of the bridge above each support pier and at each end are affixed pole light fixtures. A stylized base is present beneath each pole, running downward along the outer edges of the bridge. This stylization is of a deco-style zig-zag pattern that fans out at its lower portions. The light poles, also concrete, have a fluted pattern and a fluted base. The light fixtures are bronze lantern style fixtures. The Riverside Drive bridge is four lanes wide. A 1938 bronze commemorative plaque is present at the northern portion of the bridge, along the inner portion of the west railing.

Zoo Drive

Second Picnic Area and Maintenance Facility

A second unnamed picnic area (Figure 38) located off of Zoo Drive runs parallel the 134 freeway between the Riverside Drive bridge over the Los Angeles River and the Griffith Park Maintenance Service Yard located at 5201 Zoo Drive. Numerous Pine specimens are present within this picnic area.

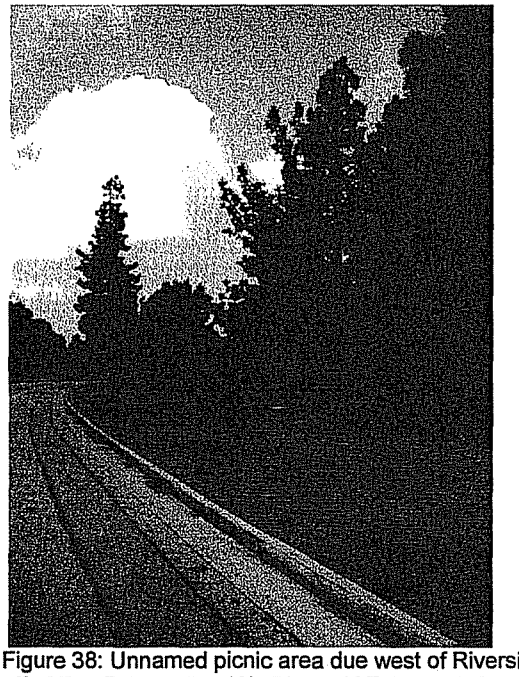


Figure 38: Unnamed picnic area due west of Riverside Drive off of Zoo Drive. View W. Photo: ICF Jones & Stokes, March 2008.

A chain link security fence with barbed wire is present across the front portion of the maintenance yard, as is a row of mature canary pine trees. The Maintenance Service yard is located off the east shoulder of Zoo Drive, running parallel to it and backed by the 5 freeway. The yard is largely blacktopped, as a place to park various maintenance vehicles. At the far southern end of the maintenance yard is "Building 1," a Modern, irregular plan, 1.5-story building of various layered rectangular-plan units set in a ninety-degree relationship to one another (Figure 39).

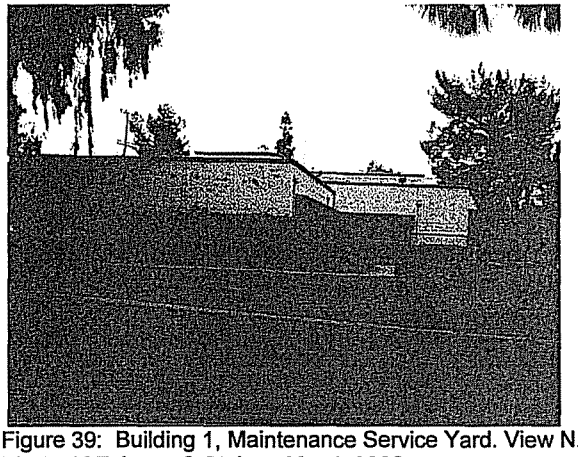


Figure 39: Building 1, Maintenance Service Yard. View N.
Photo: ICF Jones & Stokes, March 2008.

Building 1 is acclimated north-south. The northern-side portion of the building is 1.5 stories taller than the southern portion. This structure is of cinder block, and its flat roofs are underscored by simple beveled concrete molding. The front and rear elevations feature long horizontal bands of windows each topped by a small, pitched eave. The window bays within these bands undulate with panels of cinder block. Many of the windows within these bays are 8-glazed fixed woodframe horizontally acclimated windows. Other bays within these bands are now infilled with milled aluminum vents. The front entry is acclimated east and is inset into the right angle corner formed by two separate units of the building. Due north of Building 1 is a blacktopped parking area fronted by a two gas pumps.

Buildings 2 and 3 are located at the northern portion of the Maintenance Service Yard. Building 2 is a rectangular-plan, single-story cinder block building with a flat roof underscored by simple beveled concrete molding. The structure is Modern in design, and dates, like the other buildings in this area, from the early mid-1950s. The north elevation of Building 2 has one door, plus a band of three horizontally acclimated window bays topped by a small pitched eave. A similar eave tops the door at this elevation. The west facing side elevation of Building 2 features a centered pair of single unit metal doors topped by a similar eave of the kind previously mentioned. The south-facing elevation of Building 2 features four 8-unit horizontally acclimated window bays in a single band topped by the low pitch eave of the type previously mentioned. Between each of these window bays is brick infill painted a different color than the rest of the building.

Located directly behind Building 2 is Building 3, which is a rectangular plan 1.5-story Modern Building made of cinder block and done in the Modern style. Similar to Buildings 1 and 2, Building 3 has a flat roof underscored with a simple concrete beveled molding. Building 3 is divided into two units: a 1.5-story northern component and an affixed 1-story southern component. The southwest facing front elevation features a pair of metal doors and two horizontally acclimated window bays each of 8-unit glazing. Both windows and the door are topped by a continuous small pitched eave. The front elevation also features a tall, pitched roof corrugated metal porch underscored by rafter tails and

supported by four steel pipe columns. A small, square plan single-story building constructed similarly to the above three with a molded, flat roof and cinder block construction is located at the back of the maintenance yard in its northwest corner. This building is not numbered.

Los Angeles Live Steamers Railroad Museum[1]

The Los Angeles Live Steamers Railroad Museum (Live Steamers) is located across the street from the Griffith Park Maintenance Facility. The Museum is an open air collection of rideable, 1/8th scale miniature steam, electric and diesel trains over 23,000 feet of steel rail track, including a main line that is a 1.5 mile circuit around the perimeter of the Museum (Figure 40).

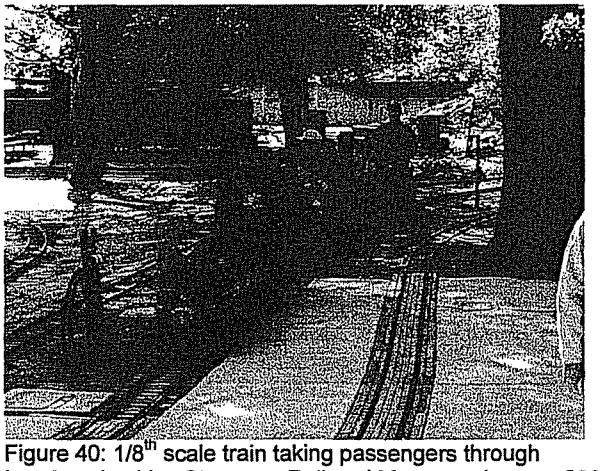


Figure 40: 1/8th scale train taking passengers through Los Angeles Live Steamers Railroad Museum, January 2008. View S. Photo: ICF Jones & Stokes, January 2008.

Walt Disney, who donated the line, lent his name to 2,615 feet of the 1/8 gauge trackage. The line used to traverse his 5-acre Holmby Hills property. Two turntables, 40-foursteaming bays, and two power hoists are also present, as are over 80 electric signals. The track is set upon a miniature built environment of "three miniature towns, two water towers, a roundhouse, three train stations, a coal tipple, and two control towers," among many other buildings.[2] Three concrete tunnels are present, as is a steel frame gambrel truss bridge, called the *O'Brien-Moore Bridge*. The track itself is of various miniature gauges. Interspersed among the various miniature villages within the Live Steamers Museum are five early train cars, three of which are cabooses that pre-date 1950, a Union Pacific Baggage Dorm Car built in 1941, and a Union Pacific Sleeper Car constructed in 1956. An open sided, metal frame, rectangular plan Steam Plant is present at the rear, south-east portion of the property. The Plant is topped with a side gabled, metal canopy with a canopied clerestory bump-out upon its eastern portion. This steam plant contains numerous demonstration pieces of miniature steam powered machinery. Numerous mature tree specimens, which

[1] "Los Angeles Live Steamers Railroad Museum," information brochure. Toluca Lake, CA: Los Angeles Live Steamers, c.2007.
[2] Ibid.

appear to predate the museum, are present throughout Live Steamers and provide a degree of shade over the premises.

At the eastern portion of Live Steamers is "Walt's Barn," a relocated workshop that belonged to Walt Disney and served as his workspace for his own model train line, which as mentioned above, is now part of Live Steamers (Figure 22). This workshop, constructed in 1950 by Disney Studio architect John Cowles Jr., is modeled after a pre-existing barn that was a play-place for Walt Disney during his childhood years. Walt's Barn is rectangular plan, single-story clad in wood board and batten siding. A full length porch runs along the west-side elevation. The roof is of medium pitch front gable, and the ridgeline purposely sinks, so as to imply aging. A dovecote is present atop the ridgeline. A centered, double barn-door entry is present at the south-facing elevation. Above it is an exposed wood ridgebeam, and a centered, double set of attic doors. The eastern-side component of the Barn reads as a full-length shed roofed lean-to. This lean-to component features two symmetrically placed sets of three woodframe windows and a small, square plan bumpout with a shed roof at its south elevation. Inside the Barn are numerous displays of tools and model train components that once belonged to Walt Disney. All benches and desks inside the barn were handcrafted by Walt Disney. Walt's Barn was originally constructed in 1950 by Disney Studios architect John Cowles Jr. and was relocated to the Live Steamers Museum in 1999.

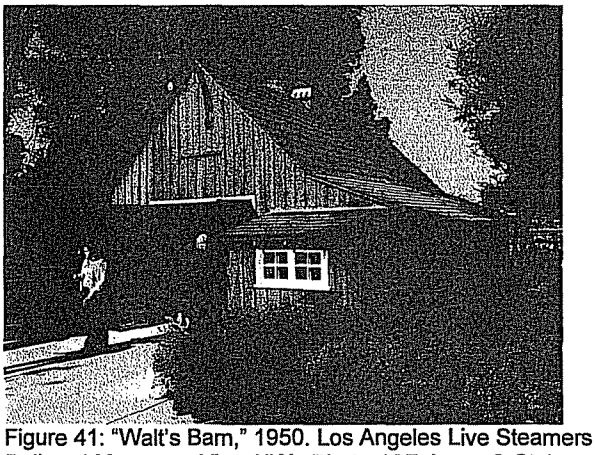


Figure 41: "Walt's Barn," 1950. Los Angeles Live Steamers Railroad Museum. View NW. Photo: ICF Jones & Stokes, January 2008

Picnic Area

Across the street on Zoo Drive due northwest of the Maintenance Facility and immediately north of the Live Steamers is a grass-covered picnic area primarily of square plan with an extended arm at its west end that extends south. This picnic area is flat, with a mowed lawn covering, and features mature tree specimens and concrete benches, two of which are covered with 6-sided central-plan canopies supported by metal post V-bracing and clad with fiberglass panels in the shape of multiple wood shingles. A gravel-covered parking area is located just south of this picnic area and between it and the picnic area is a continuous row of low wood posts (Figure 42).



Figure 42: Picnic Area located between Travel Town and Los Angeles Live Steamers off south shoulder off Zoo Drive. View W. Photo: ICF Jones & Stokes, March 2008.

Travel Town Transportation Museum

The Travel Town Transportation Museum (Travel Town) is located at the northwest edge of the Park off of Zoo Drive where it meets the far western terminus of Griffith Park Drive (Figure 43).

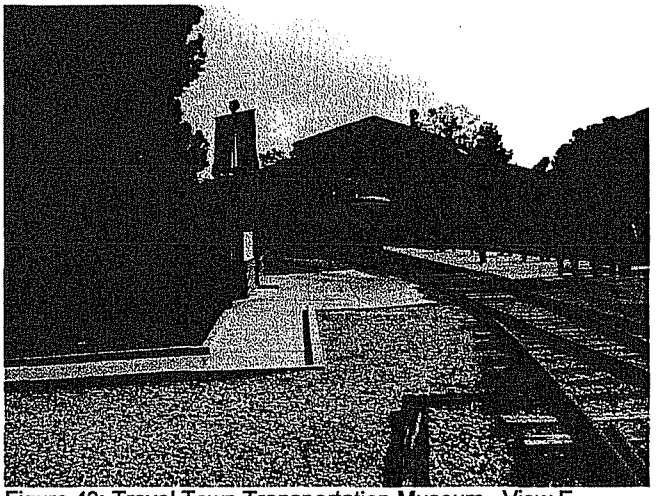


Figure 43: Travel Town Transportation Museum. View E. Photo: ICF Jones & Stokes, March 2008.

Travel Town is acclimated east-west and features an assortment of buildings, structures, and most notably, various examples of actual transportation, including a variety of early steam locomotives. Among these, The 1937 "Little Nugget" Union Pacific Club Car is City of Los Angeles Historic Cultural Monument #474 (Figure 44).

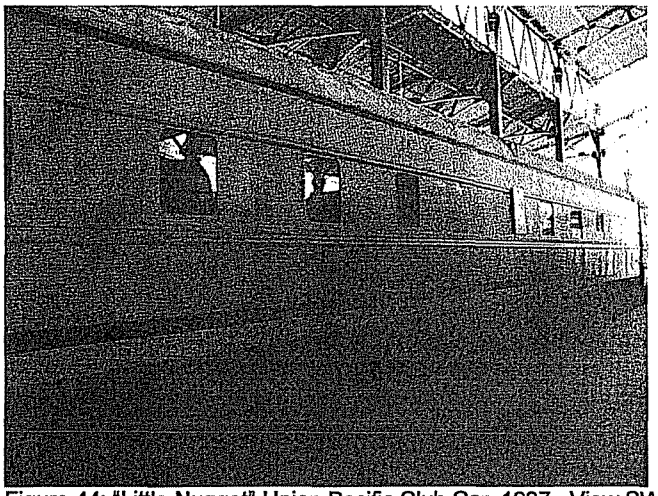


Figure 44: "Little Nugget" Union Pacific Club Car, 1937. View SW.
Photo: ICF Jones & Stokes, March 2008.

A narrow gauge miniature train encircles Travel Town. A blacktopped parking area is located directly south of the primary entrance into travel town. The kiosk of the primary entrance is located at the southwest corner of travel town. The entry kiosk was recently built. This kiosk is constructed of metal columns, and it has a steep pitch cross gabled roof. As one steps through the entry kiosk, directly behind it is a recent metal frame bridge with stucco piers at either end that crosses above a small gully with the narrow gauge right of way. The various buildings, structures and objects of Travel Town are connected by concrete and blacktopped walkways that cover the low, rolling hills within Travel Town that are covered with mowed lawn and mature tree specimens.

At the far west edge of Travel Town is a small, rectangular plan waiting canopy constructed of wood posts infilled with diagonal cross beam members at its upper portions. This waiting canopy, which does not appear to be used as such anymore, has a wood clapboard wainscot. Its roof is side gabled and each gable end is infilled with spaced vertical wood beams. Exposed wood plank rafter tails are part of the design. This waiting canopy is adjacent west of the small gauge railroad that loops around Travel Town, inset onto a concrete pad among ivy bush. Just east of this canopy is a decaying Los Angeles Railway Horse car. Along virtually the entire eastern edge of Travel Town are four rows of standard gauge rail spurs that have upon them a variety of steam locomotives, cabs, and other rail-related objects dating from the 1880s to the 1930s. An eight-sided wood gazebo is present at the northeastern edge of travel town, adjacent Griffith Park Drive. Near the southeastern edge of Travel Town these locomotives and other train cars are beneath a large, rectangular plan, three-story train shed that was built within the last 15 years and is done in a turn of the century industrial style. The structure is side gabled and is open at each gable end. Each gable end consists of three large bays that are each topped with an arch that is supported by exposed steel truss members. These arches repeat at each of the nine bays that comprise the length of the shed. Its canopy, which is nine bays long, is of corrugated metal roofing except at its northern edge, where this roofing becomes glass. A full-length clerestory is present upon this building.

Due west of the large train shed is a recent, rectangular plan single-story visitors center constructed of running course brick and having a low-pitched hip roof with asphalt shingle. Centered atop the hip roof of this building is a square plan brick cupola with a pyramidal roof and a simple clock face at its north elevation. One entrance to the visitor's center is recessed behind a full-length opening at the north elevation. Red glazed ceramic brick tile, laid vertically, is present on the walls around this entrance. The second entrance is at the west facing elevation. Both entrances feature a pair of aluminum framed glass shop doors full height aluminum framed sidelight glazing.

Immediately north in front of the primary entrance is a circa 1952 pylon-shaped "park style" drinking fountain of irregular coursework with smooth, colored ashlar cut sandstone and a concrete basin. Due immediately west of this drinking fountain is a square-shaped planter that is bounded by recent concrete benches with the words "Travel Town" emblazoned into them. In the middle of this planter is a re-creation, dedicated in 1993, of the Statue "Spirit of the CCC," which is placed upon a beveled end concrete pedestal. The artist of the original version of this work is John Palo-Kangas. The Travel Town area, and the area that is now part of SR-134 above it, was originally part of an early CCC camp, and later served as a Prisoner of War camp during World War II.

Just north of this planter, which serves as the center point for congregation in Travel Town, is a large, rectangular plan, corrugated metal "Exhibit Hall" with a centered opening and a low-pitched front gable roof clad in standing seam metal. The primary space inside the Exhibit Hall includes numerous examples of train cars, carriages, early automobiles, and other early forms of transportation and travel. Located north of the Exhibit Hall is an open, grassy area with picnic benches, mature trees, and a wide stairway that leads up to the entrance/exit gate. An early San Francisco Cable Car is present within this picnic area, as is a faux water tower with a wood base and cylindrical, corrugated metal tank that is adjacent the narrow gauge tracks that run along the edge of this picnic area. Due southwest of the visitor's center is a rectangular-plan single-story portable trailer that serves as the Travel Town Gift Shop.

Due southwest behind this structure is a rectangular plan one-story side-gabled Depot building clad in wood shiplap (Figure 45).

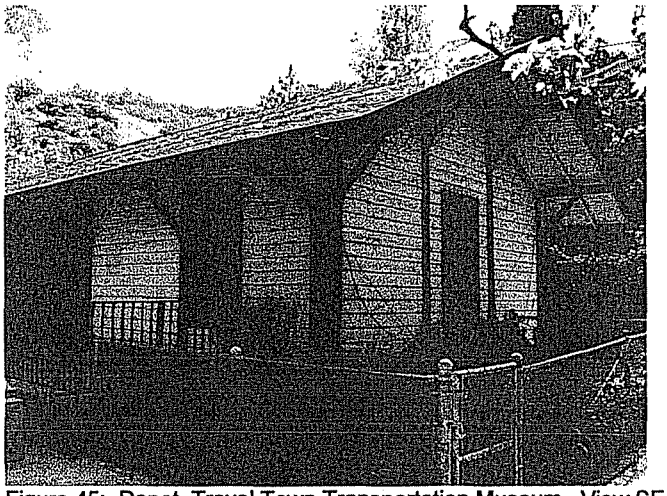


Figure 45: Depot, Travel Town Transportation Museum. View SE.
Photo: ICF Jones & Stokes, March 2008.

The side gable roof has long, extended eaves with long, thin scrolled wood brackets, and is covered with staggered course asphalt shingle. Part of the design are 9/1 wood frame windows. The depot is four bays long, and a ticket counter is located within the open breezeway at the center of the building. Large carriage doors are part of the design, and open up most of the building to the outdoors, revealing that the roof is supported with repeating bays of wood queen trusses. The north-side gable of the depot features a centered 9/1 wood frame double hung window, and the south side of the depot features two horizontally acclimated windows with wood surrounds.

Just north of the train shed, on either side of the western-most of the four rail spurs, are two train signals, one on either side of the tracks (Figure 46).

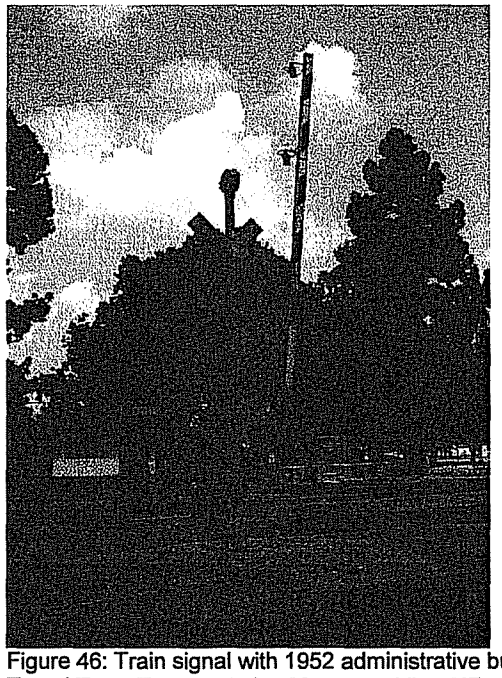


Figure 46: Train signal with 1952 administrative building in background.
Travel Town Transportation Museum. View NE. Photo: ICF Jones & Stokes, March 2008.

Each of these is supported by a steel pole, with two red lights at either side of it. Atop the pole is an enclosed bell with white "X" that reads "Railroad Crossing" just below it, and another sign reads "3 Tracks" in reflecting font. Affixed to each of the arms themselves, which have a standard red and white striped diagonal pattern upon them, are three small red hanging lanterns. At the northern portion of Travel Town are two circa 1952 buildings. The first is a square-plan, single-story flat-roofed building with vertical tongue and groove siding and a flat roof with long wraparound eaves and beveled fascia boards. This building features narrow horizontal window bays, each lined with standing wood molding that wrap around the corners of the building. The front elevation of this building faces west and features a centered entry with a rustic style vertical board wood door with an infilled upper glazed panel. A pair of 2/2 woodframe double hung windows are located to the south of this entry, and a small ribbon of three square windows are present to the north of the centered entry. This building, which appears to be an administrative building for Travel Town, has wood clapboard wainscoting across all four elevations.

Behind this small administrative building is a small-scale, square-plan single-story restroom building with metal "board and batten" cladding and a low-pitch butterfly roof. Metal screened transom openings, present across all four elevations, are part of the design. The restroom entry ways are placed symmetrically at either end of the southwest elevation, and each is covered by a metal screened partition. At the northwest corner of Travel Town begins Griffith Park Drive.

Zoo Drive → Forest Lawn Drive

A small spur of Zoo Drive runs west of Travel Town and connects to Forest Lawn Drive. Off the northern shoulder of this spur is the Martinez Arena: an earth covered horse recreation area enclosed with a wood fence and dotted with sparsely placed tree specimens Griffith Park briefly runs against a roughly 1 mile stretch of Forest Lawn Drive due west of Travel Town. The property within the Griffith Park boundary is primary adjacent the north shoulder of Forest Lawn Drive, and consists of an open, earth-covered area dotted with mature tree specimens and containing utility poles. This stretch of land is variously referred to as the "Headworks" and the "Spreading Grounds," and it is immediately adjacent to the Los Angeles River (Figure 47).

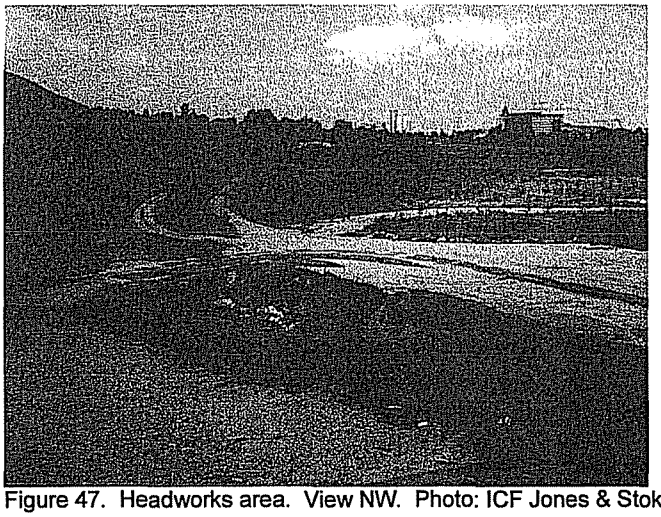


Figure 47. Headworks area. View NW. Photo: ICF Jones & Stokes, March 2008.

On this stretch of road, the primary portions off the southern side of Forest Lawn Drive consist of Mount Sinai and Forest Lawn Memorial Parks, both of which are not part of Griffith Park. Near the entrance to Forest Lawn, a small portion of Griffith Park is located off of the southern shoulder and it contains the recently completed Junior Achievement Center, which is a two-story, L-plan concrete brick educational building with a semi-circular rotunda entrance.

Griffith Park Drive: Mineral Wells Picnic Area

Griffith Park Drive begins at the northwest corner of Travel Town, and its last leg runs parallel to Crystal Springs Drive from a point beginning at Park Center and ending at Los Feliz Boulevard at the primary, eastern entrance to the park. The first stretch of Griffith Park Drive winds through an area called Oak Canyon, a largely open and undeveloped area of the Park. Due southeasterly through Oak Canyon, the outer edge of the Toyon Canyon landfill is present off of the south shoulder of Griffith Park Drive (Figure 48). At the present time, the Toyon canyon Landfill is being conditioned to become a nature restoration project.

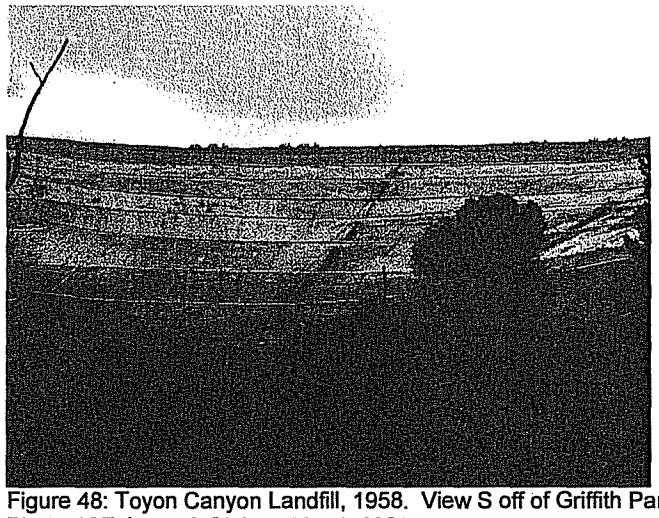


Figure 48: Toyon Canyon Landfill, 1958. View S off of Griffith Park Drive.
Photo: ICF Jones & Stokes, March 2008.

Beyond Oak Canyon due east upon Griffith Park Drive is the Mineral Wells Picnic Area. The Mineral Wells Picnic Area is a long, narrow picnic area acclimated northwest to southeast set into its own gully. The ground cover is mowed lawn, and mature Cypress, pine, sycamore, and maple trees are present. There is a culvert running diagonally through this picnic area. A retaining wall is placed between the road against the hillside and flat landscape, where there is a low wall stepped and composed of rusticated concrete. On the site are picnic tables, a bathroom building, small metal water foundation, and small concession stand. These structures date from the mid-1950s (Figure 49).

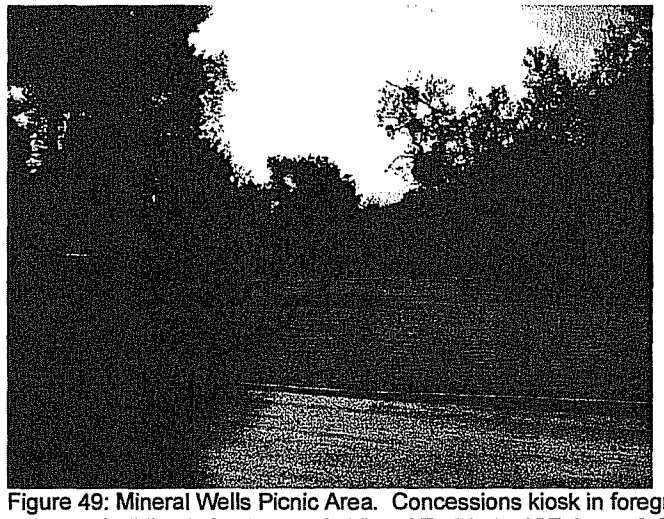


Figure 49: Mineral Wells Picnic Area. Concessions kiosk in foreground, restroom building in background. View SE. Photo: ICF Jones & Stokes, April 2008.

Located near the center, northern portion of Mineral Wells Picnic Area is a rectangular plan single-story bathroom structure. The side elevations are the long, lengthwise elevations and the men's and women's entries are placed symmetrically, underneath either gable end. The south-side elevation features

two ribbons of window: one of four bays and the other of six. The north-side elevation features a ribbon of square windows at the east side, upon the men's restrooms. This structure is clad in smooth stucco and features a gabled roof clad in asphalt shingle and underscored with exposed wood rafter tails. Stucco-walled partitions are present in front of each entry. The doors to each restroom are rusticated wood board and batten with a small view window.

A single-story rectangular-plan, small-scale concessions kiosk is located due west of the restrooms, near the northwest corner of the Mineral Wells Picnic Area. This structure is clad in smooth stucco siding and has a hipped roof clad in rolled asphalt shingle underscores by wood rafter tails. The front of this concessions stand faces south and is fronted by a full-length porch supported on either end by three thin wood posts. A pedestrian entry is present on the east portion of the front elevation, and it is surrounded by wood framing. Two counter bays, now infilled with T-111 siding, are present at this elevation. No windows are present upon this structure, which, like the previously described restroom, is minimal traditional in style. A power hookup pole is present due west of the front elevation.

Above the Mineral Wells Picnic Area is the very recent Los Angeles Zoo Animal Hospital facility. This structure is very recent and is Postmodern in design. The animal hospital facility consists of various component buildings and an irregular, U-plan arrangement. Each component building ranges from one to three stories. The structure is made primarily of rusticated concrete block, but features numerous elevations of continuous glass fronted by metal screens. Above the roofs of these structures are metal cantilevered canopies upon both side units. The rear unit is slightly elevated above the other two units and features a primary south-facing elevation of continuous vertically acclimated full green glazing fronted my metal screen. The west wing contains a balcony, and the right wing is one story with a subterranean level. The courtyard in front of these buildings features a large driveway and permanently affixed machinery. The complex is fronted by an ivy covered wall with the words "Los Angeles Zoo" written in a modern, metal font affixed to this wall.

Wilson Harding Golf Clubhouse

The Wilson Harding Golf Clubhouse is a two-story, irregular plan, cross gabled clubhouse with hand troweled stucco cladding designed to look like adobe. The structure is Spanish Eclectic in design, such as The features that associate it to the Spanish Eclectic design system include hand troweled stucco cladding, Spanish tile roofs, and *corredors*. The general symmetry of the front elevation, with a two story central component with extended wings and a centered cupola with weather vane give provide the building Colonial overtones (Figure 50).

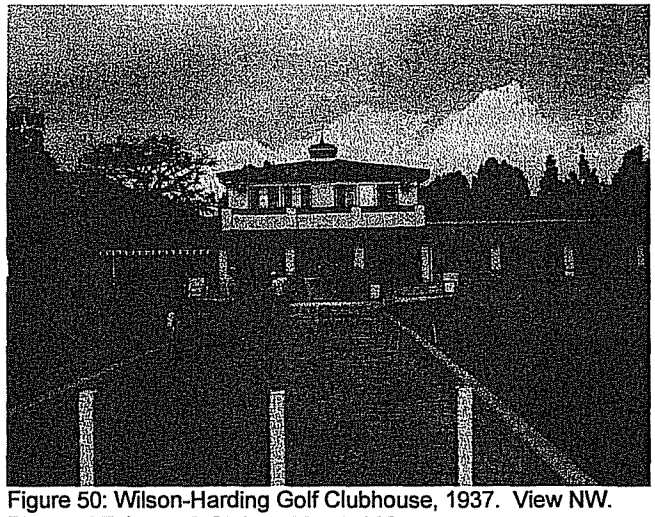


Figure 50: Wilson-Harding Golf Clubhouse, 1937. View NW.
Photo: ICF Jones & Stokes, March 2008.

All roofs are underscored with decorative rafter tails. A large pitched roof porch supported by four piers made of brick is present in front of the main entry. The sides of this pitched roof portion feature a colonial revival type tongue and groove pattern in wood with scalloped edges. This porch is supported by six square piers each made of brick, the frontal four of which support a continuous lintel beam, itself topped by scrolled rafter tails and the Spanish tile clad pitched roof itself. Present on the side of one of the two inner beams is a bronze plaque that reads "Built by the Works Progress Administration 1937." Behind the southern portion of the frontal unit of the golf clubhouse is an enclosed patio with a centered, terra cotta decorative fountain supported on an octagonal brick base. The rear portion of the building appears to be a separate structure, though it is connected. This rear component is one-story rectangular plan, and has a recessed front elevation that faces south onto the patio. This front elevation is recessed behind a centered porch supported by two wood columns. Two entry doors symmetrically placed are present within the recessed portion of the front elevation of the rear component of the clubhouse. The wood screen door is original and features three panels topped by a large screen picture panel. Wood board and batten cladding is present in the recessed element of the front elevation. This rear structure is one-story, rectangular plan with side gabling and has stylistic features associated with the early California Ranch design system. At the southern portion of its front elevation is a paired casement window with each window being three vertical glazed units. Wood shutters are present at either side. The very rear portion of the building is a rectangular-plan one-story structure clad in hand troweled stucco with an asymmetrical side gabled roof clad in Spanish tile. The east facing side elevation features a continuous band of horizontally acclimated six-unit wood frame windows. Two additional structures done in the Spanish Revival Style are located behind the clubhouse and are part of the same program as the Lounge itself. The golf course area is surrounded by small putting greens of various sizes located in front of and due south of the building. A new, later fountain is present due south of the clubhouse.

Behind the Wilson Harding Golf Clubhouse is a large, two-story metal golf driving range facing west. This platform for this driving range is a two-story metal frame structure with a metal banister. The driving range is enclosed by a large, 20'-tall chainlink fence, placed atop an early park-style wall with irregular rusticated concrete block, which appears to be more recent. . Grass covers the driving range, which is roughly 250 feet in length. The parking area for the clubhouse complex is located due southwest of the clubhouse proper. Around these parking areas are irregular course square block park style walls of sandstone and/or aggregate concrete block with irregularly placed dry course mortar. The lower of the rock walls runs virtually full length parallel to the row of parking spaces just south of the driving range.

The Wilson and Harding Golf Courses

The Harding Golf Course is an 18-hole course spanning 6,536 yards for a Par 72. It is located off of Crystal Springs Drive and combines with Wilson Municipal Golf Course, which is similar to the Harding Course, where it contains 18 holes and 6,942 yards for a Par 72 (Figure 51).

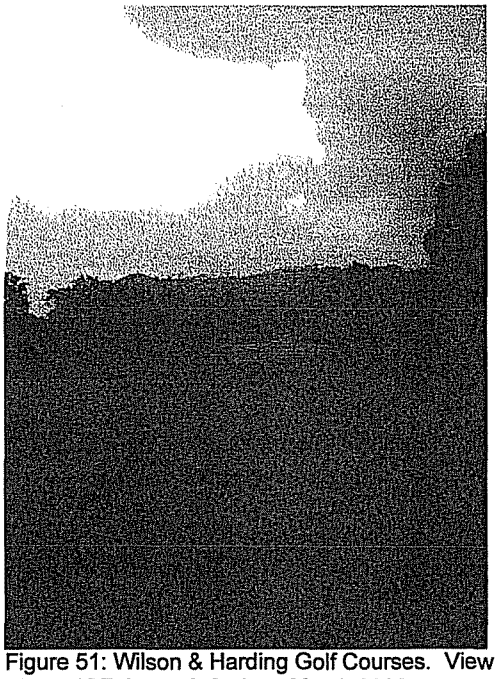


Figure 51: Wilson & Harding Golf Courses. View SE.
Photo: ICF Jones & Stokes, March 2008.

Both courses are rectangular in shape, located adjacent to Interstate 5 to the east, bounded by Griffith Park Drive to the south and west, and bordered by the Los Angeles Zoo to the north. Crystal Springs Drive divides the course, running north-south, where 12 holes, driving range, and golf clubhouse is located on the northwest section. Both of the landscapes have a flatter terrain than the Roosevelt course, with occasional low level hills and gatherings of oak and sycamore trees. The western course contains areas of natural growth vegetation, or groves, which have a brush area where wildlife such as deer reside; as well as

larger hills with terrain unchanged from the Rancho period. Older golf maintenance buildings exist on the western course in a fenced area, as well as other auxiliary buildings. There is a restroom located north of the maintenance buildings that is one story, rectangular in plan. It is composed of stucco with wood frame windows and upper window and door sills. The windows are one-over-one double hung and designed in a symmetrical formation. There are door frames on the north and south elevations with a concrete block wall guiding each entrance. The roof has a medium-pitch with composition shingles and overhanging eaves with exposed rafter tails on the east and west elevations. Another auxiliary building includes a one-story, rectangular in plan wood shed. The building features a slanted roof line, vertical wood siding, and a pair of wood doors. The western course contains landscape features such as park style retaining walls, minimalistic concrete bridges with metal balustrade, and small stone bridge with decorated arch in the park style. The eastern course is larger in scale, and contains more buildings, such as a golf shop, café, and restroom building that is centrally located within the course. It is one-story, rectangular in plan, and composed of concrete block. The roof has a medium-pitch with composition shingles and overhanging eaves. The eastern elevation, which is a gable end, consists of large, multi-paned windows within wood frames that follow the pitch of the roof. Two doors are located on the north and south elevations; one is for the restrooms, while the other provides access into the shop/café area. A pair of one-pane, metal encased windows are also located on these elevations, set within a wood frame. Northeast of this building is a raised concrete structure. It has concrete steps and a wood balustrade that encompasses the foundation; located within the structure is a metal picnic table. Slightly northwest is a wood bridge with concrete foundation located over a stone waterfall that leads to a small pond. Also within the eastern course, near the northern boundary, is an outline of a concrete foundation; there is no information pertaining to what structure was formerly located on the premises. Both of the courses contain a series of wood benches and features park-style water fountains, as well as water attributes within the course and sand traps around the holes.

Griffith Park Drive → Camp Road Boys Camp

The Griffith Park Boys Camp (Figure 52) is located off Camp Road, which is accessed off of the southern shoulder of Griffith Park Drive. The camp buildings are inset into a pine tree-laden hilly enclave, all upon the east facing hillside slope.

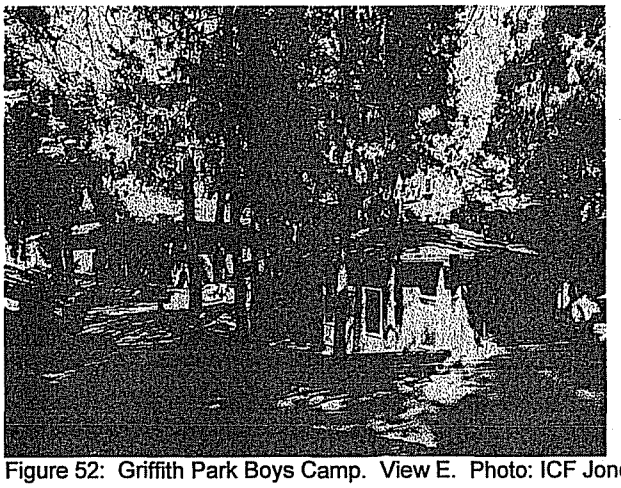


Figure 52: Griffith Park Boys Camp. View E. Photo: ICF Jones & Stokes, August 2007.

At the southwest corner of its access road and Camp Road is a decorative yard art vignette featuring a wood totem pole (Figure 53), an Indian teepee and a canoe.

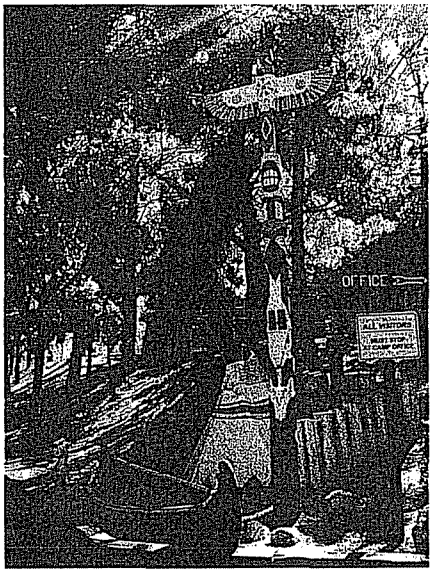


Figure 53: Griffith Park Boys Camp. View SW. Photo: ICF Jones & Stokes, August 2007.

The Griffith Park Boys Camp consists of 14 cabins, four restroom buildings, a larger scale main building, and a Directors house. The buildings share an expressivist Modern design system informed by the earlier A. Quincy Jones Girls camp units located off of Canyon Drive. All of the buildings appear to date from within the last 30 years. Each of these buildings is one story, with a rhomboid plan. Each building features triangular, low pitched angled roofs underscored by fascia molding and exposed beams. The ridgeline of each gable is acclimated toward the corners of the building, making the various buildings appear diamond shaped. Each elevation is clad in tongue and groove vertical wood bays painted the color of redwood, undulating with vertical stucco bays with one aluminum

slider window per bay. At the corners of the cabins are vertical pylons of *béton brut* plank concrete. The east elevation of the Boys Camp Main Building, which is larger and appears to be used for gatherings, contains bays entirely infilled with large, square glazing units framed in aluminum mullions. Its west elevation features a wall primarily of irregular course boulders set into concrete. Adjacent southeast of the camp complex is a square plan, grass-covered playing field. Due immediately west of the camp complex is a rectangular-plan five-lane swimming pool, and low retaining wall of irregular course rubble set in mortar that appears to predate the camp buildings. This wall, which is roughly 3 feet high, runs north-south toward its south end, where the wall conjoins with a stairway leading to the foundation of a pre-existing building. Due south of the Boys Camp buildings, inset into a separate hillside enclave, is a row of concrete foundations, running east-west of former cabins that have since burned. Elevated above this hill and due slightly westward from the abandoned foundations is a now abandoned concrete swimming pool, surrounded by a chain link fence and adjacent a small guard stand with a gabled roof clad in wood shingles.

Griffith Park Drive Ctd.

NYC Picnic Areas

Due east of the Boys Camp, Griffith Park Drive continues east past the base of the hills due northeast of Bee Rock. Off the southern shoulder of this stretch of Griffith Park Drive are three small picnic areas each cleared by the Neighborhood Youth Council (NYC). Located off the west shoulder of Griffith Park Drive, moving from north to south, the first NYC picnic area (NYC 3) is a triangular grass pad with a small row of four wood posts at its northwest portion. The rear portion of NYC 3 terminates in a gully area away from the road. The NYC 2 picnic area is an isosceles-shaped pad of mowed lawn, with its vertices away from the street, and terminating in a gully formed by two hillsides. Parallel to the road, NYC 2 has two concrete benches, side by side, beneath two fully mature sycamore trees. A modern steel beam L-shaped drinking fountain is present near these benches. Two additional trees are symmetrically placed at either side of the middle portion of this picnic area. The northern boundary of this picnic area is bordered by a row of cylindrical wood posts, above which is a dirt parking area. The NYC 1 picnic area is an isosceles-triangle-shaped pad of mowed lawn that runs east west, and terminates into a gully between two hills. NYC 1 has three concrete picnic benches underneath two sycamore trees (Figure 54). A row of low wood posts border this picnic area along its north and south sides.

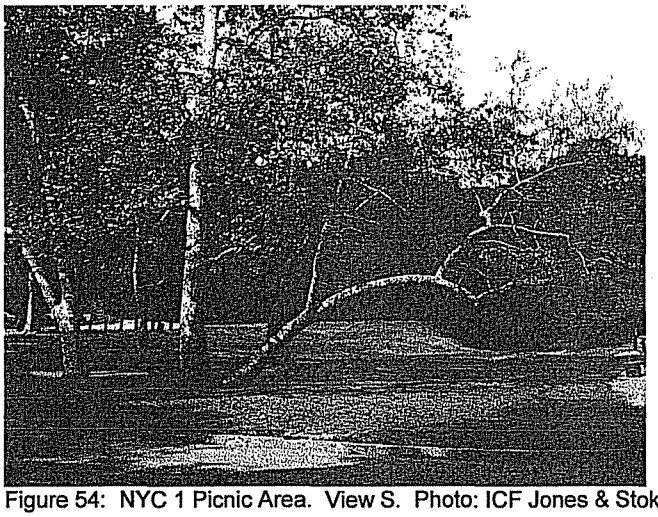


Figure 54: NYC 1 Picnic Area. View S. Photo: ICF Jones & Stokes, March 2008.

Old Zoo Picnic Area

The Griffith Park "Old Zoo" (Figure 55) is inset at the north-facing base of hills forming Spring Canyon below Old Zoo Trail. The Old Zoo is a continuous row of semi-recessed cave-like spaces made of sculpted concrete designed to look like various over-sandstone boulders. The design of the Old Zoo features a variety of asymmetrical, irregular arrangements of these boulders, which often appear to be protruding outward at their upper courses. These caves read as integrated into the landscape and have a quality of a primitive or prehistoric construction. These cave-like openings were for the various animals within various cages, and they vary in size and design from tall, narrow, flat-topped openings that are similar to a pedestrian entry to wider, lower round arched opening that were used for various animals. Metal pulley wheels are present upon the rear elevations upon the southern-most of the zoo structures.

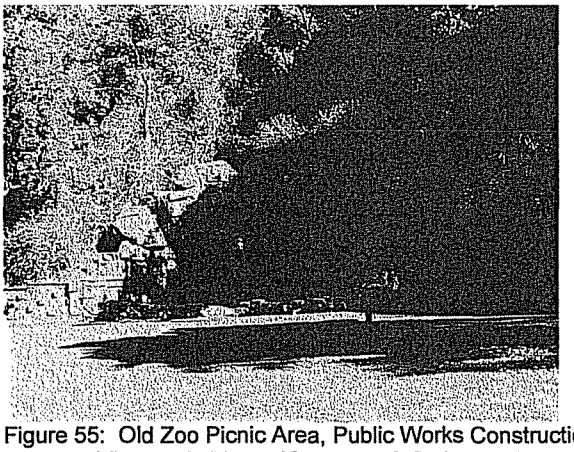


Figure 55: Old Zoo Picnic Area, Public Works Construction, c. 1932. View SW. Photo: ICF Jones & Stokes, July 2007.

Set within the far northern niche, and present behind chain link fencing, is a low drinking fountain that is one piece of sculpted concrete. This drinking fountain

features a swirling shaped base and a concrete step with aggregate rock in its tread. This step is one continuous piece with the rest of the fountain, which overall has an organic, handmade quality.



Figure 56: Old Zoo Picnic Area, Public Works Construction, c.1932. Drinking Fountain. View SW. Photo: ICF Jones & Stokes, July 2007.

At either side of the Old Zoo are low walls in concrete of the same stylization as the Zoo structure itself—square cut irregular course concrete designed to look like sandstone boulders. The northern edge wall above the caves features large undulating square cut concrete blocks that create a crenellation effect atop the wall. The Old Zoo is fronted by a large, semi-circular picnic area covered with mowed lawn and featuring mature tree specimens and seven concrete picnic benches. Old Zoo Trail runs directly behind the caves. At the southern portion of the trail, east shoulder, are original metal fence poles with metal finials. As the trail nears closer behind the Old Zoo, at either shoulder of it are low, park-style barrier walls of irregular course rubble in mortar. Additional zoo-related resources are present at either side of the trail. At the southern portion of the trail, at its west shoulder, is a concrete base, single-story square-plan cage with thin metal vertical column bars and flat, metal horizontal members. Due west of this cage on the opposite end of the trail is the former animal hospital building. This building is a square plan, single-story corrugated metal structure with a corrugated metal gabled roof underscored with exposed rafter tails. Its front-facing south elevation has three square window openings in a continuous row at its eastern portion, and one larger window bay at its western portion. The rear elevation features a ribbon row of three square window bays, and a rectangular, square attic vent. A clapboard clad lean-to with a pedestrian entry is affixed to the rear elevation, with a west facing entry that is currently door-less; the entire building is open and abandoned. Due immediately west of this building is a concrete trough inset into the ground, and it is located next to a small rectangular plan concrete brick object that appears to have been a small animal house. This object, which is no more than 4 feet off the ground, has a large, center opening at its south elevation. Off of the south shoulder of Old Zoo Trail due slightly west of the zoo itself is the foundation remains of the former Zookeepers house (Figure 57). This foundation is accessed by a small concrete stairwell off of the trail. The foundation is square plan, with the remains of a chimney at the east end

of it. A scored concrete porch is still present in front of the foundation, as are remnants of pink square and yellow hexagon ceramic tile slabs within it.

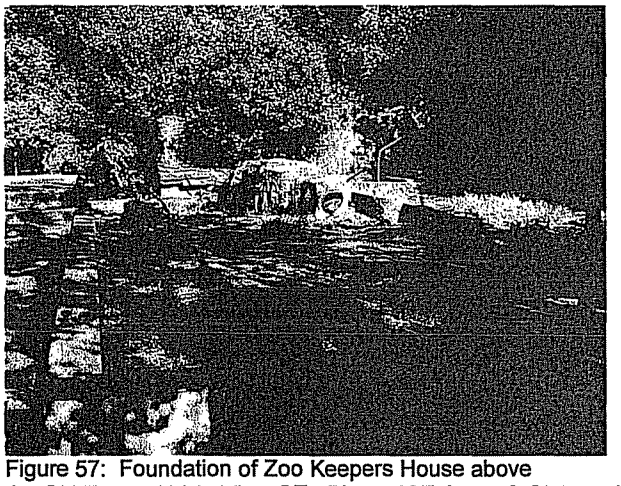


Figure 57: Foundation of Zoo Keepers House above the Old Zoo, c.1914. View SE. Photo: ICF Jones & Stokes, July 2007.

Wilson-Harding Turf Maintenance Facility

The Wilson-Harding Turf Maintenance facility is a complex of 12 single-story, rectangular-plan buildings and structures acclimated northwest to southeast around a paved, central, rectangular open court (Figure 58). The majority of the buildings are clad in corrugated metal painted evergreen, and have corrugated metal gabled roofs underscored with exposed wood rafter tails. Though all of the structures are gabled, the gable acclimation varies from front to side gabled. The majority of the structures at the upper/eastern row of this complex are sheds and garages, and have large, continuous open bays supported by metal columns that face the inner court. Exposed wood trusses are visible inside the open faced, eastern row of buildings and structures. Carriage-style doors are part of their design. The majority of the buildings at the lower/western row are fully enclosed, and at present serve as offices. Many buildings still possess their original wood doors, each of five panels. The west-facing rear elevations of the south row of buildings feature 4/4 woodframe windows. Two front gabled auto garage structures are also present along the south row, though they are due slightly west, outside of the court. One of these garages is of smooth stucco and the garage due west of it is of wood clapboard. The garage bay occupies the entire length of each front elevation, and each garage door is a single panel wood door.

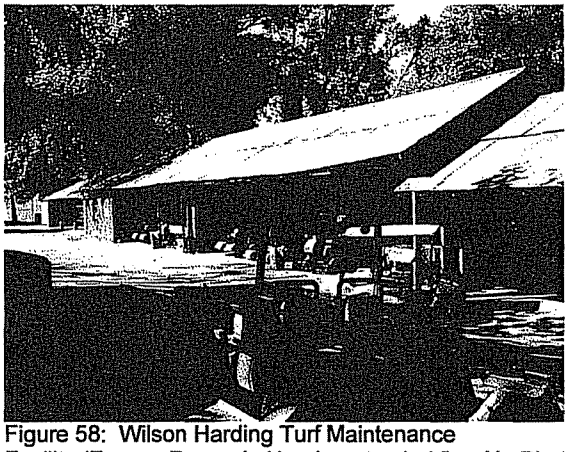


Figure 58: Wilson Harding Turf Maintenance
Facility (Former Ranger's Headquarters). View N. Photo: ICF Jones & Stokes, July 2007

A corrugated metal, gable roofed, open-sided structure is located at the southern portion of the paved court and appears to have been an early filling station (Figure 59). Due south of this structure, at the far south end of the complex, is an L-plan cross gabled building, also clad in corrugated metal, that has an off-center entry at its north-west, front gabled elevation. This entry door is fronted by a two-panel woodframe screen door that appears to be original. A gabled square plan, corrugate metal cupola straddles the ridgeline of the roof above the entry. Mature tree specimens surround the Wilson-Harding Turf Maintenance Facility.



Figure 59: Service Station within Turf Maintenance Facility
View S. Photo: ICF Jones & Stokes, October 2007

Park Center

Park Center is a large, semi-circular grassy area that elevates slightly as it ascends toward the hills south and west of it. The southern portion of Park Center features four tennis courts enclosed by chain link fencing covered in green nylon cloth, and surrounded by mature tree specimens. A small, rectangular plan kiosk with wood board and batten cladding and a pitch roof is located slightly up-

grade immediately south of the tennis courts. At present this kiosk is surrounded by chain link fencing. A sign at its west facing front elevation reads "pony ride." This kiosk appears to be abandoned. Immediately north of it is an abandoned pony-go-round apparatus of steel pipe and chain. Immediately west of the tennis courts is a rectangular plan, single-story bathroom structure of cinder block with a flat roof underscored by a ribbed row of horizontally acclimated clerestory windows at its east-facing rear and west facing front elevation. Exposed horizontal beams protrude out from the clerestory windows at the west facing front elevation. The front elevation of this restroom structure faces west and features structural partitions at either end which one enters behind to access the restrooms. Immediately west of the tennis courts and uphill, across a single lane service road is the Griffith Park Merry-Go-Round (Figure 60).

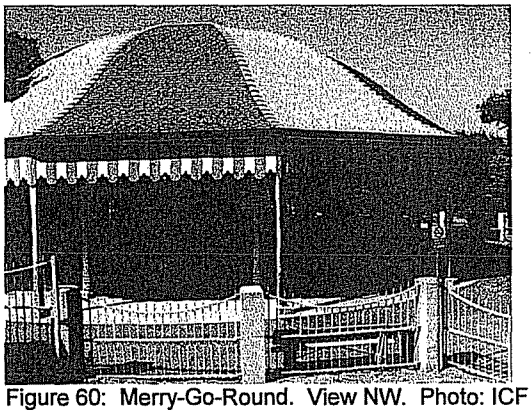


Figure 60: Merry-Go-Round. View NW. Photo: ICF Jones & Stokes, March 2008.

The merry-go-round is a four abreast, all horse Spillman type carousel. It features early horse sculptures believed to have been carved by carousel pioneer Charles Looff in the 1880s, and these horses are elevated slightly higher than the others. The merry-go-round is inset into a nook surrounded by steep grass berms. Directly above it is a parking area that traverses north-south. A second parking lot is located above Park Center due north and slightly down grade of the previous parking lot. This second lot, which is called "Merry Go Round Lot 2," is rectangular plan and features later boulder wall elements with concrete stairwells set into them. These stairs, located at the northern portion of the lot, lead downward into the park.

In the middle, upper portion of Park Center are two structures. One is a square-plan, single-story structure of painted cinderblock, and a flat roof underscored by a wood inset fascia. This structure, which is done in a Modern style, was originally constructed in 1954 as a "Seal Show" exhibit, as early construction plans identify the building as such (Figure 61). The front elevation of this structure faces south, and contains an inset concrete stage.

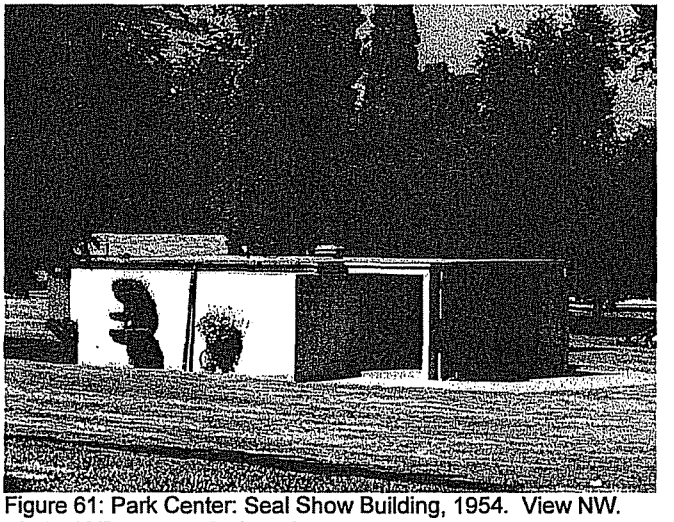


Figure 61: Park Center: Seal Show Building, 1954. View NW.
Photo: ICF Jones & Stokes, August 2007

Due north of the seal show is a small-scale, rectangular-plan single-story bathroom building with stucco clad walls. The gabled roof is underscored with exposed wood rafter tails with rounded edges and is clad in asphalt shingle. One bathroom entry is present at each gable end; men at the south gable and women at the north gable. In the apex above each entry are three ceramic, circular openings in a triangle formation that serve as attic vents. Each entry features a single leaf wood door with a small security window. The lengthwise side elevations feature symmetrically placed paired window bays with each window covered with decorative metal security bar in a diamond pattern (Figure 62). A wood lintel tops each pair of windows as well as each door, each of which is fronted by an enclosure of wood plank.

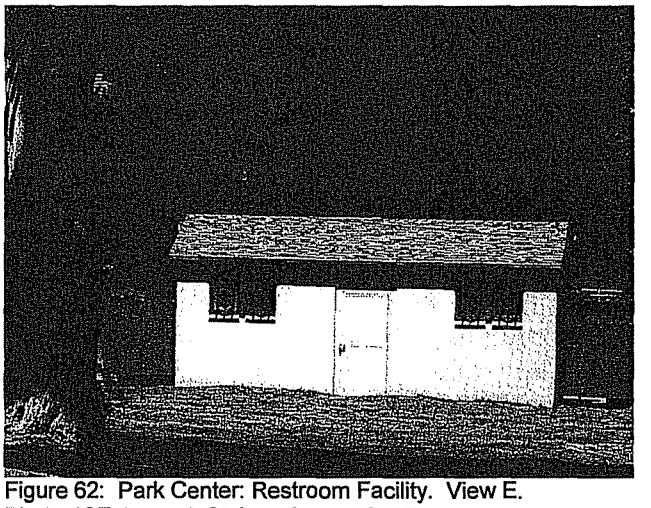


Figure 62: Park Center: Restroom Facility. View E.
Photo: ICF Jones & Stokes, August 2007

In Park Center a long, continuous row of 21 concrete picnic tables runs roughly north-south in the area just east of the above-mentioned resources. These picnic tables are set between two rows of mature sycamore trees that are, at present,

roughly 50 feet tall. A second long, continuous row of 12 picnic tables is located just south east of the Park Center tennis courts, near the southern edge of Park Center. Each of these picnic tables is of smooth concrete stained orange. The table and benches are each of one affixed unit. The City of Los Angeles Department of Recreation and Parks insignia is present in a circle at the support base of the table. These picnic tables as well are located between two rows of mature sycamore trees.

In the middle, northern portion of Park Center is an irregular plan, single-story building that serves as the Park Services Building (Figure 63). This building, which dates from circa 1937, is house-like, and features a variety of Spanish Revival elements. This building is clad in stucco with the front entry facing south. The front-gabled apex above the entry has molding and two circular protruding openings, one placed over the other, that serve as an attic vent. The entry doors are a pair of single leaf wood units. The entry is slightly recessed, and is topped by a wood lintel. One window bay is present at either side of the entry and each of these window units is topped by a long, wood plank lintel, and each is underscored with T-111 siding. A slightly elevated porch with scored concrete and fireflash tile is present in front of the entry. A second entry to the building faces east, and is inset inside a small covered porch with a shed roof supported by wood posts. The door at this entry is a single leaf wood door with a small window at its upper portion. This window features a security bar covering of wrought iron in a simple lattice pattern. A large enclosure is present behind the north/rear elevation of this resource.

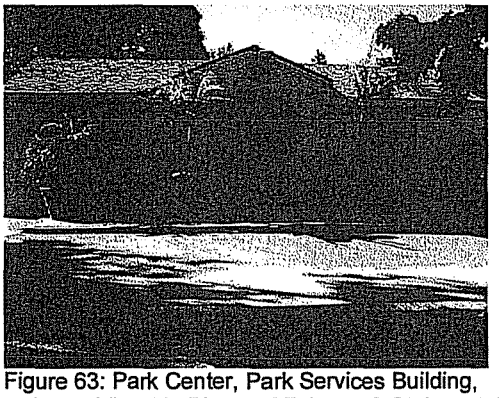


Figure 63: Park Center, Park Services Building, c. 1927. View N. Photo: ICF Jones & Stokes, July 2007.

Directly west above the Park Services building is "Shane's Inspiration," a sprawling complex of various types of playground equipment all designed to be fully accessible by the disabled (Figure 64).



Figure 64: Park Center: Shane's Inspiration Universally Accessible Playground. View W. Photo: ICF Jones & Stokes, August 2007.

At the upper, western portion of Shane's Inspiration is a rectangular plan restroom structure of multi-colored cinderblock done in the postmodern style. This structure features variegated massing including small, square planed tower components with steep, standing seam metal pyramidal cupolas. Aluminum milled attic vents underscore each of these cupolas. Angled walls are juxtaposed with flat walls across all four elevations, and each plane is of a different color than that adjacent to it. Shane's Inspiration was built within the last 15 years and is not a contributor to the historic significance of Griffith Park. An arm of Park Center extends the southwest arm of Shane's Inspiration and it features various concrete picnic benches, including an abstract, Modern style concrete bench with beveled sides. The benches to these are trapezoidal in shape, with some half-length of the tables and others full-length. This picnic area extends westward into a small, hilled gully.

After Park Center, Griffith Park Drive continues southeast for roughly 1 mile at the perimeter of the central, hilly portion of the Park before coming to a turn-off for the Marty Tregnan Golf Academy.

The Marty Tregnan Golf Academy

The Marty Tregnan Golf Academy is a junior golf center located up the hill from the southeastern section of Griffith Park Drive (Figure 65). The driveway contains a small stone and concrete wall that has been painted. The wall is replicated at the top of the hill, with a large retaining wall that diminishes into the smaller wall bordering the parking lot. The maintenance building north of the parking lot has a one-story, rectangular plan with a concrete foundation. There is vertical wood siding with two, symmetrically located, roll-up garage doors that have inset wood panels. The building has a pitched roof with composition shingles and a belt course that runs around the building, located at the top of the wood frame garages.

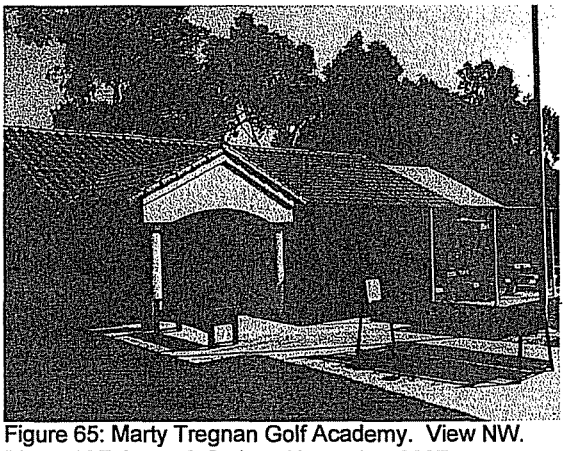


Figure 65: Marty Tregnan Golf Academy. View NW.
Photo: ICF Jones & Stokes, November 2007

The Golf Academy building is new construction that is one-story and situated above the retaining wall. The concrete stairs and ramp leading to the building have a brick memorial dedicated to the people who helped finance the Academy and structures. It is composed of stucco with tinted, single pane, side-by-side windows on the east and west elevations. The north elevation, which faces the driving range, has an embedded arcade supported by columns with a central tinted glass window. The west elevation, that faces the putting range, has a stucco porch with supporting columns and gable roof. There is an extended metal porch with a flat roof and metal poles located south of the gabled porch. Picnic tables and benches are located underneath the metal porch. The roof of the entire building is pitched with Spanish tiles.

The Golf Facility is on a downward sloping landscape to the south. It is comprised of a driving range to the north of the Academy building and a small putting green in between the driving range and building. To the south, west, and northwest of the building are three holes, in which small sand traps are located around the putting green of each hole.

Amenities and Areas due east and north of the Los Angeles River

A portion of State Route 134 is within the historic boundary of Griffith Park and parallels the Los Angeles River where it runs east-west. Where the river turns southward, the section of it against Griffith Park is now paralleled by the Interstate 5 freeway, which is due west of the river and is set within Griffith Park. Interstate 5 and State Route 134 read as the physical east and north boundaries of Griffith Park. The vast majority of the park is due southwest of these two freeways. However, there are smaller portions of the park with various resources located on the opposite side of both the 5 and the 134 freeways near to the communities of Atwater, Glendale, and Burbank. Historically, Griffith Park not only abutted the Los Angeles River, but also traversed it due north and east. Beginning at the southeast corner of Griffith Park and running north, and then

westerly, the following areas are contained within Griffith Park but are located at either the east or north sides of the Los Angeles River.

The Baum Bicycle Bridge is present over Los Feliz Boulevard, between the Los Angeles River and Interstate 5 (Figure 66). The bridge is composed of concrete and metal with a large metal circle through which one rides at each end done in the style of a spoked bicycle wheel. The bicycle tire theme is expressed through a small metal balustrade on top of the concrete sides, and again on the larger balustrade on the ramp leading up to the large, decorative circles.

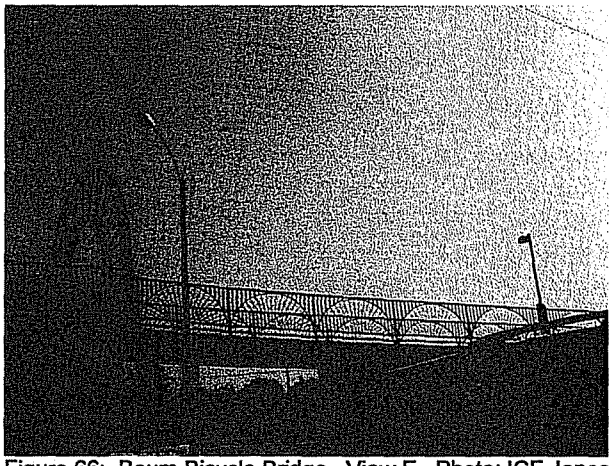


Figure 66: Baum Bicycle Bridge. View E. Photo: ICF Jones & Stokes, November 2007

Los Feliz Boulevard

Los Feliz Golf Course

East of Interstate 5 and the Los Angeles River is the Los Feliz Golf Course (Figure 67). This 9-hole Special "Pitch and Putt" course is accessed via Los Feliz Boulevard, and runs parallel against the Los Angeles River. The course is a Par 3, which spans 1,065 yards, and includes a small putting green near the southwest corner. The landscape consists of low rolling hills with maple and pine trees. In addition, there are a few wooden benches placed on the course, as well as very small auxiliary structures that are rectangular sheds composed of wood with a central door, or a larger shed with double wood doors.

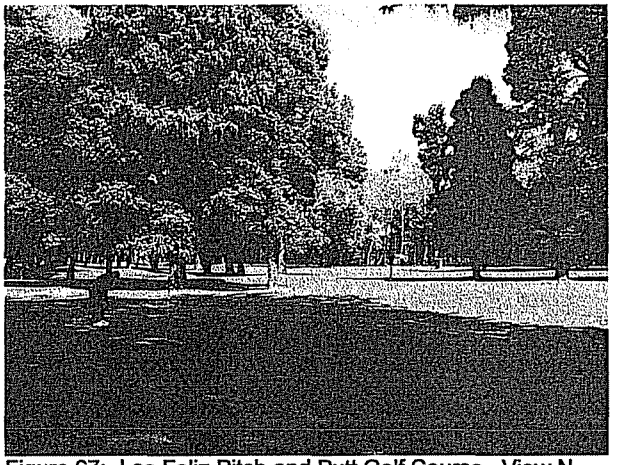


Figure 67: Los Feliz Pitch and Putt Golf Course. View N.
Photo: ICF Jones & Stokes, November 2007

Set within the Los Feliz Golf Course, the Los Feliz Café was constructed in 1948 by transforming a Quonset hut (Figure 68). Although the exterior does not portray this building style, the interior contains the barrel vaulted supports. The building is one-story and has large window panes that slant upward and to the exterior. There is a stone water table and two brick pillars that surround the glass door that faces west, to the parking lot. There is a concrete extension of the building to the west, along Los Feliz Boulevard, that has raised side-by-side single pane windows with decorative, applied security bars. The west side of the building has a concrete patio with wood canopy to the north and newer concrete and metal fence. In front of the Los Feliz Café is a 1950s-era pole sign with the word "EAT" in block lettering highlighted in neon and set upon a rectangular backing. Immediately beside it is an intact, early 1950s era backlit pole sign for the course itself (Figures 69 and 70).

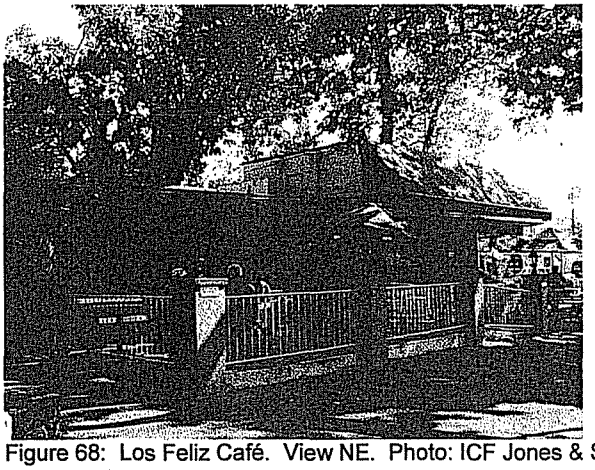


Figure 68: Los Feliz Café. View NE. Photo: ICF Jones & Stokes, November 2007

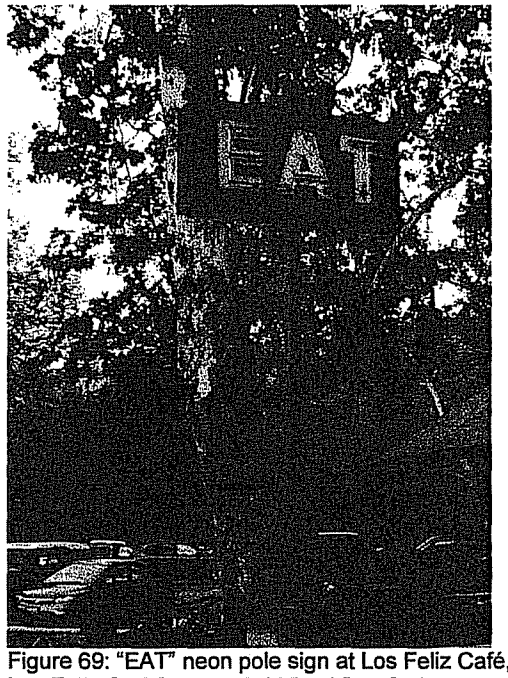
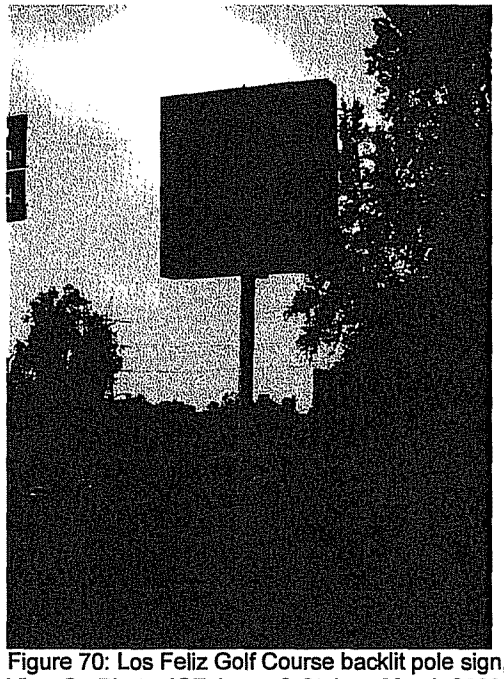


Figure 69: "EAT" neon pole sign at Los Feliz Café, Los Feliz Golf Course. C.1956. View SW. Photo: ICF Jones & Stokes, March 2008.


Figure 70: Los Feliz Golf Course backlit pole sign, c. 1960. View S. Photo: ICF Jones & Stokes, March 2008.

Within the Los Feliz Golf Course there is an auxiliary building facing the Los Feliz Café used to store landscaping and maintenance equipment. It is one-story, rectangular in plan, with a flat roof. The building contains board-and-batten

siding, as well as a garage and metal door. A square-plan, single-story, tongue-and-groove-clad check-in kiosk is also located southwest of the Los Feliz Café (Figure 71). This check-in kiosk is mid-century vernacular in design, and has a pitched roof that cantilevers out as an overhang. This roof is underscored with stylized fascia boards that wrap around the rear elevation of the building.

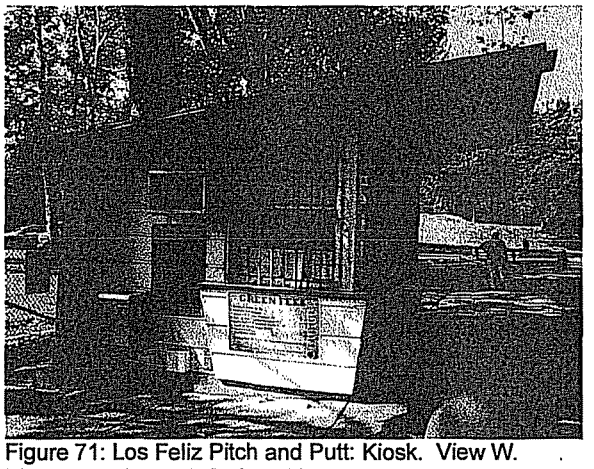


Figure 71: Los Feliz Pitch and Putt: Kiosk. View W.
Photo: ICF Jones & Stokes, November 2007

There is parking for the facility adjacent to the Boulevard and River in a small, paved lot. A small circa 1955 golf shop building is present that features a slanted roofline with exaggerated, metal roof line and German clapboard siding. The building resides on a concrete foundation and has aluminum encased windows on the main (north), west, and east elevations with security bars. Below the windows is a projecting water table that has a small top surface where it meets with the windows.

Chevy Chase Drive

North Atwater Park

Directly above the Los Feliz Golf Course are private equestrian facilities that are not part of Griffith Park. Located off of Chevy Chase Drive, above these facilities is North Atwater Park (Figure 72). North Atwater Park is a small, rectangular section of Griffith Park east of Interstate 5 and the Los Angeles River, where it is classified as the Griffith-Metro Region. The northern side has two large concrete circles within the ground that contain sand and playground equipment within one, and the other is in-filled with brick and contains different heights of large column structures. Directly south of the concrete circles is a bathroom building that is one-story, rectangular in plan. It is composed of metal and concrete siding with a cast concrete foundation and pitched roof with composition shingles. There are inset doorways on the north and south elevations and series of raised open-air metal screens that are located on all elevations. There are flower boxes surrounding the building. To the south and west of the bathroom building is predominantly flat, grassy landscape that has

pine and maple trees, as well as picnic benches. To the south of the park area are basketball courts, small baseball field, and a metal water fountain.

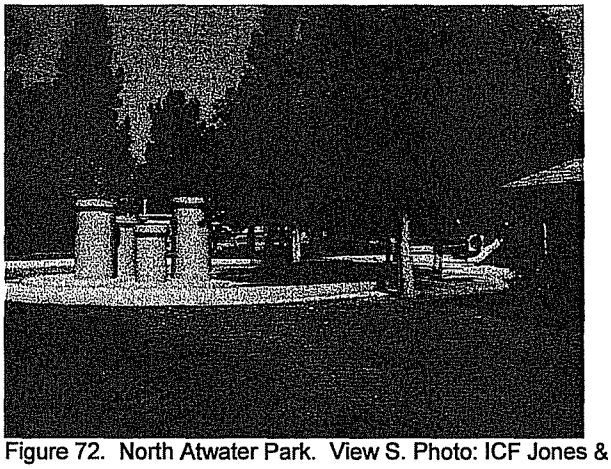


Figure 72. North Atwater Park. View S. Photo: ICF Jones & Stokes, November 2007

Griffith Park Central Service Yard

Directly north of North Atwater Park is the Griffith Park Central Service Yard. The Griffith Park Central Service Yard is a trapezoidal piece of land that is located adjacent to Interstate 5 on the east and directly north of North Atwater Park. The area that encompasses the Central Service Yard is 27.55 acres and contains an asphalt ground surface with sections designated for different departments, in which each division has a main building and designated area for storing temporary structures, machinery, and vehicles. The main access into the yard is via Chevy Chase Drive, where the entrance into the Central Service Yard is through a security booth. It is a one-story, small square structure that has a large roof overhang, which is flat. The building resides on a concrete foundation, with a concrete water table that is fluted and large single-pane windows above. There are two metal doors with a glass transom on the east and west elevations. The road extends north, through the yard, where after passing the security booth there is a warehouse directly to the west. It is a one-story, rectangular-plan building on a concrete foundation. The elevations are composed of corrugated metal with metal doors and a flat metal roof. The windows are metal casement and double metal encased with concrete lower sills. Directly north of the warehouse is a parking lot and fenced-in area that holds temporary storage structures. To the north is a one-story, rectangular building that holds the Equipment Division. It has a concrete foundation, vertical wood siding, metal encased windows in a wood frame, and a flat roof. The building has a front porch with wood supports that faces north. Directly east of the small building is a larger concrete warehouse. It is a tall one-story building used in conjunction with the Division's administrative building.

Off the main road to the east is a trailer that holds the Golf Division. It is a rectangular building composed of vertical wood siding and metal encased windows within a wood frame. There is a concrete foundation, flat roof, and wooden front porch that looks north.

Continuing north on the road, there is a large office administration building for the Department of City Wide Construction (Figures 73 and 74). The building has a T-shape, where the cross of the T is two stories and the extension is one-story. The structure has a concrete foundation, water table, and flat roof. It features large single pane windows that are side-by-side on each elevation. This is the largest office building within the central Service Yard and the most architecturally defined. This building is done in a Mid-Century Modern design and features a generous use of large-scale glass windows in continuous horizontal ribbons; a flat roofed car canopy; and an extended second level with large glazing units fronted by metal, decorative screens with a repeating circle pattern. The planters around this building are done in the park style, though they appear to be from the late 1950s, like the building itself.

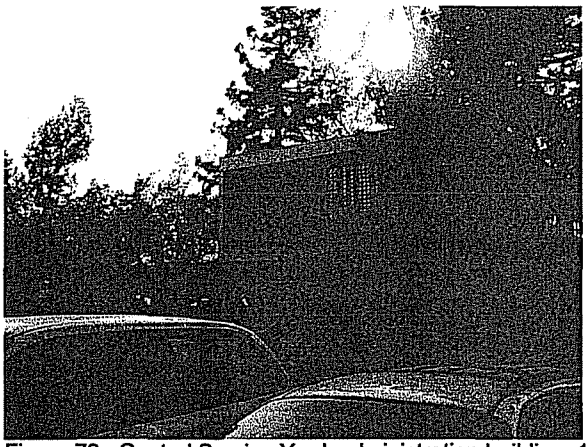


Figure 73: Central Service Yard, administration building, 1958. View SE. Photo: ICF Jones & Stokes, November 2007

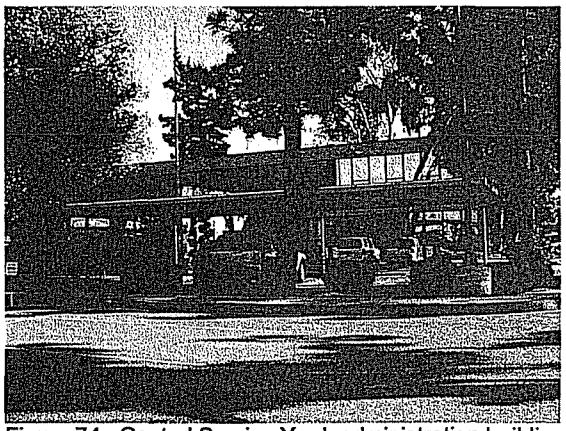


Figure 74. Central Service Yard, administration building, 1958. View S. Photo: ICF Jones & Stokes, November 2007

To the east of the Construction Department, across the street, is a larger warehouse and administrative building. It has single pane windows on the northeast corner, where the elevations primarily consist of concrete with roll-up garage doors. The majority of the north elevation contains a concrete loading dock. To the north of the buildings are two large warehouses that lie before the northern boundary of the property. They are tall one-stories, rectangular in plan on a concrete foundation. The eastern warehouse is composed of corrugated metal east and west elevations, with concrete elevations on the north and south. There are metal doors, roll-up garage doors, and a flat roof. The building features a series of side-by-side garages, with no garage doors, on the west elevation. The east elevation has a downward slanting porch roof, composed of metal, which provides shelter for the loading dock.

The western warehouse has concrete elevations and clerestory hopper windows. It contains a large roof overhang on the eastern elevation, with metal supports, that provides shelter for the series of garages with roll-up doors. On the south elevation is an extended concrete porch that is a filling station. To the west of this garage is a tall metal structure that provides shelter to equipment stored outside. It has metal supports and a pitched roof of corrugated metal.

The northeastern corner of the yard is a fenced in area that holds equipment and temporary storing facilities. To the south, is a trailer that holds the Park Safety Officer Program. It has corrugated metal elevations, wood skirt, and a concrete ramp to the main door on the south with wood barrier wall. It has metal encased double windows with security bars on the south elevation and a metal door. The trailer faces a rectangular parking lot that extends towards the southern boundary. Southeast of the Park Ranger Division is a trailer that faced west. It is a single-wide with vertical wood siding, metal encased windows with security bars, a small front porch stoop of wood, and a low barrel vaulted roof. To the south of this trailer is a large warehouse building for the Metro Region Green Machine Landscape and Support Division that is the oldest in the yard, and dates from the middle to late 1950s. It is two joined buildings, each with a pitched roof and elevations of corrugated metal. They are rectangular in plan with metal doors, where the main entrance is on the south. The west elevation contains the concrete loading dock with roll-up garage doors.

Riverside Drive Resources North of the Los Angeles River

The remaining resources associated with Griffith Park on the other side of the Los Angeles River are those that are due north of the 134 freeway and the river itself. These resources include the Bette Davis Picnic Area, the Los Angeles Equestrian center, and an open natural, flatlands area called the "Pollywog." All three of these areas are located off of Riverside Drive where Riverside Drive runs north of Griffith Park.

The Bette Davis Picnic Area is bordered by the Los Angeles River and 134 Highway to the south and Rancho Avenue to the north with a portion of it spanning Riverside Drive (Figure 75). This picnic landscape is a predominantly flat area abundant with sycamore, ash, oak, and mulberry trees. There are several concrete picnic tables throughout the park. To the west of the grassy park is a large dirt area that is used by the equestrian center. The dirt area is adjacent to the Los Angeles River, with access to the equestrian center via a small concrete bridge. It has short, rounded concrete pillars that are joined by a wood balustrade and a metal fence extends from the outer sides for precaution.

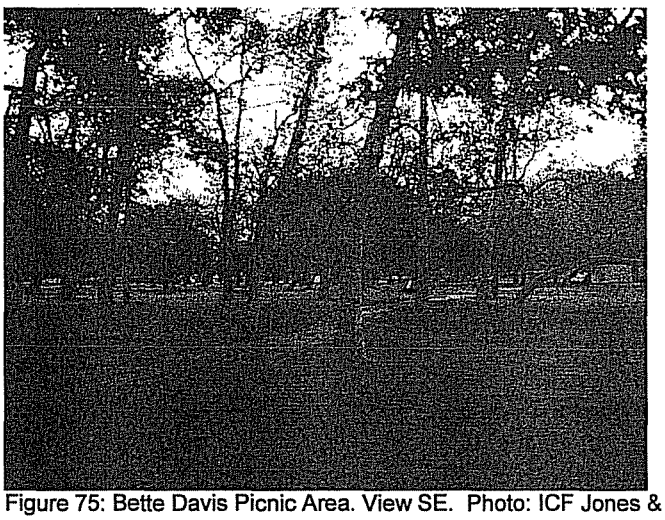


Figure 75: Bette Davis Picnic Area. View SE. Photo: ICF Jones & Stokes, March 2008.

Across from the Los Angeles River to the south, by the 134 Highway, is a one-story, rectangular plan residence that is upon the Griffith Park property. It is composed of stucco with a pitched roof with composition shingles. There is an inset front porch on the east elevation, vinyl windows, and a picket fence. The immediate area contains maintenance equipment. This property may be a caretakers or workers house, and is not readily accessible. Within the Bette Davis Picnic Area, near the 134 Highway and Riverside Drive, is a one-story rectangular-plan building, which is a restroom facility. It is composed of brick running course with side inset entrances to the east and west, metal doors, and a flat roof. Within this area of the park is a small drinking fountain composed of stone. There are concrete water drainage tunnels running below the highway. Across Riverside Drive due northeast, the picnic area continues with sycamore and maple trees. Within this section there is a park building that is one-story, rectangular in plan, and has a cast concrete foundation. There is clapboard siding with wood vents and a vertical wood sliding door. The roof is pitched with exposed rafter ends and is composed of composition shingles. There is an additional building, which is smaller in scale. It is one-story, rectangular plan, with a pitched roof of composition shingles. The building has clapboard siding, three one-pane windows side-by-side on the gable ends, and a double metal doors on the other elevations. It has a concrete foundation, and there are screens underneath the roof pitch on the gable ends. The building holds a piece of equipment and is connected with an exterior piece of equipment that is fenced in, adjacent to the building. The Bette Davis Picnic Area runs westbound in a

fashion parallel to the Los Angeles River, until it crosses a creek and then conjoins with the Los Angeles Equestrian Center.

The Los Angeles Equestrian Center

The Los Angeles Equestrian Center is a large equestrian complex located immediately north of the 134 Highway. The siteplan is semi-circular, with a main entrance off of Riverside Drive, entering into the complex due south. Except for one structure to be described below, the Equestrian Center dates from the mid-1980s, which is well beyond the period of significance for purposes of this nomination. However, this area has historically been used for equestrian related activities. The northern section of the Equestrian Center is open to the public; however, the southern stables and western office area are private. The entrance to the center is accessed to the north through a large entry way structure that has a concrete foundation and horizontal wood siding. The shape of the structure mimics a stable with the double pitched roof.

Directly south of the entrance is a one-story house that is rectangular in plan (Figure 76). The building has board and batten siding, wood frame windows, and four pane French doors. There is a gable on hipped roof with composition shingles. There is a stone chimney near the north elevation, and an overhang porch on the primary, east elevation. There is a concrete foundation with an original, protruding addition on the north elevation. This building dates from the 1930s and originally served as a Cricket Clubhouse. The chimney appears to be a later reconstruction.

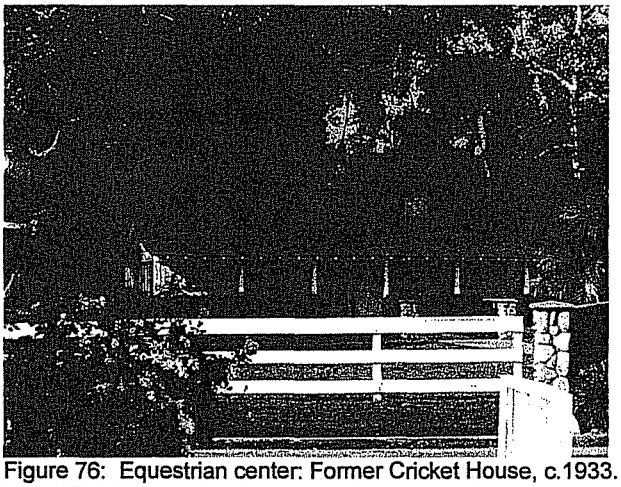


Figure 76: Equestrian center: Former Cricket House, c.1933. View NW. Photo: ICF Jones & Stokes, November 2007

Inside the complex to the left is a paddock used to show horses with bleachers located adjacent to Riverside Drive. Directly to the south is a parking lot accessed off of the main road. To the south, across from a parking lot, is a bathroom structure that is small, one-story, and rectangular in plan. There is a concrete foundation with clapboard siding and a flat roof with asphalt covering. There are inset doors on the east and west elevations that lead to interior bathrooms. The same building is replicated on the south side of the Equidome.

Directly south of the bathrooms is a very large open air building, the Equidome, that is used as a showing facility. It is a concrete supported structure with horizontal wood veneer on the exterior elevations. There is a pitched roof of corrugated metal with barrel vaulting concrete supports displayed from the interior. There is individual stadium seating surrounding a centered showing ring with a dirt floor. The exterior of the building is above elevation on the north and south elevations, where concrete steps and metal railing lead to the pedestrian walkways.

To the east of the Equidome, following the parking lot, is a small building used as a horse rental facility. The building is one-story, rectangular in plan. The trailer is raised from the ground and composed of wood logs that resemble a log cabin. There are two aluminum windows in a wood frame, where one window is slightly arched. In between the windows is an offset wood door. The roof is pitched with a corrugated metal roof. Surrounding the building to the south and west is a series of outdoor stables covered with metal structures that have a pitched roof or corrugated metal. The landscape surrounding the stables is flat and composed of dirt. Southeast of the Equidome is a series of 11-horse stables surrounded by a flat, dirt landscape. The stables are one-story, rectangular in plan. They have horizontal wood siding with vertical wood paneled doors. The buildings are open-air with a low pitched roof with corrugated metal. Only one of the 10 stables is different, composed solely of metal with a tarp roof and lower section of the sliding metal stable doors. Plywood is also used on this stable on the gable ends and on the lower portion of each stall.

A building directly south of the Equidome is a one-story, rectangular-plan structure called La Cantina. It is a concession stand that has a concrete foundation and is composed of clapboarding. There are two inset window bays on the south, main, elevation that have a series of aluminum encased windows with a tile water table. There is a flat roof with an added roof structure that has a mansard roof and projecting, central sign. Directly south of the south side bathrooms is a row of three buildings. The far south structure holds Dominion Saddlery, which is a two-story building that has a rectangular plan. There is a large inset in the center of the building on the first floor that has vertical wood siding veneer to the south and corrugated metal to the north. The structure is composed of plywood encased with metal. Aluminum encased metals are present as is double pitched roof composed of corrugated metal with a wood cupola.

The central building is a concession stand that is one story in an L-shape plan. It has a concrete foundation and patio, vertical wood siding around the concession area and board and batten siding on the northern section of the building. Wood frames that hold metal encased screens are present. There is a metal door to enter the concession stand and a tilt-up garage door on the west elevation. The north building holds the veterinarian offices. It is a one-story trailer rectangular in plan and raised from the ground. It contains vertical wood siding with a plywood skirt. The windows are vinyl, six-over-six in a wood frame. This resource possesses a flat roof plus metal doors and stairs. To the west of the aforementioned buildings are two separate dirt rings that are encased with concrete block. To the south of these buildings is a series of horse jumping rings

that span across the majority of land adjacent to the 134 Highway. West of the Equidome is the Los Angeles Equestrian Center building, which is one-story and U-shaped in plan. The large structure houses "Calamigos," a restaurant that holds private parties; gift shops, restrooms, box office, and the center offices. It has a concrete foundation and porch, which is covered from the extended roof line and supported by wood supports, that wraps around the inner and western sections of the U shape. The entire building has clapboard siding, wood frame windows that are side-by-side, and wood and glass doors with four pane transoms. However, the central section of the building has been modernized with large, tinted glass encased by metal on the west elevation, which includes the doors. The interior has been renovated as well. The roof on the entire building is gable-on-hipped with composition shingles. The Equestrian Center building can also be accessed via car through the main road within the complex. Before the parking lot within the U shape of the building is accessed, a square plan, one story information booth is present. It has a cross gabled roof with composition shingles. The building is composed of clapboard siding with wood frame windows that are 16 pane to the north, four pane with four pane central window with four pane fanlights, and a wood paneled and glass door to the south. Another booth is placed after passing the Equestrian Center building.

West of the main access road is a series of three large stables. They are one-story, rectangular in plan, with horizontal wood siding on the first floor, vertical wood siding under the gable ends, and wood vents on the gable ends. The roofs are double pitched with corrugated metal. The buildings are open-air stables, where there are three rows of stalls, two of which are accessed via the north and south on the porch that has metal supports. There are two, large interior halls that are accessed by the gable ends. In between the three stables are two bathrooms lined on the east. They are one-story, rectangular in plan, with a concrete foundation. The building is composed of newer concrete block with a slightly slanted roof line that has overhanging eaves to the east and west, with exposed rafter ends. This building features inset entrances to the north and south with metal doors.

To the west of the two bathrooms are outdoor training areas separated by metal fencing. To the west of these facilities are temporary storage facilities composed of vinyl siding. Off of Mariposa Street, which is the western edge of the complex, is a private access road that holds a large parking lot. Within this area is a series of trailers that are single- or double-wide, one-story, rectangular in plan, with horizontal wood siding. Some structures have flat or barrel vaulted roofs, corrugated metal skirts, metal doors, aluminum encased or vinyl windows, and metal stairs leading to the raised door. To the south of the parking lot is a one-story office building that has a long, rectangular plan. The main entrance faces the parking lot, north, with large panes of glass used as windows and doors. The elevations are composed of brick to the east, and an extended western section is concrete. The building resides on a concrete foundation and has a flat roof with concrete overhang. There is a one-story house composed of stucco located adjacent to Mariposa Street, north of the parking lot. It has a hipped roof and single pane windows only located on the eastern, projecting bay. The entire equestrian center appears to have been constructed after the period of significance, with the majority of the buildings constructed in the 1980s.

The Pollywog

Due west of the Equestrian Center upon Riverside Drive is a trapezoidal area of largely flatlands called the Pollywog (Figure 77). The pollywog is unique to Griffith Park as a flatlands area that is not covered with mowed lawn. The occasional tree specimen is present in the pollywog, as are various unofficial horse and pedestrian trails.

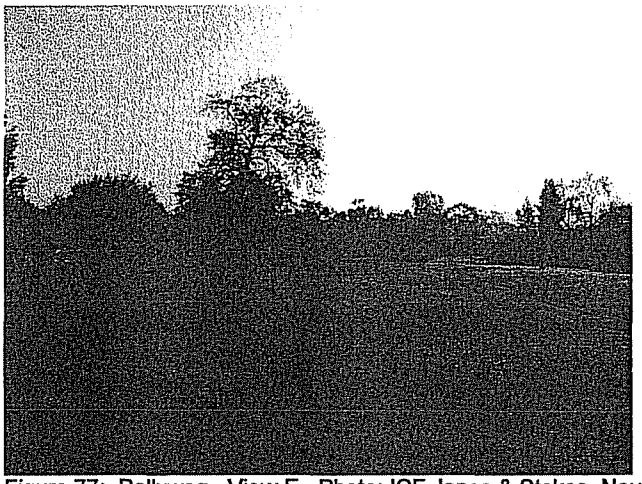


Figure 77: Pollywog. View E. Photo: ICF Jones & Stokes, November 2007

Griffith Park: Southern Portion Amenities

The southern portion of Griffith Park is set directly behind the neighborhoods of Los Feliz and Hollywood Hills. The primary amenities at the southern portion are initially accessed by three separate roads: Vermont Canyon Road, Fern Dell Drive, and Canyon Drive. Commonwealth Canyon Drive, off which are the Vermont Tennis Courts, the Roosevelt Municipal Golf Course, and the Nursery and Horticultural Center, is located off of Vermont Canyon Road.

Vermont Canyon Road

Entrance into the park from Vermont Canyon Road is through a wide pass up a hill, which winds past the Bird Sanctuary to access the Observatory at the peak of the hill. This section of Griffith park begins well north of Los Feliz Bloulevard, behind a residential community of hillside single family residences constructed primarily between the 1920s and the 1950s. Within Griffith park, off of Vermont Canyon Road due east, the Roosevelt Municipal Golf Course is a Par 33, 9-hole course that covers 2,400 yards (Figure 78).

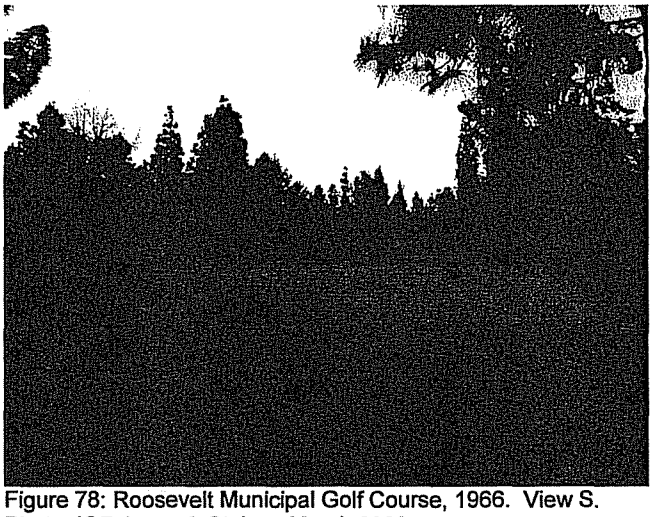


Figure 78: Roosevelt Municipal Golf Course, 1966. View S.
Photo: ICF Jones & Stokes, March 2006.

The course was developed in 1966, which is after the period of significance for Griffith Park. The course is bordered by Commonwealth Canyon Drive to the north and east, Vermont Canyon Road to the west, and the southern border of the Park that is buffered by a residential area. The landscape consists of large rolling hills with some grouping of natural vegetation and several pine and oak trees. Aside from wood benches, the only structure on the course is a small, one-story restroom facility of newer construction. The building is composed of concrete block with clerestory window frames that contain metal screens. The roof has a medium-pitch with composition shingles and overhanging eaves. There are door frames on the north and south elevations for the respective bathrooms, and attached water fountains on the east and west elevations. The Roosevelt café/golf shop is a one-story building square in plan (Figure 79).

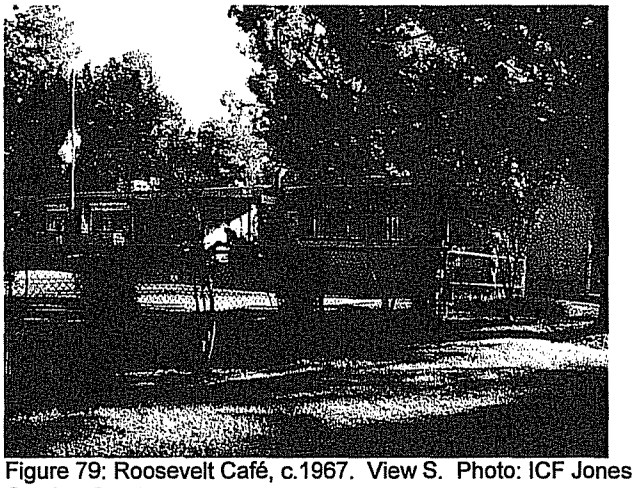


Figure 79: Roosevelt Café, c.1967. View S. Photo: ICF Jones & Stokes, October 2007

The café and golf shop are separate rectangular buildings connected with a wood canopy and concrete patio that has picnic tables. Both structures are extremely

similar in design; however, the golf shop is smaller in scale. The buildings have a concrete foundation with vertical wood siding. The golf shop has a flat roof, and the café roof is flat with a combination of a very low pitch. There are aluminum framed windows and metal doors. The west, Vermont Street, side of the building has a wood patio and fence. Roosevelt Golf Course auxiliary structures are located north of the golf shop and café. There are three small, rectangular sheds that have a flat, corrugated metal roof and wood doors. Within the same area there is a wood structure that has a pitched roof with composition shingles. It is supported with wood columns.

Vermont Canyon Road → Boy Scout Road

Boy Scout Road is a small spur road off of Vermont Canyon Road due west, across the street from the Roosevelt Golf Course amenities and entrance. A one-story and rectangular-plan restroom building is present at the southwest corner of Boy Scout and Vermont Canyon Roads. It has a pitched roof with composition shingles and a concrete foundation and patio. The gable ends are wood framed with mesh nets underneath the pitch of the gables. Surrounding the building are wood supports of a pergola. This building has entrances on the east and west elevations. Water fountains are attached to the south elevation. This building appears to be recent. A cleared picnic area with picnic tables is present off the north shoulder of Boy Scout Road, as is a small concrete amphitheater (Figure 80).



Figure 80: Amphitheater off of Boy Scout Road. View N.
Photo: ICF Jones & Stokes, March 2008.

Vermont Canyon Road → Commonwealth Canyon Drive

Commonwealth Canyon Drive is located directly above the Roosevelt Café and Golf Shop and below the Greek Theatre. Commonwealth Canyon Road runs eastward, above the Roosevelt Municipal Golf Course and down past the Griffith Park Nursery and Horticultural Center. Above the Roosevelt Golf Course off of Commonwealth Canyon Drive are the Vermont Tennis Courts (Figure 81). The Vermont Tennis Courts are three sets of four tennis courts located north of the Roosevelt Golf Course, just north of Commonwealth Canyon Drive. These tennis courts are set upon bases of park-style irregular course boulder work embedded in masonry. Directly south of the courts is the reservation booth building, which is one-story and rectangular in plan. It has a concrete foundation and patio with stucco siding and wood veneer. It has a flat roof and wood canopy extending to the north. An aluminum sliding window is present on the west elevation. A shed that has a gambrel roof with composition shingles is present to the north of the building. It is a small one-story, rectangular-plan structure that has vertical wood siding and a double wood door. It is placed on concrete blocks. A wood structure is placed in between courts, adjacent to the walkway. It has a pitched roof of corrugated metal. North of the courts is a one-story rectangular-plan building that contains bathrooms. It has a concrete foundation and stucco siding. There are raised one pane windows side-by-side in a metal frame. The roof is pitched with extended eaves and composition shingles. The gable ends contain a wood door and vents underneath the pitch of the roof.

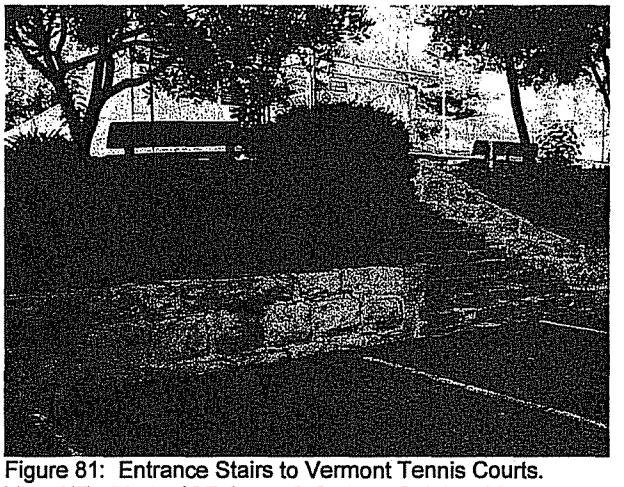


Figure 81: Entrance Stairs to Vermont Tennis Courts.
View NE. Photo: ICF Jones & Stokes, October 2007.

Griffith Park Nursery and Horticultural Center (Commonwealth Nursery)

The Commonwealth Nursery is inset into the natural terrain of the southeast section of Griffith Park, located immediately south and below grade of Vista Del

Valle Drive, and immediately east off Commonwealth Canyon Drive, where the nursery complex is accessed via a small, unpaved road. Located off the west side of this access road the first structure associated with the nursery is the Nursery Caretakers House. The Nursery Caretakers House is a one-story rectangular-plan building with stucco cladding. There are vinyl and aluminum windows, lunette attic vents, and two overlapping gables with composition shingles. A detached garage is present behind the residence, and its 2-car garage entry is covered with a recent, metal roll-up door. This residence, which was originally done in the Spanish Revival design, was constructed in 1927, and has lost its integrity due to exterior alterations. Due north of the Nursery Caretaker's House, on the same side of the access road, is a small but overgrown clearing among mature tree specimens that contains a picnic area dating from the 1930s (Figure 82). This picnic area is set upon a platform of smooth, molded edged concrete at its lowest course, rusticated, SCR-scaled, square-cut concrete block in its centered courses and topped by a smooth concrete floor with square edge molding. Cut into this base are two wide stairways consisting of molded concrete lower stairs and rusticated concrete block upper stairs. A recent, metal picnic table is present upon this base, and is barely discernible behind an overgrown oak tree. Across this access road due east and north of the residence is the nursery complex itself, which is divided into three parts: an upper section consisting of parking areas and two long, attached buildings; a middle section consisting of garden plots and greenhouses; and a lower section, consisting primarily of temporary and recent structures around a blacktopped auto court.

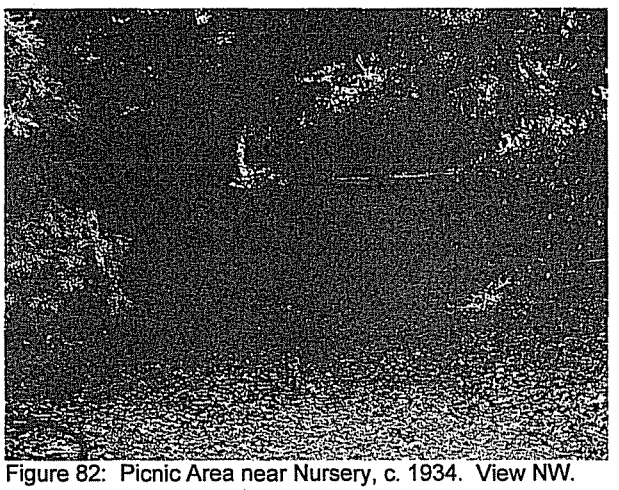


Figure 82: Picnic Area near Nursery, c. 1934. View NW.
Photo: ICF Jones & Stokes, August 2007.

The upper section of the nursery complex is accessed by the service road, which turns easterly and ends at the eastern edge of the nursery. At the southern shoulder of the service road is a row of parking spaces that traverses the length of the nursery. At the upper portion of the service road are two early buildings, both horizontally acclimated, and connected to one another. The most westerly of these is the Nursery Office and Locker Room building (Figure 83). This building is one-story and is side-gabled, with stucco cladding. This building consists of two components. The west-end component is slightly recessed and its front elevation consists of five adjacent bays, four of which are large, 4/4

woodframe double hung windows, and one of which is an off-center entry fronted by a metal security door. This elevation is inset behind brick planters, and the entry is accessed by a concrete walk. Presumably, this unit of the building was originally the nursery office itself. Woodframe, paired casement windows are part of the design. Each of these windows is topped by an inset wood plank lintel. One of the bays is an overhang for the entry, which is recessed. Above the entrance to the overhang itself is a scrolled bracket present within one corner. The roof, which is clad in asphalt, has low small eaves that are underscored with exposed wood rafter tails.

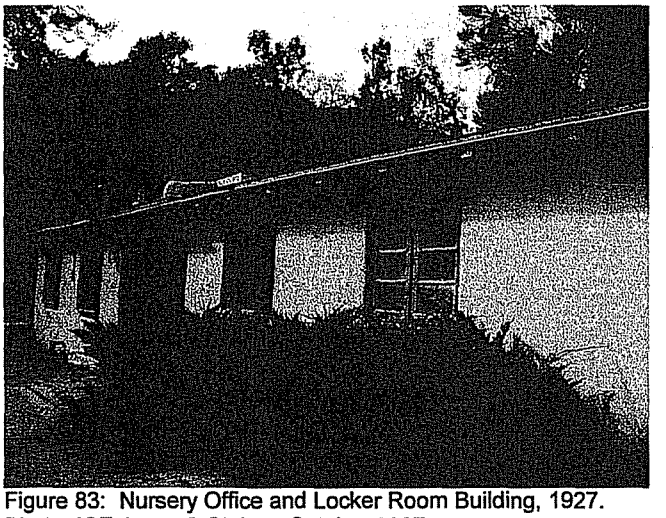


Figure 83: Nursery Office and Locker Room Building, 1927.
Photo: ICF Jones & Stokes, October 2007

The above-described nursery office and locker room building is affixed to an extended structure, which is a long, single-story, side-gabled rectangular-plan structure clad in false bevel wood siding (Figure 84). This building appears to be used as a garage, office, and storage facility. Across its front elevation is a series of window and entry bays that appear to be organized into various groupings. At the far western portion of this building are six bays, five of which are 8/1 woodframe double hung windows and one of which is a pedestrian entry. All windows and entries across the front elevation of this building are framed in wood plank. Due east of these bays is a series of three bays featuring wood frame windows in sets of three where the upper corners of each set are beveled. The eastern half of the front elevation of this building features four window bays with 8/8 woodframe double hung glazing, two paired single panel entry doors, a large, inset beveled corner opening, and a pair of 4/4 woodframe double hung windows. Aside from the Feliz Adobe located in Crystal Springs, this building, along with those comprising the Wilson-Harding Turf maintenance facility, is among the earliest in Griffith Park, and dates from 1927.

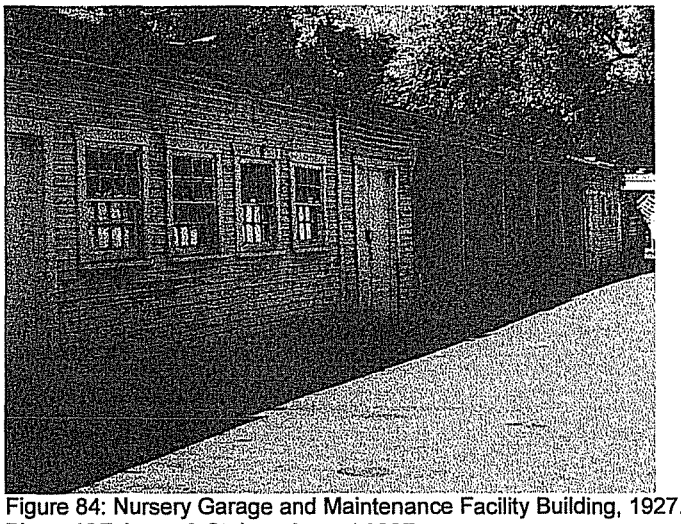


Figure 84: Nursery Garage and Maintenance Facility Building, 1927.
Photo: ICF Jones & Stokes, August 2007

The middle section of the Commonwealth Nursery consists of numerous terraced garden plots that are made of concrete, and are acclimated roughly east-west. Running parallel at the upper portion of these plots and running perpendicular east of them are four greenhouse structures that date from circa 1938 (Figure 85). Each of these woodframe structures is of a single story with a gabled roof. Continuous, woodframe, large panel frosted glass glazing is present across all elevations. The two easterly nurseries contain glazing across the roof itself, whereas the two northerly nurseries feature an exposed woodframe roof. All elevations are underscored with three courses of channeled wood siding. The lengthwise side elevations of each greenhouse consist of multiple glazed bays of vertically acclimated frosted and clear glazing units. Each nursery is front gabled at its breadth-ends that contain a centered entry. The glazing around and above the entry is vertically acclimated, and consists of custom cut single panels running up the height of the elevation. The lower portion of the nursery facility consists primarily of recent buildings and structures including a recent filling station, numerous metal storage containers and sheds, and a metal clad trailer. The trailer is located at the upper portion of a blacktopped area and is fronted by mature bougainvilleas and a tall metal flagpole. The filling station is located in the middle of the nursery's lower portion. Numerous recent rectangular plan metal storage containers are lined along the eastern edge of the property. Park style rock barriers, from the 1930s, with irregular course boulders are present at the below southwest corner of this area. Park-style irregular course boulders placed in concrete surround the blacktopped area itself.

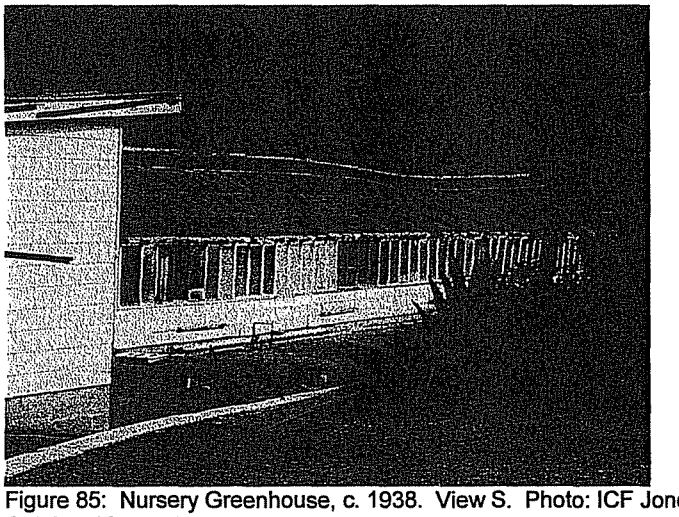


Figure 85: Nursery Greenhouse, c. 1938. View S. Photo: ICF Jones & Stokes, October 2007.

Vermont Canyon Road Ctd.

Continuing northward on Vermont Canyon Road is the Greek Theatre, which is a two-story performance venue, rectangular in plan with a concrete foundation (Figure 86). It was designed in a Second Greek Revival style, emphasizing fluted pilasters, elaborate entablature with triglyphs, metopes, and dental molding on the north, south, and east elevations. There is a pitched roof with composition shingles and a large pediment on the east and west elevations. The west elevation has stadium seating with metal chairs that are built into the natural landscape, as well as the stage. The north, south, and east elevations also have a series of twelve pane metal casement windows with metal grills and metal double doors.

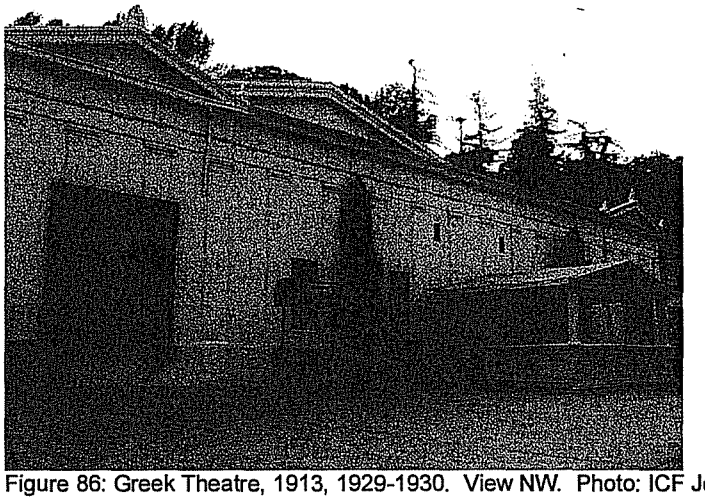


Figure 86: Greek Theatre, 1913, 1929-1930. View NW. Photo: ICF Jones & Stokes, October 2007.

The Theatre building is a two-story structure north of the Greek Theatre. It has horizontal wood siding on the top story and concrete and glass on the second story. The Greek Theatre Box Office is located northeast of the Greek Theatre, next to Vermont Canyon Drive, and is a one-story building rectangular in plan and contains a flat roof. It is located northeast of the Greek Theatre. The building is composed of concrete with horizontal wood siding veneer. The southern elevation has a series of windows used for the box office. Bathrooms are located north on Vermont Avenue and the Greek Theatre, directly north of the parking lot used for venues. It is a one-story building rectangular in plan. It has a concrete foundation and is composed of stucco. There is a pitched roof with Spanish tiles. There is a series of three wood windows that are inset with screens on all elevations. There is a transom that contains a banister above the wood doors on the east and west elevations, as well as a wood eave. There are vents located beneath the pitch of the gable ends.

The Griffith Park Bird Sanctuary is off of Vermont Canyon Road just before it curves west toward the Griffith Park Observatory (Figure 87). The Bird Sanctuary was designed by the Los Angeles Chapter of the Audubon Society and constructed by Boy Scouts in 1922 under the direction of the Audubon Society and the City Parks Department. The Bird Sanctuary is an open area bordered by a wood post and beam fence. Within it are various low, park-style walls and culverts of irregular course tumbled river rock in mortar, and these walls appear relatively recent. The bathroom building within the Bird Sanctuary is a one-story building rectangular in plan with a concrete foundation, concrete elevations and elevations with a wood shiplap water table. There is a series of clerestory windows on the north and south elevations within a wood frame. The building has a hipped roof with composition shingles and overhang. This bathroom appears to have been constructed within the last 10 years. The Bird Sanctuary also features a pylon-shaped drinking fountain of ashlar cut stone, and an irregular course flagstone sink basin.

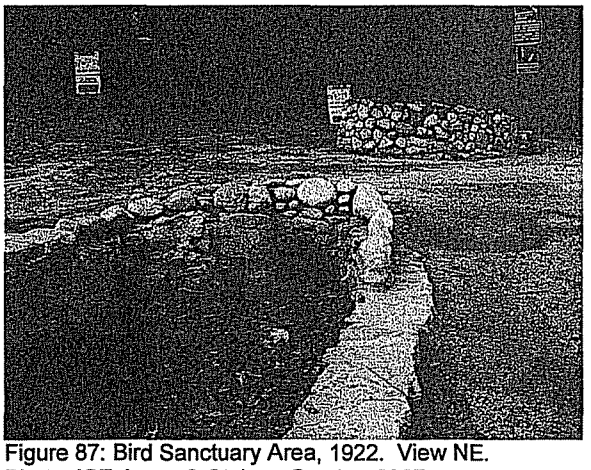


Figure 87: Bird Sanctuary Area, 1922. View NE.
Photo: ICF Jones & Stokes, October 2007.

Vermont Canyon Road → East Observatory Road

East Observatory Road is located south off of Vermont Canyon Road and leads to the Griffith Observatory. East Observatory Road is lined with 1920s-era City of Los Angeles light standards with fluted, classically detailed granite poles with an acorn-shaped glass bowl. The Griffith Observatory (City of Los Angeles HCM # 168) is a large concrete building defined by three domes and the PWA Moderne style (Figure 88). Built in 1935, it has a concrete foundation, Greek frets within a frieze and around the front door that faces north, as well as copper windows, door, and roof decoration. The southern elevation reveals the buildings placement on the sloped landscape, revealing two additional basement stories. Stairs lead from the first floor onto a roof balcony and access to the flanking domes. The main entrance, facing north, has a manicured lawn and concrete walkway, as well as centrally placed figurative concrete sculpture called the "Astronomers Monument." This sculpture depicts various legends of astronomy and was created by six separate sculptors as a WPA Artists Project.

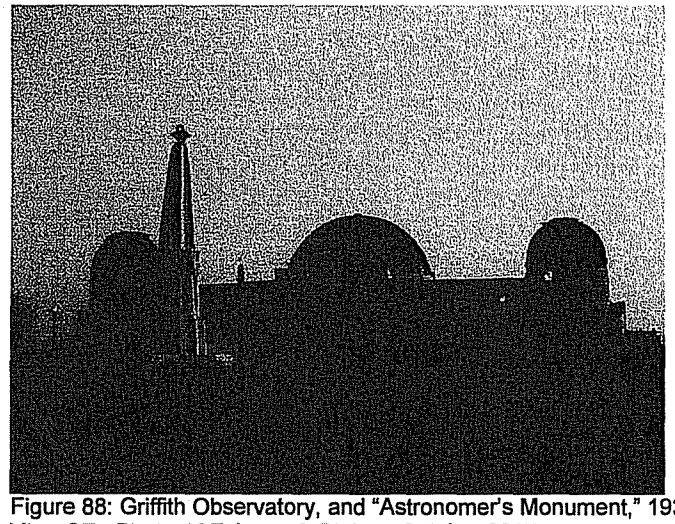


Figure 88: Griffith Observatory, and "Astronomer's Monument," 1935. View SE. Photo: ICF Jones & Stokes, October 2007.

Vermont Canyon Road → Mt. Hollywood Drive (Mt. Hollywood Tunnel)

After crossing East Observatory Road, Vermont Canyon Road ends at the Mt. Hollywood Tunnel (Figure 89), which itself is a brief segment of Mt. Hollywood Drive. The Mt. Hollywood Tunnel runs east-west and has a square-shaped, smooth concrete face at each entrance side. The tunnel itself is a barrel vault of *béton brut* poured in placed concrete.

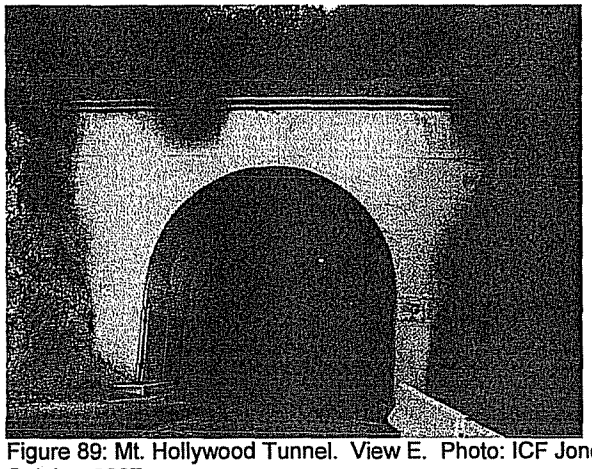


Figure 89: Mt. Hollywood Tunnel. View E. Photo: ICF Jones & Stokes, October 2007

Mt. Hollywood Tunnel → Western Canyon Road

A junction point with the upper end of Western Canyon Road is present shortly after exiting the Mt. Hollywood Tunnel due west. Western Canyon Road is a two-lane, paved road with switchback turns that run along the south face of Mt. Hollywood. Adjacent Western Canyon Road just after the above-mentioned junction are park style walls with multi-colored geometrically cut masonry infilled with gallets in an irregular course dry mortar. Turn offs and picnic area with park style irregular course borders are present along Western Canyon Road (Figure 90). Driving West and south on Western canyon road, expansive vistas of the Los Angeles basin are readily visible. At its lower end, Western Canyon Road becomes Fern Dell Drive.

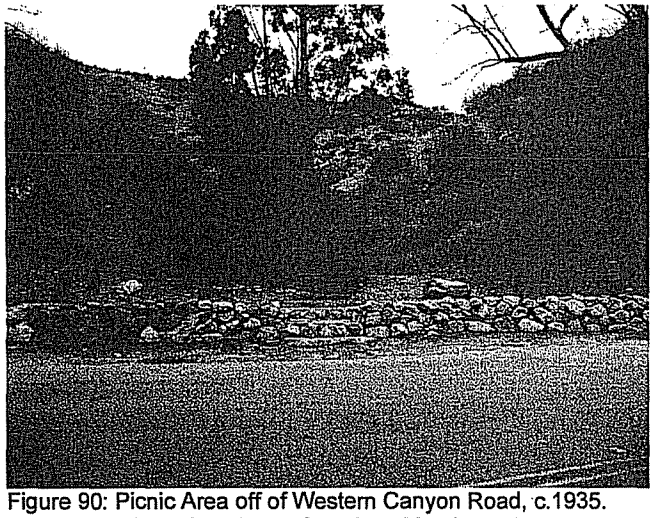


Figure 90: Picnic Area off of Western Canyon Road, c.1935. View NW. Photo: ICF Jones & Stokes, March 2008.

Fern Dell Drive and Fern Dell

The second of three primary entrances into the south portion of Griffith Park is Fern Dell Drive, which is near Western Avenue in Los Feliz. As Fern Dell Drive moves northward, the street changes name to become Western Canyon Road, which as it ascends in elevation ultimately winds eastbound toward the Griffith Observatory.

Fern Dell Overview

The Fern Dell section of Griffith Park is a series of trails and rock encrusted water features that are bilaterally intersected by Fern Dell Drive: a paved, two-lane automobile road that traverses north-south. The Focal Point of Fern Dell is a secluded grouping of pedestrian trails and streams that is largely below grade, bordered by park style rock walls and numerous fern specimens of various types. This section of trails and features, which is Fern Dell proper, jogs beneath Fern Dell Drive at its rear portion before it opens onto a multiplicity of pedestrian trails, dry ponds and creek beds, and picnic areas all bordered by various courses of irregular and ashlar cut concrete and rock boulder wall and barrier features done in the Park Style, oftentimes in dry course masonry. This rear portion of Fern Dell features a minimal traditional-styled building that is today used as a snack bar, inset into an area that appears to have been an early camp gathering area based upon three parallel rows of sitting level rockwork in concrete, the westerly of which has a flagpole in the center. Various movable, cut tree stumps that serve as stools if necessary are also present adjacent the snack bar. South of the snack bar area along Fern Dell Drive is a Spanish Revival style watchman's house that long served as a nature exhibit. The integrity of this resource, along with Fern Dell as a whole, is very good. The Fern Dell site was formerly a Gabrielino Indian site for which it is recognized as City of Los Angeles Historic Cultural Monument #112 (Figure 91).

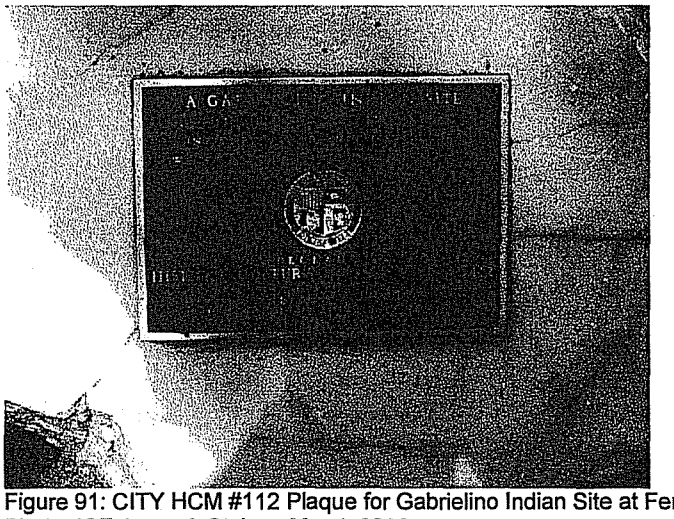


Figure 91: CITY HCM #112 Plaque for Gabrielino Indian Site at Fern Dell.
Photo: ICF Jones & Stokes, March 2008

Entrance Features off Fern Dell Drive

At either side of Fern Dell Drive at the entrance to Fern Dell is a lawn-covered hilly area with mature tree (canary pine) specimens. On the easterly hill is "Griffith Park" signage of welded, textured metal letters painted on pipe railing set in a planter with a recent boulders-in-mortar surround. At this section due easterly of the entrance, a paved pathway cuts diagonally from southwest to northeast. A stream is present running along the far eastern edge of the Fern Dell area. Set within this easterly section of the entrance is a roughly 5-foot-tall bronze statue of an upright bear known as the Berlin Bear statue which dates from the 1980s (Figure 92).

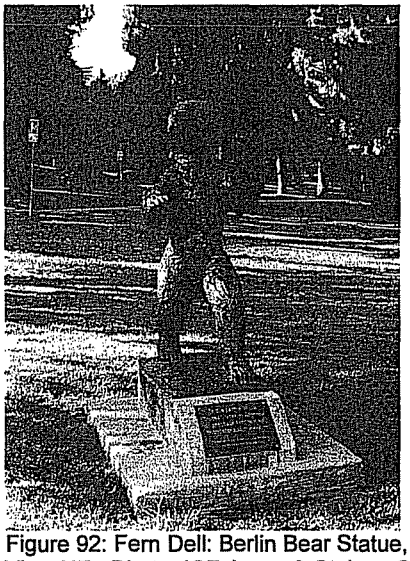


Figure 92: Fern Dell: Berlin Bear Statue, 1981.
View NE. Photo: ICF Jones & Stokes, October 2007

The westerly side of the Fern Dell area entrance features rolling grass hills and two monuments: a ground level bronze plaque set into a boulder and dedicated to Mrs. Rollin B. Lane, December 17, 1937 and a bronze bust portrait of Lief Erickson, which is placed upon a black granite obelisk. At either side of Fern Dell Drive is a sidewalk. A park-style retaining wall feature with 4-course square-cut concrete aggregate block is present along the western sidewalk. This wall continues along the length of sidewalk before the entrance to Fern Dell proper, which is located at the corner of Fern Dell Drive and Black Oak Drive. This wall features a periodical pattern of a centrally placed, flat-faced slab concrete. The grassy area above this wall features mature redwood trees. Moving northward at the easterly portion of the Fern Dell area adjacent Fern Dell Drive, the stream at the far eastern edge is fed by a small aqueduct from beneath Fern Dell Drive. This stream is bordered with square cut concrete aggregate rock. A blacktopped, straight, ascending trail runs along the eastern edge of the east portion, parallel to the stream, and this trail is lined with trees at its east side. The middle portion of the easterly, at-grade portion of the Fern Dell area is a hilly, grass covered area with mature sycamore specimens with the occasional decorative large boulder. Continuing northward at the at-grade easterly portion

of the Fern Dell area the blacktopped trail gradually ascends and descends, redwood trees are present, and the single family residences visible upon an embankment above the trail begin to recede, with additional park property opening up at the middle portion of the easterly side. The terraced "Soroptimist" picnic area is present in this area and features boundary walls of irregular course boulders in a dry mortar style (Figure 93). A bed of bulbous flowers is present, with ground cover primarily of earth. The Soroptimist Picnic area is of three terraced levels with a barrier wall entrance of irregular course square cut red sandstone containing a symmetrical arrangement of two stairways; inset with two drinking fountains and centered plaque that reads "Minnie M. Barton Memorial, Soroptimists Club of Los Angeles, July 1947."



Figure 93: Fern Dell: Soroptimist Picnic Area, 1947. View SE. Photo: ICF Jones & Stokes, August 2007.

Below each drinking fountain is a metal catch basin that reads "Scofield Big Boy Basin." The upper terraces of the Soroptimist Picnic Area have low walls of square cut recycled concrete aggregate in dry mortar. The upper terrace is topped with faux concrete wood branch railing. Terraces two and three have one centered stairway each, which are both axially aligned above the previously mentioned Soroptimist plaque. At the north portion of the uppermost terrace is a canopied food prep area with a counter that appears to have had a former sink or stove that has since been removed. A concrete table is present within this prep area. At the very rear of this picnic area, inset into the upper terrace wall is a second Soroptimist metal rectangular plaque dated July 1955 and reading "Soroptimist International of Los Angeles." Looking west from this picnic area are two bridges that serve as the center point of the Fern Dell area, and underneath which Fern Dell proper jogs from west to east. One of these bridges is an auto bridge for Fern Dell drive, and it appears to date from the 1930s. This bridge, which appears to be in a WPA style, features thick concrete railing with a repeating motif of rectangular vertical openings each underscored and capped with a semi-circular opening. A pedestrian bridge is parallel the auto bridge. In a concrete curbed area off of Fern Dell Drive just north of the bridge on the east side are leaf patterns set into the concrete itself and are dated 1998. Looking south on Fern Dell Drive toward the front entrance to the area, there are 1920s era light standards, and a chain link fence with an occasional opening into Fern Dell runs along the western side of the road.

Fern Dell Proper

The entrance to Fern Dell proper is located at the northwest corner of Fern Dell Drive and Black Oak Drive. This entrance is protected by a recent metal bar security gate and is fronted by a plaque honoring City of Los Angeles Historic Cultural Monument #112 for the Gabrielino Indian Site that is present at the Fern Dell property. Once inside Fern Dell proper, a culvert is present that runs eastward beneath the adjacent road. The openings of this culvert are in a pointed, Moorish style arch shape. Upon entering Fern Dell, a stream is present, as are various pedestrian trails: two trails to the west of the stream and one running parallel to the east of the stream. A recent truss bridge connects the trails over the stream. The trails west of the stream are connected by the occasional faux flagstone concrete walkway. Walking northward, a rock alcove is present built into the western wall, and it appears to have originally contained a water feature (Figure 94).

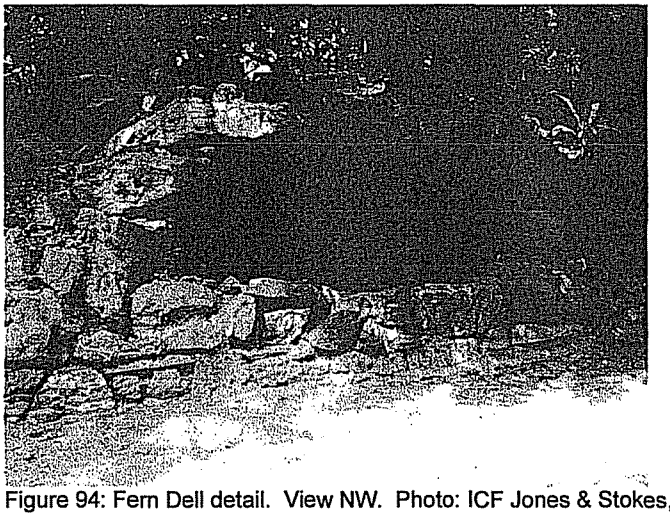


Figure 94: Fern Dell detail. View NW. Photo: ICF Jones & Stokes, March 2008.

This alcove features two symmetrical square openings in its catch basin. Between the two westerly pedestrian trails are various concrete islands bordered in park style rockwork that feature numerous mature tree and fern specimens. The westerly edge of Fern Dell proper features a roughly 4-foot-tall Park style wall that is terraced and dotted with a lush, enclosing treatment of numerous plants, including many fern specimens. The trails wind and the stream undulates in width as one moves northward. The walkways are multi-tiered and elevated sitting areas are present along the western end of the walk. Continuing northward, the three trails become two, and additional concrete islands covered with vegetation are present within the stream. These islands are composed of square cut aggregate in mortar topped with irregular fragments of upright concrete slab and boulders. One island within the stream is an irregular, triangulated shape. The side walls of the streambed are made of square cut recycled aggregate set in a dry mortar multi-course. A hand rail and post system of faux wood branches made of concrete runs along the eastern edge of the trail that parallels the western side of the stream.

Continuing northward on Fern Dell proper, the stream and the rest of the program descends in grade beneath the street level, featuring a five-level terrace with plants at the east side, and a three-level terrace at the west side—each terrace made of multi-course dry mortar coursework and topped with tall trees and ferns in a "hanging gardens of Babylon" effect, where the recessing run of each ascending terrace contains additional plants (Figures 95 and 96).

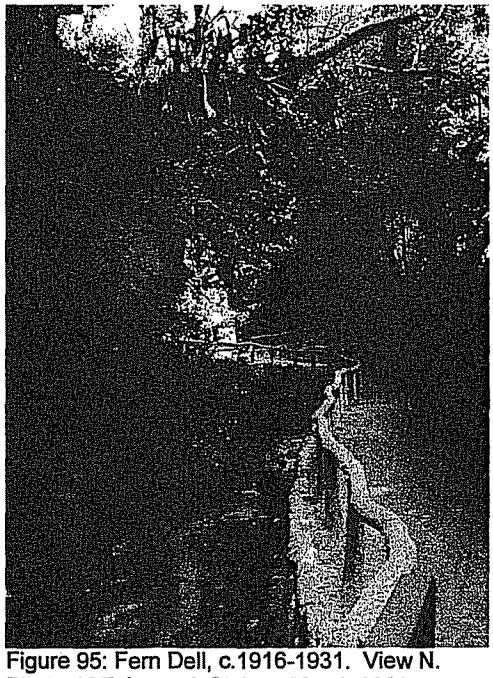


Figure 95: Fern Dell, c.1916-1931. View N.
Photo: ICF Jones & Stokes, March 2008.

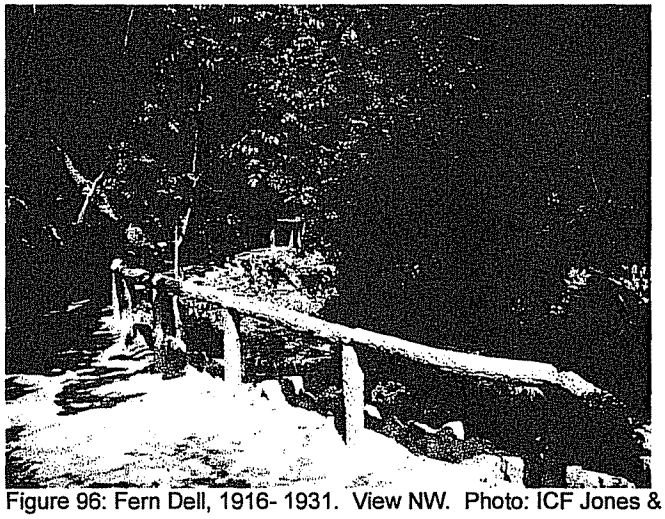


Figure 96: Fern Dell, 1916- 1931. View NW. Photo: ICF Jones & Stokes, March 2008.

Walking northward, a roughly 20-foot-tall waterfall made of flat concrete scored faux boulder patterned risers with symmetrically placed circular capping of rounded boulders is present at either side of the multi-terraced waterfall.

Continuing northward, the now single trail adjacent the stream jogs eastward beneath two bridges. Beneath these bridges are rock walls at either side of the trail and stream. Open ducts are present within these walls and out of them spouts water, much of which is collected in a concrete gutter that runs parallel to the foot trail for much of its duration due south. The sound of dripping and moving water is present along much of Fern Dell proper. The underside of the auto bridge features a low-pitched concrete spanning arch. As the trail moves beneath the pedestrian bridge, the bridge supports are visible and they consist of concrete piers with Moorish style pointed arch openings: one at each side. The pedestrian bridge is underscored with log supports that appear to have been telephone poles. After traversing beneath the two bridges, Fern Dell proper is now located due east of the bridges, and continues at a subterranean grade. Rock features of periodic flat slab concrete set between boulders, and multicourse dry mortar horizontal concrete topped with reused upright, rough edged concrete slab are present. The pedestrian trails are lined with boulders at either side and inset concrete benches are part of the design.

Fern Dell area: rear eastern portion

Continuing northward upon Fern Dell proper, its trail ascends back to grade, and it is at this point, due slightly northeast of the two bridges, that Fern Dell proper ends. Where its conjoins to street grade, nearby an open picnic area is present with a relatively unique early light fixture of a tapered steel pole, metal final, exposed bulb (which may or may not have been the original design intention) and a double-S filigree pattern between the catheti of the pole and the arm. Due east of this open picnic area is a second picnic area that is elevated into the hillside due east of the easterly trail. This picnic area, with barrier walls of an iron ore type boulder, features a similar light fixture. Due north of these picnic areas is what appears to be a shallow, dry pond with a concrete island containing banana trees. The siding of this pond, as well as the siding of the three pedestrian trails that wind along either side of it, feature rock and concrete inset into mortar in multiple variations of the Park style. Continuing northward, various man-made creeks, dry at present, feature side walls of multi-colored aggregate. The various walkways are terraced at different levels and are connected.

Where the walkways are elevated horizontal course, square cut dry mortar aggregate is often present beneath them. The boundaries of these walkways, as well as sections of the dry streambeds themselves are often capped with boulders. Pipe railing, concrete benches inset into the rock work, and numerous mature tree specimens are all part of the design. Other railings are present between these walkways and streams that are of a faux wood branch style done in concrete. Between the trails and the various streams in this rear, eastern portion are pockets of plants with mature fern, shrub and tree specimens. A mid-century era restroom facility is set within the eastern edge of this portion of the Fern Dell area. It is of single-story and rectangular plan with single-rank horizontal-course square windows, pedestrian openings at either end, and T-111 siding. The roof is gabled and is clad in corrugated metal.

Moving northward, the rear, eastern portion the Fern Dell area splits into two sections. At this split is a single-story, rectangular plan Spanish Revival

restroom facility with triplicate narrow vertical windows; Spanish tile roofs underscored with scrolled wood beams; an attic vent of four squares in a diamond pattern, and engaged piers (Figure 97).

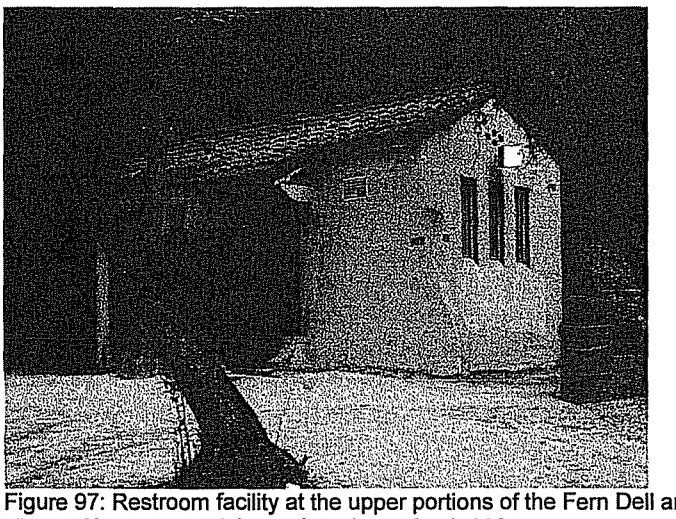


Figure 97: Restroom facility at the upper portions of the Fern Dell area, c.1927. View NW. Photo: ICF Jones & Stokes, March 2008.

The facility features a gabled roof and stucco cladding. The eastern portion north of this split is characterized by canyons and affords a view of the Griffith Observatory. Continuing northward, this very rear-easterly corner of the Fern Dell area features multi-graded trails, mature tree specimens, a man-made creek, and 1960s-era wood and metal picnic benches. The rear-most reaches of this area dissolve into a gully, and multiple stoppage dams of *béton brut* concrete or rough cut concrete block set in mortar are present. The western portion behind this split contains various trails of concrete with a faux flagstone scoring pattern in addition to flat slab concrete walks. These walkways are at various levels in relation to one another, and are slightly below grade from Fern Dell drive, which is present due immediately west (Figure 98).

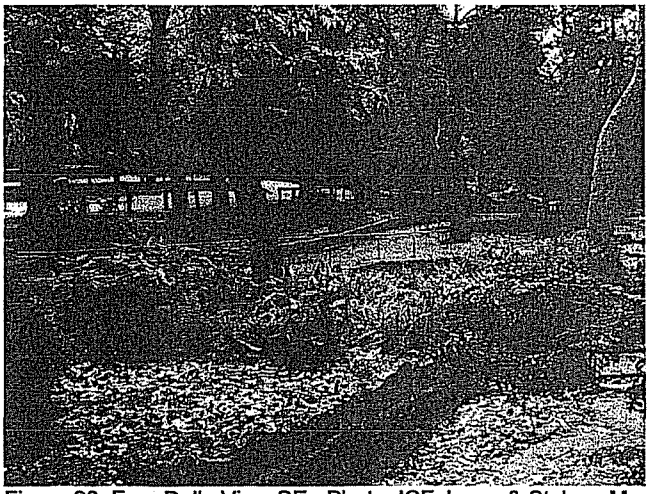


Figure 98: Fern Dell. View SE. Photo: ICF Jones & Stokes, March 2008.

Fern Dell area: western portion

Much of the western portion of the Fern Dell area is occupied by Fern Dell proper, which is below grade and not entirely visible from Fern Dell drive. The rear section of the western portion features various amenities including "The Trails" Café, a ranger's station, and restroom buildings. The Trails Café is a square-plan, single-story building that reads as a Minimal traditional residence in its design (Figure 99). Its cladding is of thick stucco and the roof is pyramidal, clad in asphalt shingles and underscored with wood rafter tails. The east facing front elevation features a ribbon of wood frame service windows, set behind a full length open porch topped with a stained wood lintel. Concrete stairs lead to the café from Fern Dell drive, and they contain railing of faux-wood branches made of concrete as seen at other portions of Fern Dell.

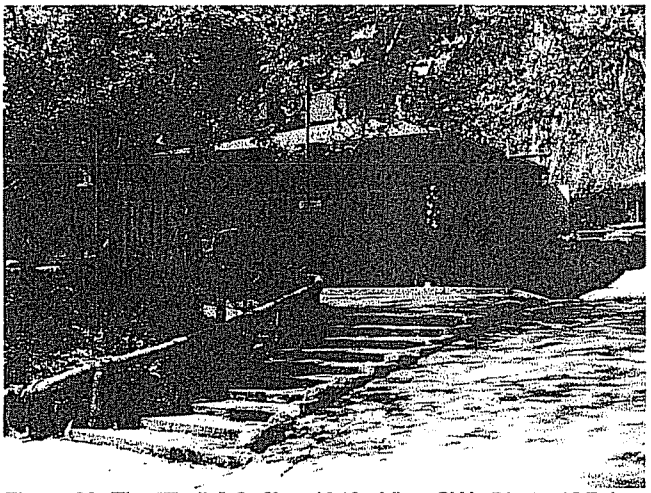


Figure 99: The "Trails" Café, c.1948. View SW. Photo: ICF Jones & Stokes, March 2008.

Immediately north of the Trails Café is a man-made stream of irregular course rock placed in mortar that traverses the upper edge of this amenities area. Immediately south of the Trails Café are recent picnic tables, wood stumps, and three low, parallel rows of rockwork in concrete, possibly used for seating. A lightpole is centered in the westernmost of these rows. This area appears to have been originally used as a gathering place, possibly for camp "powwows" (Figure 100). A restroom building is located behind the Trails Café. This circa 1951 building is single-story and rectangular plan with entries at either end, a gabled roof clad in corrugated metal, and T-111 siding upon all elevations. Single ranked horizontal course square windows are part of the design.

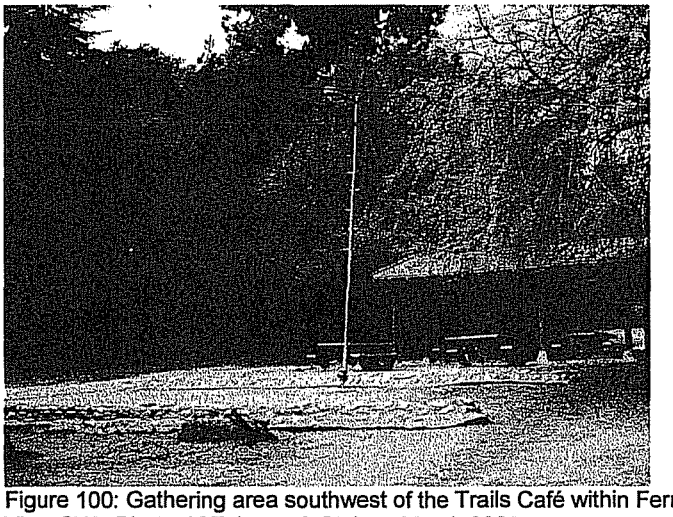


Figure 100: Gathering area southwest of the Trails Café within Fern Dell. View SW. Photo: ICF Jones & Stokes, March 2008.

Below the amenities area, due south along Fern Dell Drive at the western portion of the Fern Dell area, at the northwest corner of Red Oak Drive is the former Watchman's house and Fern Dell Nature Museum (Figure 101). This residential building is single-story, rectangular plan with a gabled central salient. The building is Spanish Revival in design, and features triplicate sets of paired, six-unit glazing, a large, round headed multi-glazed picture window; two chimneys, cross gabled roofs, and a three-part open duct terra cotta attic vent. The entry is inset at the side of the central salient. The residence, which faces south, is set back in front of a lawn covered front yard. The integrity of this resource is very good.

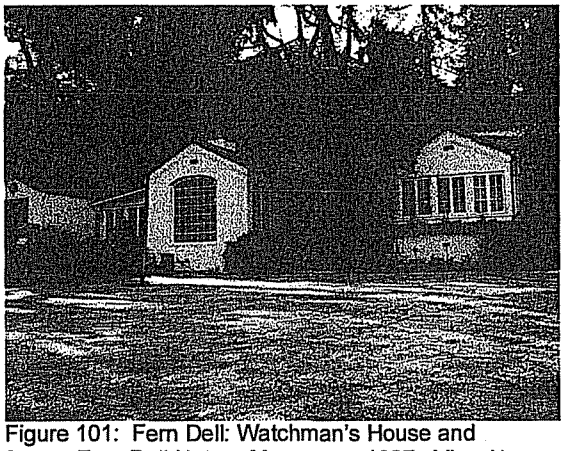


Figure 101: Fern Dell: Watchman's House and former Fern Dell Nature Museum, c.1927. View N. Photo: ICF Jones & Stokes, October 2007

Canyon Drive

Canyon Drive is located near the southwest corner of Griffith Park. Where Canyon Drive enters into Griffith Park, the Park is set back behind a neighborhood of Hollywood Hills called The Oaks. This section of Griffith Park is not readily visible from Franklin Avenue, which is the primary east-west thoroughfare that crosses Canyon Drive itself. The area of Griffith Park entered into by Canyon Drive is rugged, dry chaparral, and appears as unimproved and semi-isolated. As the name indicates, Canyon Drive traverses the base of a steep canyon. Moving northward past a 1970s era entry gate into Griffith Park, Canyon drive terminates at Camp Hollywoodland. Between the entrance and Hollywoodland, due east off of the road and accessed by an unpaved trail are the Bronson Caves (Figure 102). The "Bronson Caves" are actually a man-made tunnel through a hill as the result of rock quarrying activity at the beginning of the 1900s which ceased by the 1920s. The tunnel is acclimated east-west with one large opening on the west side and three smaller openings upon the east side. The tunnel is roughly 50 feet long and roughly 8 feet tall.

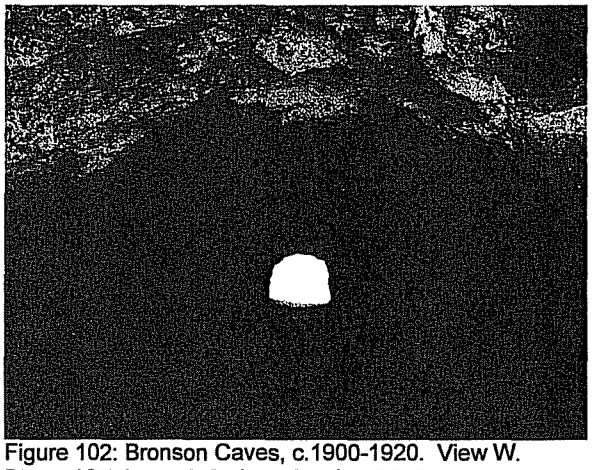


Figure 102: Bronson Caves, c.1900-1920. View W.
Photo: ICF Jones & Stokes, October 2007.

Camp Hollywoodland (Girls' Camp)

Camp Hollywoodland, also known as the "Girls' Camp," is a series of one-story contemporary-style Modern buildings built into the natural landscape of small canyons off of Canyon Drive (Figure 103). Leading to the Camp is a flat park to the east that contains concrete picnic tables and is bordered by a creek, and to the west is a small playground near the entrance. The main building within the camp was built in 1992 after a 1990 fire. It is a two-story building composed of horizontal wood siding and detailed with stonework. There are aluminum and vinyl windows and a cross gabled roof with shingles. A building at the entrance of the camp is one-story and rectangular in plan. It is composed of vertical wood siding and resides on a concrete foundation. It has a flat roof, wood doors, and aluminum sliding windows. The camp has a series of buildings used for camp residences that were built in 1952. They are known as Hollywoodland Acres. They are composed of horizontal wood siding, water table of brick stretcher course, large glass panes, and a slanted metal roof. Small structures are also placed around the cabins as bathrooms. They are one-story buildings composed of wood paneling with flat roofs, in a rectangular plan. In addition, there are outdoor structures supported by metal poles that contain an arched roof of corrugated metal.

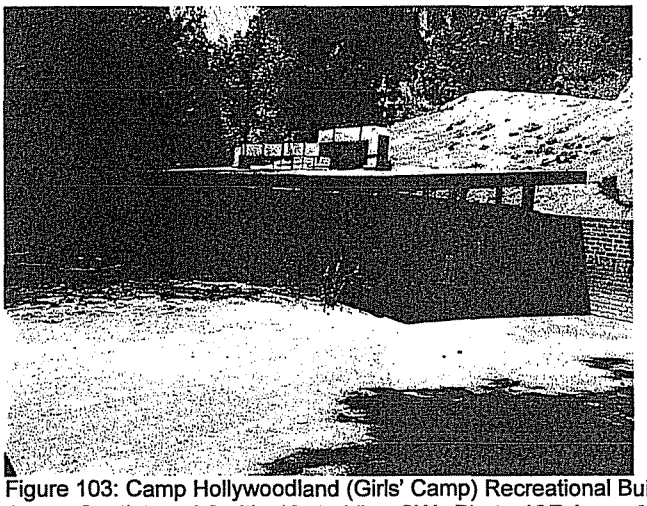


Figure 103: Camp Hollywoodland (Girls' Camp) Recreational Building.
Jones, Contini, and Smith, 1952. View SW. Photo: ICF Jones & Stokes, October 2007.

Beachwood Drive

Beachwood Drive is not a major entrance into Griffith Park, but instead enters the park at its southwest portion behind the hilly, Hollywoodland neighborhood. At the end of Beachwood Drive are the Sunset Ranch Stables. Though these Western-style, barn-themed buildings appear to be within Griffith Park, technically the Park surrounds this property with chaparral covered hills.

Beachwood Drive → Ledgewood Drive → Mulholland Highway → Canyon Lake Drive

Lake Hollywood Park and the Hollywood Sign

A spur road off of Beachwood Drive called Ledgewood Drive is present within the Hollywoodland neighborhood. Taken west, Ledgewood Drive merged onto a brief stretch of Mulholland Highway which borders Griffith Park. Due west, where Mulholland Drive becomes Canyon Lake Drive is Lake Hollywood Park (Figure 104). Lake Hollywood Park is a small, flat area that consists of grass where the terrain slightly slants downward to the north. On the southern side is a small playground with recent equipment that is enclosed within a metal fence around the perimeter and contains sand. The park also consists of a few scattered small tree specimens and picnic benches. In clear view due northeast from Lake Hollywood Park is the "Hollywood" sign (HCM #111) (Figure 105), which consists of white painted, flat, metal frame block lettering with each letter against a steel armature set in a poured concrete foundation. The letters are set upon a hillside ridge upon the side of Mt. Lee, in a manner that slightly undulates to the ridge's terrain.

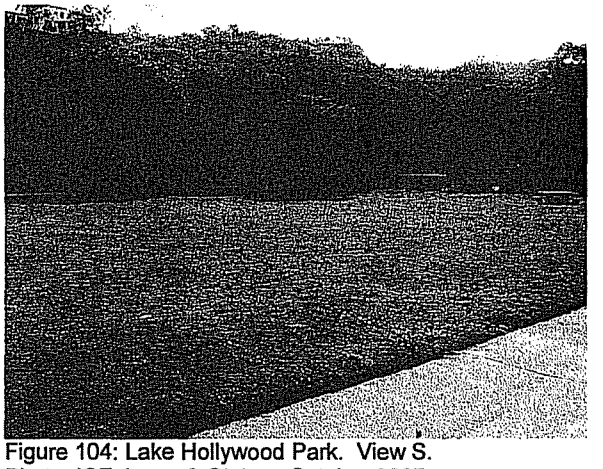


Figure 104: Lake Hollywood Park. View S.
Photo: ICF Jones & Stokes, October 2007.

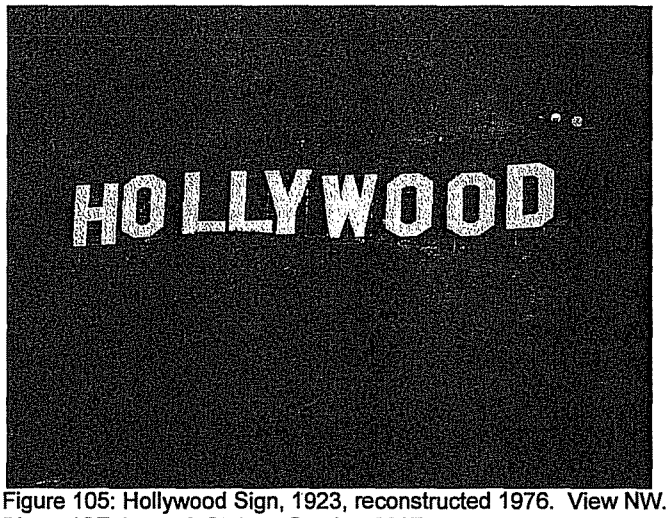


Figure 105: Hollywood Sign, 1923, reconstructed 1976. View NW.
Photo: ICF Jones & Stokes, October 2007.

Park-wide objects: retaining walls, barriers, drainage ditches culverts, and drinking fountains.

A consistently built feature throughout the entirety of Griffith Park is a series of retaining walls, drainage ditches, stoppage dams, culverts, barriers, and later drinking fountains built by various federally assisted workforce organizations beginning in the 1930s in a Park style later copied by the Recreation and Parks department through the 1950s. Most of the barrier walls are no more than 3 feet tall and are generally located adjacent to roads and/or trails. Of all of the built elements of any type throughout the park, these structures have the strongest and most intimate relationship with the natural landscape itself. The design system of these elements consists of numerous variations on the theme of rubble rock or ashlar of various patterns often set in mortar, which often features scoring or line work. Many of these elements, though often finely done, have intriguing patterns

combined and an unpolished quality often seen in the work of self-taught artists. Often, barriers, channels, culverts, and occasionally dams are found together to facilitate drainage near the side of a given road, or near a public gathering area such as a picnic area, or even upon a golf course. The barriers are often found not just near roads, but also along landscaped areas such as picnic areas. Below are examples of each of these features.

Barriers and Boundaries

Park Style barriers and boundary elements, are primarily located adjacent the various automobile roads throughout Griffith Park. Their height ranges from one rock course tall to roughly 5 feet. One example is adjacent Western Canyon Road west of the Griffith Observatory. This barrier is 4.5 feet tall and composed of various sharply angled irregular course sandstone, concrete, and granite rubble rock and gallets fitted together through cyclopean dry masonry in three stacked horizontal levels each separated by an unfinished masonry course (Figure 106). Along the unpaved road to the Bronson Caves, recycled pieces of sidewalk are used to create a low boundary. The barriers and boundaries throughout Griffith park range greatly in size, and often, like this boundary, consist of a couple of low coursed atop the ground (Figure 107).

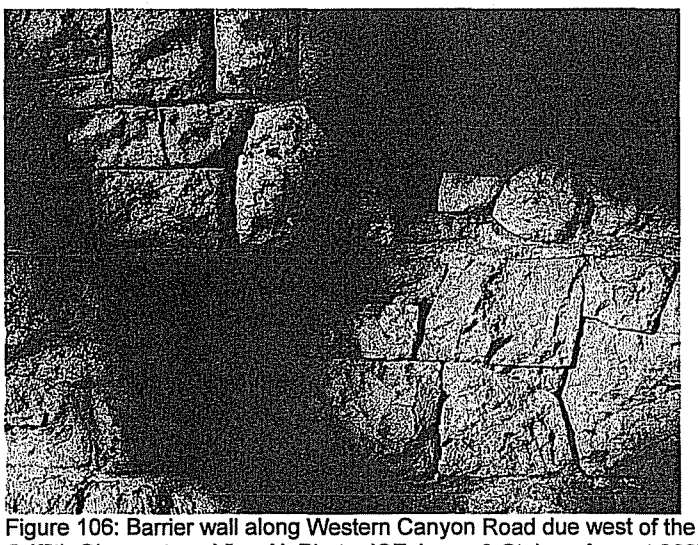


Figure 106: Barrier wall along Western Canyon Road due west of the Griffith Observatory. View N. Photo: ICF Jones & Stokes, August 2007.

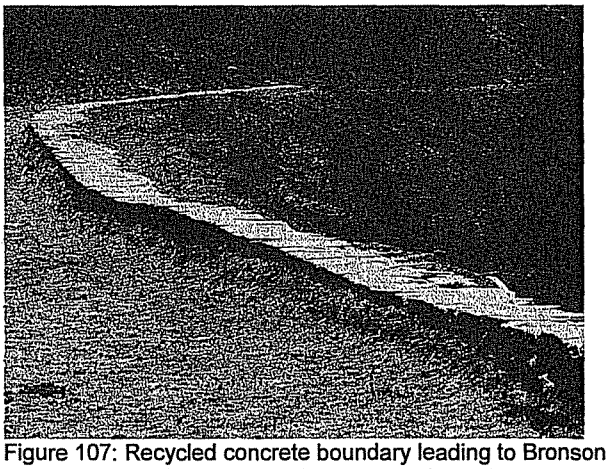


Figure 107: Recycled concrete boundary leading to Bronson Caves. View S. Photo: ICF Jones & Stokes, March 2008.

Stoppage Dams

Griffith Park features numerous stoppage dams found within gullies and adjacent various steep hills throughout the Park. At present time many of these dams are covered over by brush and over growth. The stoppage dams of Griffith Park generally feature a row of repeating walls along a hillside, usually no more than 20 feet long, infilling a small arroyo. Usually above these series of walls, at the top of a given hill, is a centered, narrow drainage canal embedded into the ground. Presumably these stoppage dams were built in areas that saw a high degree of flooding and water-down fall during the rainy season. Often these stoppage dams are combined with drainage canals, usually centered, that are inserted into the ground. These canals range in width from 2 to 4 feet.

As one example, off of the Fern canyon Trail there is a 4-part stoppage dam and canal program facing north and running downhill. The most visible upper component of it is a centered drainage canal with concrete side walls embedded with boulders. These side walls are roughly 3 feet tall and run a length of about 10 feet downhill. Below this channel is a stretcher course, squared rubble-in-masonry wall that runs the length of the gully that is roughly 20 feet wide. The upper edge of this wall is slightly concave. Within this wall are three small circular holes in a triangular formation, presumably for drainage. Centered about 20 feet below this stoppage wall is a low-slung, concave concrete stoppage with embedded rubble rock that stands about 1.5 feet above grade. Water presumably passes above this feature. Affixed directly below it are the sides of a canal, inset into the ground that is 10 feet wide at its upper portion, and reduced to about 2 feet wide at its lower portion. The sides of this canal feature random rubble inset into concrete sides about two feet tall. The alignment of the culvert itself has a slight has a slight arc. The bottom side-edges of this canal are of thick, solid poured concrete and have the appearance of walls of their own on either side of the centered opening. The side-ends of this canal rest on a random rubble-in-mortar base (Figure 108).

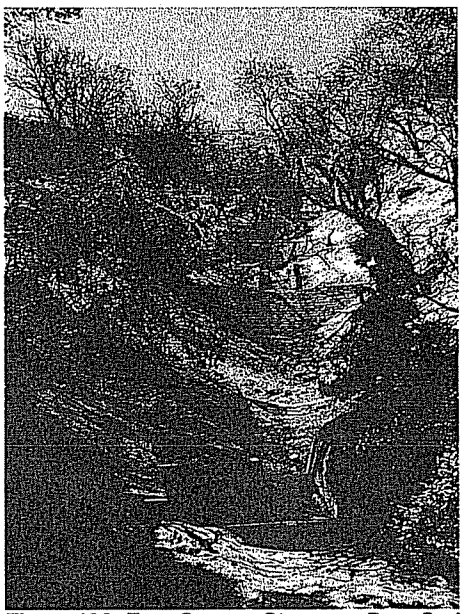


Figure 108: Fern Canyon Stoppage Dam Series.
View S. Photo: ICF Jones & Stokes, July 2007.

A second example of a Griffith Park stoppage dam/culvert program is also found along Fern Canyon trail, in this case facing east, and running both above and below the trail proper. Roughly 70 feet due west of and slightly elevated above the trail is a poured concrete stoppage dam with irregular course boulder work that fills a section of gully roughly 20 feet wide. This stoppage dam is no taller than 5 feet. In front of it is a centered flat-sided drainage culvert roughly 5 feet wide with 3 feet tall side walls of irregular course rubble placed in concrete. This culvert has a slight curve toward the north in its alignment, and runs for roughly 30 feet. At the last section of this length, the drainage descends under the fern canyon trail proper via a metal pipe roughly 1 foot in diameter. The pipe discharges directly below the trail, through a 9-foot-tall culvert made of large scale (2–3-foot-long) pieces of squared rubble placed in unfinished masonry bond. This wall features 4-foot-long spurs facing east that also serve as sides to a drainage area. In front of these spurs are affixed additional side walls, of similar construction each terracing down below the prior which themselves continue the sides of the drainage area, until it finally discharges in a small gully well below the Fern Canyon trail, and away from other circulation areas (Figure 109).

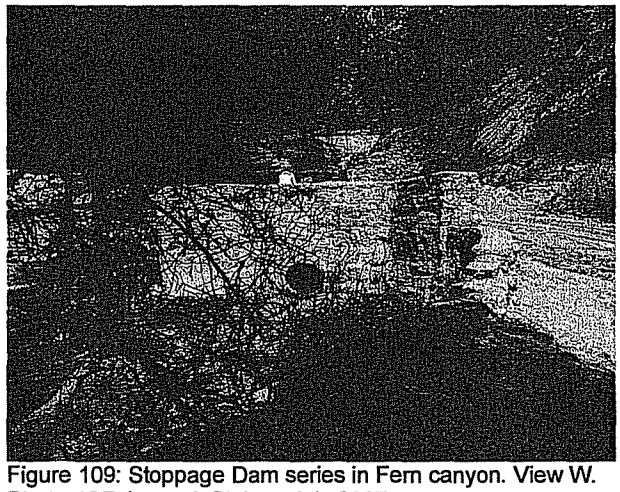


Figure 109: Stoppage Dam series in Fern canyon. View W. Photo: ICF Jones & Stokes, July 2007.

The various series of stoppage dams (in addition to all other similar features) appear to have been made by various individuals, with varying degrees of artistry. Off of Vista Del Valle Drive above the nursery and below Vista View Point is a stoppage dam, revealed by the fire, that features mandala like-patterning made of small boulders inset into scored concrete intended to look like rusticated brick (Figure110).

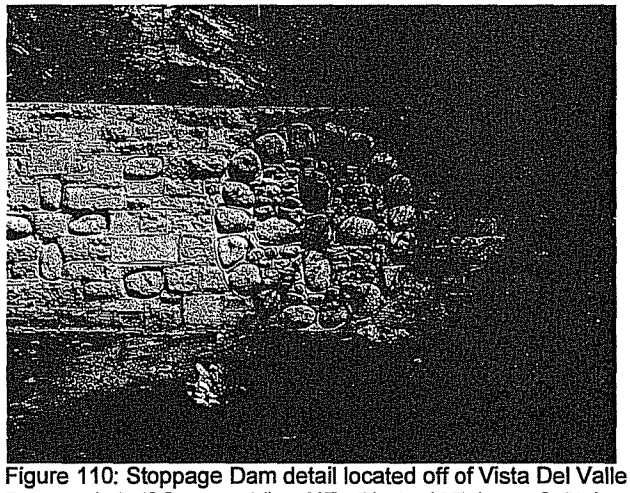


Figure 110: Stoppage Dam detail located off of Vista Del Valle Drive east of the Roosevelt Golf Course. View NE. Photo: ICF Jones & Stokes, June 2007.

Drainage Canals

Throughout Griffith Park are numerous drainage channels that exist independently of stoppage dams. These drainage channels are often located beginning at the position of roads or trails, and descend toward steep, long declines down a given hill in the park. Most of these drainage canals feature Park Style random rubble masonry, of various compositions set into concrete. These drainage canals tend to be embedded into the earth with angled or straight

siding and are anywhere from 2 to 4 feet wide. The functionality of these drainage ditches often required that they descend down long stretches of hillside. A drainage canal seen off of Vista Del Valle Drive, facing north above Spring canyon, descends and winds in a curving fashion a length of roughly 150 feet. The canal is embedded roughly 2 feet into the earth with side walls of rusticated rubble rock placed in mortar. Its floor, which is roughly 1.5 feet wide, is clad in concrete (Figure 111).

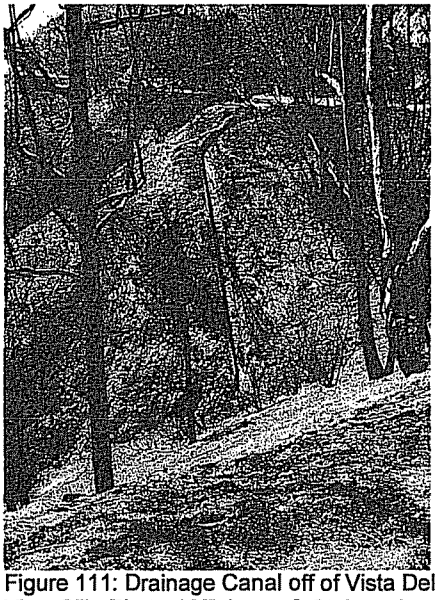


Figure 111: Drainage Canal off of Vista Del valle Drive.
View SE. Photo: ICF Jones & Stokes, June, 2007.

A second example of a drainage canal is located near the intersection of Griffith Park Drive and Camp Road, at the entrance to the Boys' Camp. This is a drainage canal with concrete squared aggregate rubble placed in a stacked course pattern. The side-walls of this drainage, which parallels Camp Road, are roughly 4 feet tall. The lower half of this drainage is beveled inward and is of flat-faced flagstone set against a thick, smooth concrete masonry. A small, arched concrete bridge, roughly 3 feet wide and with no railing, traverses the channel, which is about 8 feet wide. Either run-side of the bridge features a faux-wood log made of concrete. Beneath the bridge against the southern of the two walls of the channel is a *faux* wood log support (Figure 112).

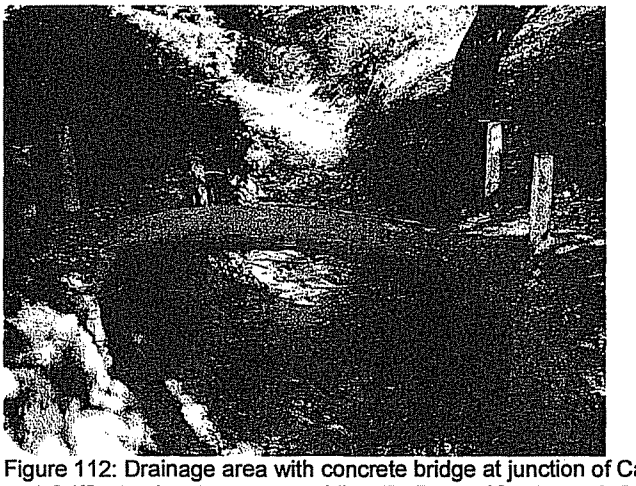


Figure 112: Drainage area with concrete bridge at junction of Camp Road and Griffith Park Drive, c.1935. View E. Photo: ICF Jones & Stokes, August 2007.

Adjacent a picnic area near the Greek Theatre is a catch basin embedded roughly 4 feet into the ground. Its walls are of square cut rubble rock of both rusticated and smooth surfaces embedded in cement in four stacked courses. This concrete below these surfaces features hand scoring into the surface creating the effect of stacked roman bricks. The concrete atop these stacked courses has a simple, square scoring motif. Set above this opening, near the top of the construction, and within the rock course work is a centered, flower shaped modillion (Figure 113).

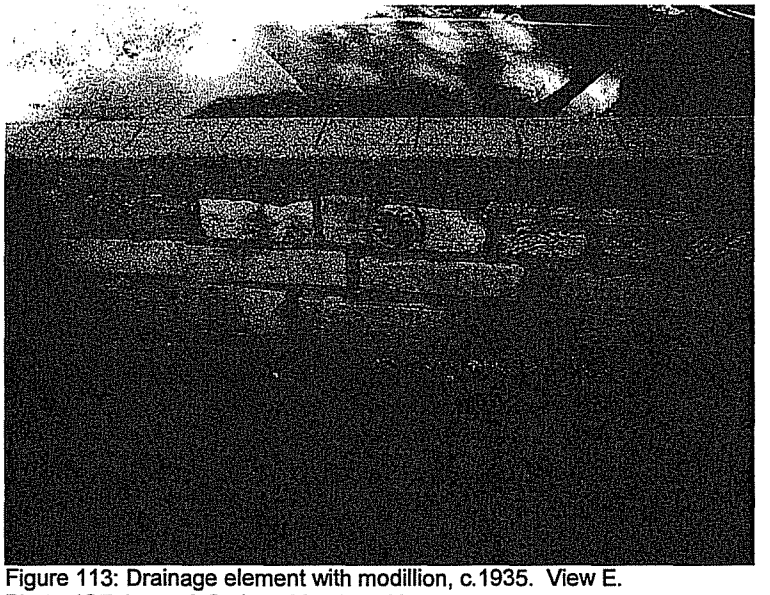


Figure 113: Drainage element with modillion, c.1935. View E. Photo: ICF Jones & Stokes, March 2008.

The side walls of this element are of a similar construction. The majority of this basin is subterranean to the hillside road immediately adjacent it. Within the roughly 2 feet that rise above the road level is a metal cross bar adjacent the road and between the sidewalls. At the base of this construction is a semi-circular

drainage opening. This opening leads to a steep, concrete sided drainage channel, which leads through a culvert that is topped by a triangular-shaped planter with walls of irregular course rubble placed in mortar, with a smooth concrete cap. The drainage runs beneath this planter and into a concrete lined channel that features small, round boulders at either shoulder. The alignment of this drainage curves in a winding fashion for its roughly 30-foot length (Figure 114).

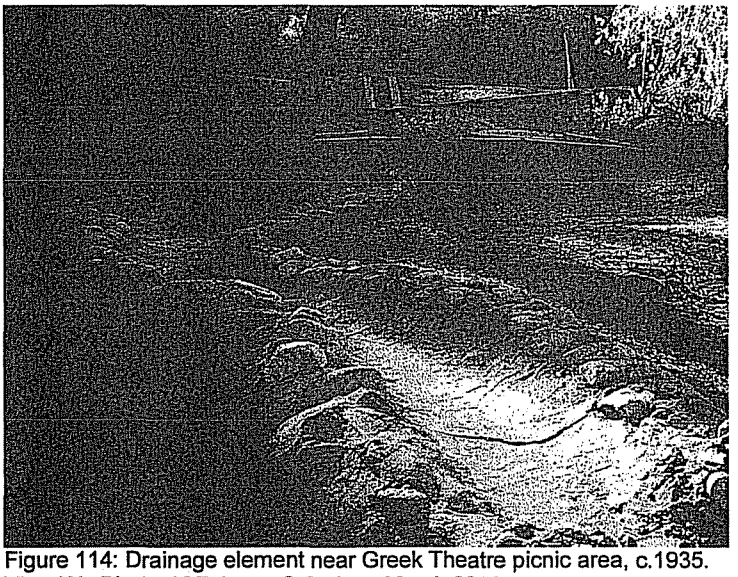


Figure 114: Drainage element near Greek Theatre picnic area, c.1935. View W. Photo: ICF Jones & Stokes, March 2008.

Drinking Fountains

Many of the drinking fountains throughout Griffith Park are done in a "park style" akin to the above mentioned infrastructure elements. Most of the drinking fountains throughout the park are square plan, pylon shaped with a rough-edged concrete capworks incised with a shallow basin. Most of these drinking fountains are roughly 4 feet tall. The cladding upon various examples is highly divergent. Near the pony rides are three separate examples of such fountains including one with textured, rough edged irregular course boulders of various types inset into an unfinished masonry bond, a second with broken range ashlar stone cladding with concave joint masonry finish, and a third of a highly porous volcanic type rock done in an irregular course formation with unfinished masonry bond (Figures 115, 116, and 117). These fountains were likely built by Los Angeles Recreation and Parks employees roughly 10-15 years later than the previously mentioned infrastructure elements, though they mirror the same park style.

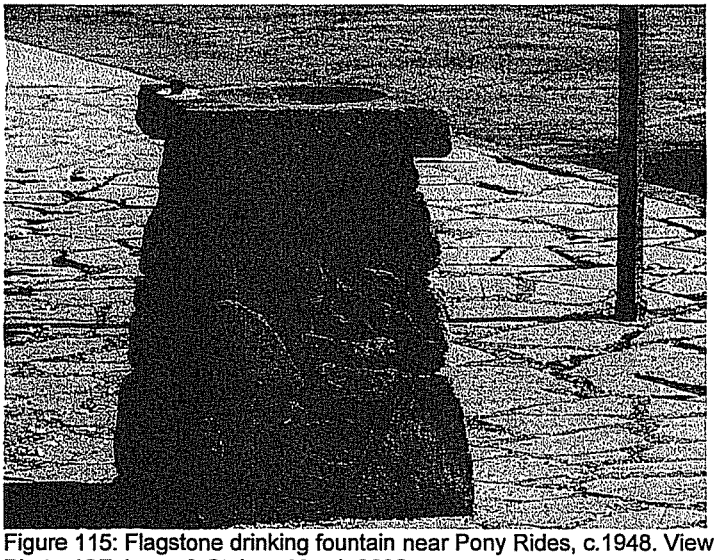


Figure 115: Flagstone drinking fountain near Pony Rides, c.1948. View SE. Photo: ICF Jones & Stokes, March 2008.

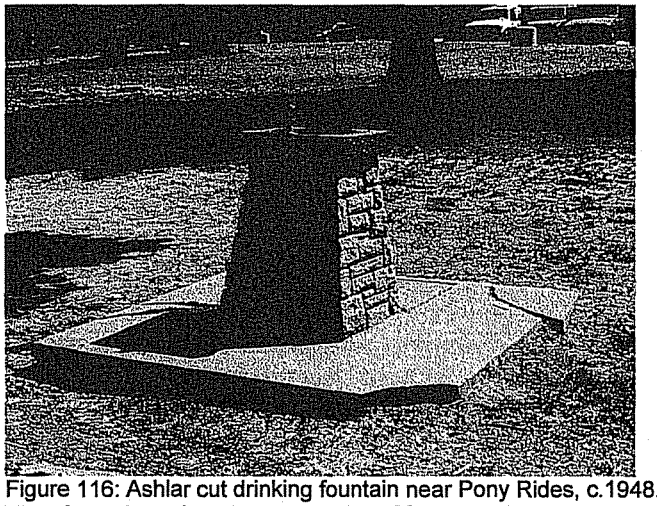


Figure 116: Ashlar cut drinking fountain near Pony Rides, c.1948. View SE. Photo: ICF Jones & Stokes, March 2008.

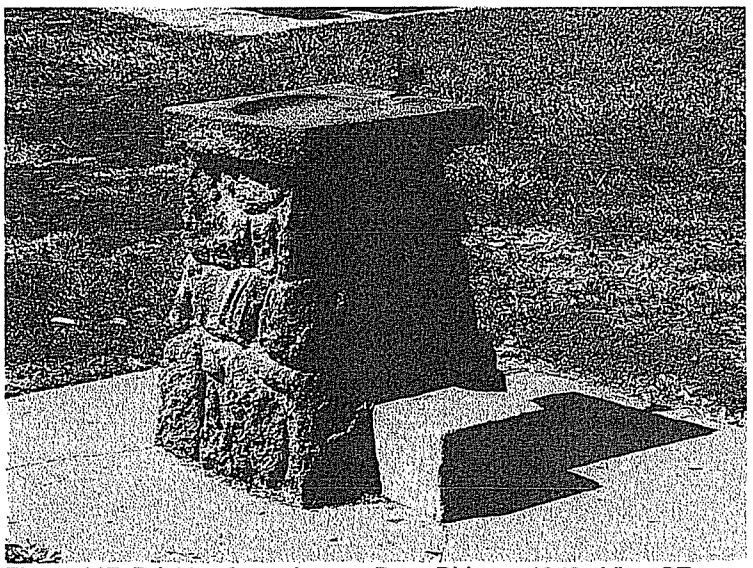


Figure 117: Drinking fountain near Pony Rides, c.1948. View SE.
Photo: ICF Jones & Stokes, March 2008.

SECTION 2: Griffith Park Wilderness Area

Introduction

Located within a biome called the California Floristic Provence, Griffith Park is present upon the far eastern edge of the Santa Monica Mountains.[3] The majority of the 4,218 acres that comprise Griffith Park is a wilderness area, which serves as the primary character-defining feature of the park itself. Though the wilderness area is pervasive throughout the park's entirety, its primary concentration is within the park's central portion. As originally stipulated in the 1938 Ralph Cornell Master Plan, the central, interior portion of Griffith Park was to remain a wilderness, with built amenities and recreation present along the flatlands areas at various perimeters. The Cornell Master Plan was never ratified, yet through time this principle has largely been followed.

The wilderness area of Griffith Park sustains hundreds of different types of plant and animal life. Please see appendices 3,4,5 and 6 for detailed surveys of various plants, large mammals/reptiles, birds, and butterflies throughout Griffith Park. The Griffith Park wilderness area contains a variety of plant communities, both native and introduced. Among these plant communities, mixed chaparral and mixed dcrub are the most widespread; oak-walnut woodland communities are found upon slopes and elevations above high use areas; oak-sycamore riparian communities are present along creeks and moist areas in lower elevations; pine

[3] "The park lies within the California Floristic Province, a biome considered one of 34 biodiversity hotspots for conservation worldwide due to its high levels of diversity, endemism, and the degree to which it is threatened (Myers et al. 2000)." Paul Mathewson, Stephanie Spehar, et al. A Preliminary Large Mammal and Herptile Survey of Griffith Park, Los Angeles, California. technical report (Glendale, CA: not published, 15 Aug 2007) 2.

communities are located near certain built amenities; oak woodland communities are found on north-facing slopes, and ruderal communities are found in patches throughout the park, often bordering areas of ornamental landscape.[4] Introduced vegetation includes pine, eucalyptus, silk oak, numerous ornamentals, and landscaping areas around built amenities, which often include lawn. The wilderness area contains numerous natural springs and seeps, in addition to three dependable seasonal streams near Royce's Canyon, Bronson Canyon, and the area near Cadman Trail. Taken together, the north and south slopes of the peaks through Griffith Park feature 20 watersheds and the majority of these are unaltered by human activity. According to the County of Los Angeles Draft General Plan, Griffith Park as a whole is a proposed Significant Ecological Area (SEA) by the University of California, Los Angeles.[5]

The Griffith Park wilderness area contains foot and bridle trails, landscaped gardens and groves, sheet metal water towers, decommissioned auto roads, and numerous examples of 1930s-era infrastructure construction. The majority of the foot trails are covered in earth, and are roughly 15 to 25 feet wide. The wider of these trails double as equestrian trails, as do the decommissioned auto roads through Griffith Park, which include Mt. Hollywood Drive and Vista Del Valle Road.

Though the wilderness area does contain some buildings, by and large it is a natural landscape of rugged rocky canyons between various peaks traversing from northwest to southeast, of elevations ranging from 384 to 1,625 feet.[6] Because they are the most readily visible components of the wilderness area and the park itself, these peaks—in addition to their adjacent canyons—are the organizing device by which the wilderness area description proceeds. The wilderness description proceeds from the southeast corner below the main entrance moving westward along the southern portion of the inner component. Wrapping back around, the middle portion of the wilderness, which consists of a series of peaks, is described from west to east. Wrapping around once more, the inner components of the park due north of these mountains are described east to west. Finally, the northern portion of the wilderness is addressed, with a brief word about equestrian and bicycle trails near or north of the Los Angeles River.

Beacon Hill and Fern Canyon

Near the main entrance to Griffith Park off of its southeast portion, Beacon Hill, elevation 1,001 feet, is present and named after the former location of a light beacon originally used for the Grand Central Air Field. The beacon was decommissioned in 1934 and eventually removed, but an empty earth-covered site remains in its former location. Trails surrounding Beacon Hill include Upper Beacon Trail, Lower Beacon Trail, and Coolidge Trail, which runs southeast

[4] Meléndrez Landscape Architecture, Planning and Urban Design (Prepared for The City of Los Angeles). Master Plan for Griffith Park (2nd Draft). Los Angeles: City of Los Angeles Department of Recreation and Parks, Oct. 2004: 4-2 – 4-4.

[5] Los Angeles County Department of Regional Planning, County of Los Angeles General Plan Draft. http://gifi.stat.ucla.edu/projects/gpd/09pdf_SEA_policy.pdf

[6] Melendrez Draft: 4-2 – 4-4.

behind the Marty Tregnan Golf Academy. Cadman Trail connects Coolidge Trail to Griffith Park Drive at a point south of the Tregnan Golf academy. Near the Cadman Trail is one of three seasonal streams present within the wilderness area. Upper Beacon Trail, Coolidge Trail, two small unnamed trails, and Fern Canyon Trail all meet at one spot called "5 points," which is located on the western slope of Beacon Hill. Both the Coolidge and Fern Canyon trails are also equestrian trails, wider than the footpaths and containing occasional hitching posts.

Southwest of 5 points, two of these unnamed trails connect onto Vista Del Valle Drive, a two lane blacktopped automobile road that ranges in width from 35 to 40 feet. Vista del Valle Drive was closed to the public in 1989, and the blacktop is in poor condition as this road is now used as another trail. Vista Del Valle Drive traverses a large portion of the southern section of Griffith Park, containing many curves and switchbacks. One endpoint of Vista Del Valle Drive is at Commonwealth Avenue, and the other endpoint is roughly 1.44 miles (as the crow flies) where it meets Mt. Hollywood Drive between Mt. Chapel and Mt. Bell at the central-western portion of the park.

At its east face, oak walnut woodland plant communities are present upon Beacon Hill, and mixed scrub is present at the center portion of the north face of Beacon Hill. The rest of the hill is covered primarily with mixed chaparral. Southwest of Beacon Hill is Cedar Grove: an oblong shaped, 225 feet x 240 feet grove of cedar trees containing narrow foot trails and benches (Figure 118). The density of the tall trees fosters complete enclosure and generous shading, for the effect of being removed from one's surroundings just outside of the grove. Cedar Grove is located off of Vista Del Valle Drive.



Figure 118: Cedar Grove. View W. Photo: ICF Jones & Stokes, August 2007.

Across the street from Cedar Grove is an early water tank made of sheet metal studded together and topped by a sheet metal roof (Figure 119). Exposed wood rafter tails are present beneath this roof, and this water tank is inset into its hillside.

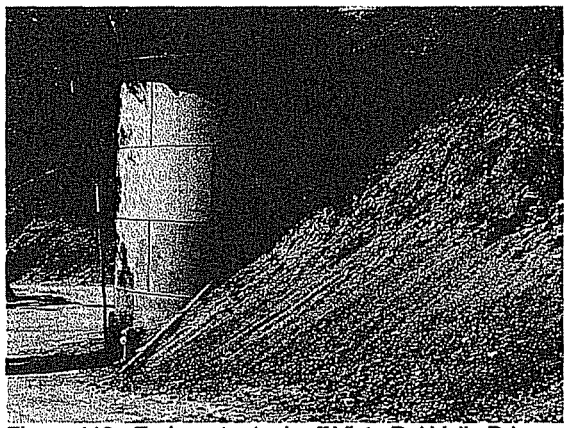


Figure 119. Early water tank off Vista Del Valle Drive due N of Cedar Grove. View N. Photo: ICF Jones & Stokes, August 2007.

Directly above it is a larger scale, recent water tank with a diorama mural across it of a painted forest-scape topped by a sky. Due roughly 1/3 mile southwest of Beacon Hill is Vista View Point, a triangular, paved turn off of Vista del Valle Drive at an elevation of 1,073 feet. Vista View Point provides panoramic views of downtown Los Angeles and the greater Los Angeles basin due south to the Pacific Ocean.

Due north of Vista View Point is Fern Canyon, which is acclimated north-south between Beacon Hill and Glendale Peak. The mouth of Fern Canyon is located directly south of the merry-go-round. The canyon above the center of Fern Canyon is the Fern Canyon Nature Trail, which is often used to educate schoolchildren about plant and animal life in Griffith Park. The plant life within Fern Canyon is primarily mixed chaparral. Trails originating at the mouth of Fern Canyon include the Lower Beacon Trail, the Fern Canyon Nature Trail, and Fern Canyon Trail. The Old Zoo Trail ends at the mouth of Fern Canyon as well. The area below Old Zoo trail between the Old Zoo and the merry-go-round contains an Oak-Sycamore Riparian community.

Glendale Peak, Aberdeen Canyon, Vermont Canyon, Western Canyon

Framing Fern Canyon and due slightly southeast of it is Glendale Peak, elevation 1,184 feet. Trails within the vicinity of Glendale Peak include Riverside Trail, Aberdeen Trail, and the East Ridge Trail, also known as Hogback Trail. The vast majority of all faces of Glendale Peak are covered in mixed chaparral. Immediately south of Glendale Peak is the Griffith Park Nursery and Horticultural Center in addition to the Roosevelt Municipal Golf Course. Upon Glendale Peak directly north of the Nursery, and in a portion of the park that laps in front of the nursery due south of it, the primary ground cover is mixed scrub.[7] Immediately west of Glendale Peak is Aberdeen Canyon: a north-south acclimated canyon running roughly 1/3 mile. Aberdeen Canyon is largely of mixed chaparral. Aberdeen Canyon is located just north of the Roosevelt

[7] Ibid.

Municipal Golf Course, and just northeast of the Vermont Tennis Courts. Trails within and around Aberdeen Canyon include the Riverside Trail and Aberdeen Trail.

Due west of Aberdeen Canyon is Vermont Canyon, through which runs Vermont Canyon Road. Amenities within the Vermont Canyon vicinity include the Greek Theatre and the Roosevelt Municipal Golf Course, both of which are located near its mouth; Riverside Trail which ends at Vermont Canyon Road; and the Bird Sanctuary. West of Vermont Canyon is Western Canyon, which is acclimated north-south, and through which runs Western Canyon Road. Western Canyon is located directly north of Fern Dell. Western Canyon is largely covered with mixed scrub, with mixed chaparral at its eastern portions. Just east of Western Canyon the vegetation is of the oak, sycamore riparian woodland plant community. Mixed scrub is also present in a section between Western Canyon and the Observatory. Within Western Canyon is the West Trail, located in the gully of Western Canyon and roughly paralleling Western Canyon Drive (Figure 120).

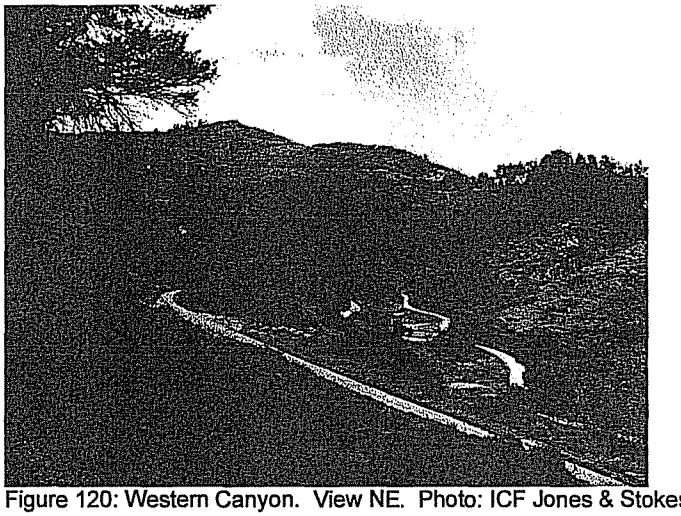


Figure 120: Western Canyon. View NE. Photo: ICF Jones & Stokes, March 2008.

Stemming off of Western Canyon Road near the mouth of the canyon are West Observatory Trail and East Observatory Trail. Both of these trails meet and then ultimately end as one trail to the Griffith Observatory, which is located upon a bluff between Vermont Canyon and Western Canyon. Boy Scout Trail originates at a point due southeast of the Observatory, continuing eastward to Vermont Canyon Road. This trail, in addition to the merged West and East Observatory Trail, meet at a point directly below the Observatory with one trail leading up to the Observatory itself. At the point where these trails meet and due east toward the Greek Theatre off of Vermont Canyon, much of the ground cover is not chaparral, but is pine.[8] Directly behind and above the Observatory is an area called the "Berlin Forest." The Berlin Forest is named for the numerous trees planted by visiting German mayors. The Berlin Forest is at an elevation of 1,100 feet and framed by Vermont Canyon Road and Western Canyon Road. The

[8] Melendrez, 4-2.

Vermont Tunnel cuts beneath at its northern portion. The West Trail joins the Charlie Turner Trail north of the Berlin Forest.

Mt. Hollywood

Directly behind due north of the Berlin Forest is Mt. Hollywood, which at 1,625 feet is the second tallest peak in Griffith Park, and is the highest point in Griffith Park open to the public. The majority of Mt. Hollywood is mixed chaparral. However, sections of it, including around the peak and a small section above the Berlin Forest, are covered in mixed scrub. The peak is an earth-covered graded and cleared portion measuring roughly 150 feet x 300 feet. A set of four picnic benches enclosed in a fence is present at the southern portion of this clearing. Within the center of this area, set in a concrete slab is a survey marker from the Los Angeles Department of Public Works and dated 1952 (Figure 121).

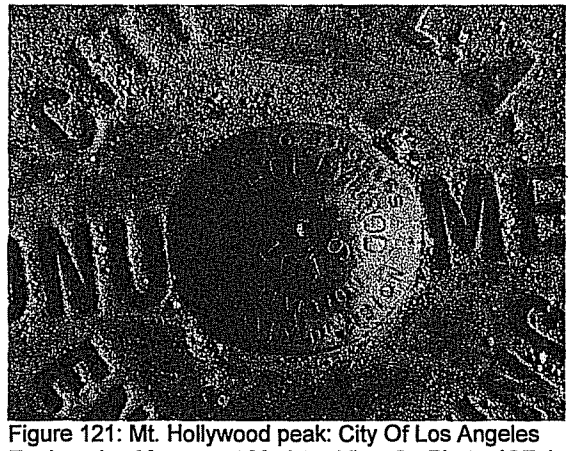


Figure 121: Mt. Hollywood peak: City Of Los Angeles Engineering Monument Marker. View S. Photo: ICF Jones & Stokes, August 2007.

Mt. Hollywood is the only vista in all of Griffith Park that presents 360 degree panoramic views of the surrounding region. Named trails with an end point atop Mount Hollywood include the Charlie Turner Trail which runs south of the peak, and 3-Mile Trail, which runs down the northwest face of Mt. Hollywood and ends at "3-Mile Tree." Two unnamed trails: one originating at the Bird Sanctuary and the other a spur off of East Ridge/Hogback Trail, are also present within the vicinity of Mt. Hollywood.

Immediately west of Mt. Hollywood peak on the west facing slope of the mountain is Captain's Roost with views of the west side to the Pacific Ocean. Captain's Roost is a folk garden with numerous plantings imported into the park by an unknown person, known only as "The Captain," who created the garden sometime in the 1940s. The Garden had been added to over time and has burned twice: in 1961 and again in May, 2007. A second folk garden called Dante's View is located due east of the Mt. Hollywood Peak (Figure 122). Dante's View was the work of one individual, Dante Orgolini, who constructed the site circa 1964. Dante's View consists of terraced walkways with rock retaining walls, rock planters, and metal picnic benches. A bronze plaque honoring Orgolini is present and set in a thick mortar slab base. Small palm and succulent specimens

are present within the garden. The original plant specimens imported into Dante's View were largely destroyed in a 1990 fire. The May 2007 fire burned the post-1990 replantings.

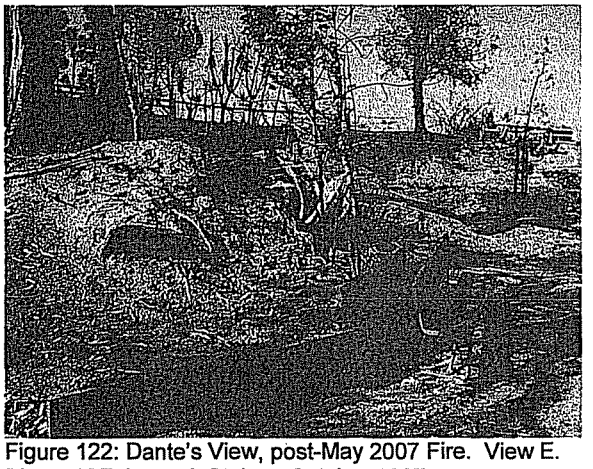


Figure 122: Dante's View, post-May 2007 Fire. View E.
Photo: ICF Jones & Stokes, October 2007.

Mt. Hollywood Drive, a two-lane paved automobile road, runs in a curving and switchback manner due west of Mt Hollywood. One endpoint of this road is at Western Canyon just west of the Vermont Tunnel. Mt. Hollywood Drive continues well north of Mt. Hollywood, and ends at Griffith Park Drive. Griffith Park Drive traverses through Oak Canyon due south of and above Los Angeles Live Steamers. Like Vista Del Valle Road, Mt. Hollywood Drive is a former automobile road that has since been decommissioned and is used today as a trail. The hill-covered portion of Griffith Park between Western Canyon and Brush Canyon due west of it is covered in mixed scrub.

Brush Canyon

Brush Canyon is a large canyon due southwest of Mt. Hollywood and it runs southwest to northeast for roughly ½ mile. Canyon Drive, which leads to Camp Hollywoodland (Girls' camp), enters Griffith Park at the south edge of Brush Canyon. Though either side of Canyon Drive through Brush Canyon is landscaped, running parallel just east of the street is Oak, Sycamore and Riparian woodland ground cover. At the southern portion of Brush Canyon are the Bronson Caves. The Bronson Caves are actually a set of tunnels with one opening at the west edge of an unnamed hill and three openings at the east edge. The three openings at the east side converge into one opening within the hill, and the total length of the tunnel is roughly 137 feet. At the east side, two smaller openings frame one larger opening. The Bronson Caves are the result of rock quarrying activity present at the site from roughly 1900 to 1920. The height of the tunnels is roughly 8 feet, and jagged ore is present at all sides and above within the tunnels. The Bronson Caves are accessed by the Bronson Trail, which ends at the caves and originates off of a parking area at the end of Canyon Drive, in front of Camp Hollywoodland. Beyond Camp Hollywoodland, Canyon Drive becomes a hiking trail which continues north-east through Brush Canyon for 0.70

miles as the crow flies until it curves west at its higher elevation before ending at Mulholland Trail.

Due northwest of Brush Canyon and its amenities are the Sunset Ranch stables, located within Griffith Park at the end of Beachwood Drive. Where Beachwood Drive enters into Griffith park, a gate is present, as is the beginning of Hollyridge Trail, which runs parallel to the road due east of it and continues beyond Sunset Ranch Stables due north until it ends at Mulholland Trail. The hilly area between Brush Canyon and the Sunset Stables is covered in mixed scrub, with the rest of the surrounding area covered with mixed chaparral.

Mt. Lee and the Southwest Corner of Griffith Park

Roughly 2/5 miles northwest of the Sunset Ranch Stables is the apex of Mt. Lee;the highest peak in Griffith Park with an elevation of 1,680 feet. Atop Mt. Lee is a grouping of multi-story radio antennae of metal frame construction (Figure 123), in addition to two single-story gabled buildings in an L-formation.

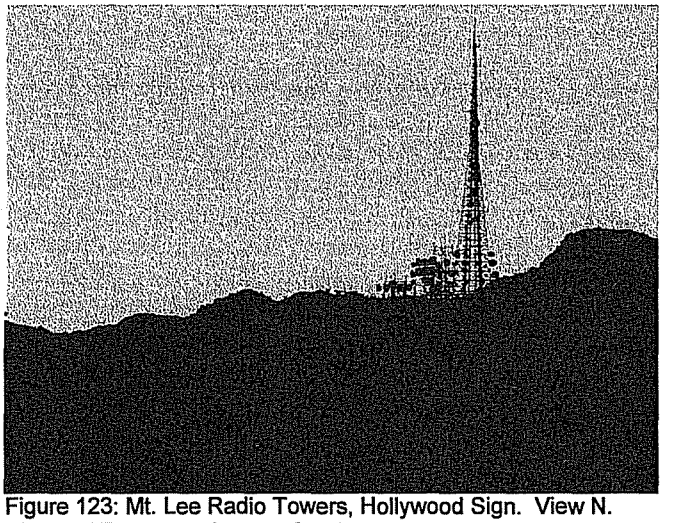


Figure 123: Mt. Lee Radio Towers, Hollywood Sign. View N.
Photo: ICF Jones & Stokes, October 2007.

Just below the peak of Mt. Lee at its south facing slope is the "Hollywood" sign, which is of metal frame construction with white-painted metal cladding, each letter set upon its own concrete foundation in a manner that corresponds to the ridge curvature of the side of the hill. The apex of Mt. Lee is accessed by Mt. Lee Drive, a private road. Mt. Lee Drive ends at the apex of Mt. Lee and begins at the intersection of Mulholland Highway and Deronda Drive above the Hollywoodland neighborhood. A water tower is located to the north above the entrance gate.

At the southwest portion of the base of Mt. Lee, in what is the southwest corner of Griffith Park, is Lake Hollywood Park, which is located at a point where Canyon Lake Drive meets Mulholland Highway. Above Mount Hollywood Park is an unnamed trail at the south face of Mt. Lee that connects Canyon Lake Drive to Mulholland Highway. Just above this trail and downward through a canyon

below Mt. Lee and to Lake Hollywood Park, the ground cover is of mixed scrub. Northwest of Mt. Lee is Cahuenga Peak, elevation 1,820 feet, which is technically outside of Griffith Park proper. North of Cahuenga Peak is an extension of the park that encompasses the rear portion of the Forest Lawn and Mount Sinai Memorial Parks. Just north of this extension is Sennet Canyon, which is also immediately outside of Griffith Park and serves as the rear portion of Mount Sinai Memorial Park.

Mt. Chapel and Mt. Bell

Within Griffith Park, just east of this extension and southeast of Sennet Canyon is Mount Chapel, elevation 1,614 feet. Along the south face of Mount Chapel is the Mulholland Trail, which features numerous repeating curves and was originally intended to be an extension of Mulholland Highway. The Mulholland Trail begins off of Mt. Lee Drive and continues eastward beneath the peak of Mt. Chapel until ending at Mt. Hollywood Drive, which traverses the eastern portion of Mt. Chapel in a series of curves, switchbacks and hairpin turns. An unnamed trail begins off of Mt. Hollywood Drive and ends at the apex of Mt. Chapel. Additionally, one end of Vista Del Valle Drive begins off of Mount Hollywood Drive in a canyon between Mt. Chapel and Mt. Bell, which is due east of it. Mount Bell has an elevation of 1,582 feet near the center of Griffith Park. Hiking trails around and near the apex of Mt. Bell include: East Ridge/Hogback Trail; Mulholland Trail; Mt. Hollywood Trail, and Bill Eckert/East Trail, which originates northeast of Mt. Bell at the base of Bee Rock. Vista Del Valle Drive traverses the north and then east faces of Mt. Bell before winding eastward toward Bee Rock. The majority of the ground cover of Mt. Chapel and Mt. Bell is mixed chaparral, particularly at their south faces. However, the north face of both mountains features generous portions of oak vegetation, in addition to small sections of mixed scrub just west of the Mt. Bell apex.

Bee Rock, Spring Canyon, Points North of Bee Rock

Bee Rock has an elevation of 1,056 feet and is located roughly 0.6 miles east/southeast of Mt. Bell. The distinguishing feature of Bee Rock is its large exposed sandstone face which faces north (Figure 124).

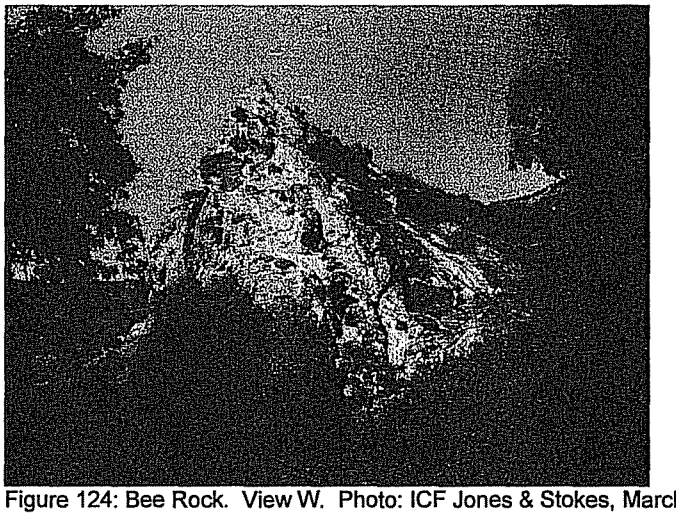


Figure 124: Bee Rock. View W. Photo: ICF Jones & Stokes, March 2008.

The majority of the vegetation on all faces of Bee Rock is mixed scrub. Vista Del Valle Drive winds just west and then south of the apex off Bee Rock before it enters into Spring Canyon, a chaparral-covered canyon which is acclimated east-west just south of Bee Rock. The Bee Rock Trail, one of the first trails cleared in Griffith Park, begins due east of Bee Rock in front of the Old Zoo Picnic Area, which is located east of Bee Rock and presents a clear view of the exposed rock face itself. Bill Eckert/East Trail runs north of Bee Rock, itself originating just northwest of the Old Zoo picnic area. The Old Zoo Picnic Area is located adjacent the Old Zoo (previously described) just east and below Bee Rock. The Old Zoo Trail, originates at the Old Zoo and runs southwest below Bee Rock through Spring Canyon and ultimately ends at the Fen Canyon Trail. Due north of the Old Zoo Picnic Area and ending just north of it is the Mineral Wells Trail, which runs along behind the three "Neighborhood Youth Council" (NYC) Picnic areas off of Griffith Park Drive, continuing parallel to Griffith Park Drive due northwest until the end of Mineral Wells Canyon and the picnic area named for it.

Points North between Bee Rock and Mt. Bell

Due north of the point where Mineral Wells Trail traverses the NYC picnic areas, Camp Road, a paved automobile road, is present and it lines westward into the Griffith Park Boys' Camp, which is nestled in a canyon between and just north of Mt. Bell and Bee Rock. The unnamed canyon in which the Boys' Camp resides contains plants of the oak and walnut woodland community. Along a ridgeline of hills due north of Camp Road is North Trail, which originates near the Mineral Wells picnic area and ends due west just south of the Toyon Canyon Landfill. Four metal clad water towers are present along the North Trail. Off of a switchback of the North Trail atop a peak due south of the Mineral Wells Picnic area is Amir's Garden (Figure 125), which overlooks the eastern edge of the park. Like Dante's View and Captain's Roost, Amir's garden is a folk landscape spearheaded by one individual, Iranian immigrant Amir Dialameh. Amir's garden features numerous imported plant specimens and trees, often accompanied by planters of pebbles placed in rough mortar. These are placed

upon an east-facing vista with mixed scrub as its native vegetation. Metal and fiberglass picnic benches are present as is a wood sign at the entrance, which reads "Amir's Garden: Since 1971."



Figure 125: Amir's Garden, 1971. Entrance. View S.
Photo: ICF Jones & Stokes, October 2007.

Toyon Canyon and Landfill Natural Restoration Project and Royce's Canyon

To the west of Amir's Garden and northwest of the Boys' Camp is the Toyon Canyon landfill, a graded, earth-covered landfill that is currently a landscape restoration project. This project, overseen by the City Bureau of Sanitation, will restore the landfill to a passive-use meadow. The Toyon Canyon landfill is 1/3 x 1/2 mile in dimension, and is covered with packed earth. The northeast portion of the area is stepped and terraced down the side of a hill that ends near the base of Mineral Wells Canyon. Toyon Trail is present along the northwest portion of the landfill, and an unnamed spur of it continues southwest parallel to Mount Hollywood Drive. Mount Hollywood Drive, which originates north of Toyon Canyon off of Griffith Park Drive, winds westward of Toyon Canyon. A winding, unnamed trail spurs off of Mt. Hollywood Drive just before it passes along the eastern edge of Royce's Canyon. Royce's Canyon is a deep, east-west acclimated canyon due south of Toyon Canyon and north of Mt. Chapel. No named trails are present within Royce's Canyon, which is largely a mixed scrub environment with oak and sycamore riparian communities at its west end. Immediately west of the Toyon Landfill are hills with a presence of pine specimens. At the western edge of Griffith Park northwest of Toyon Canyon just above Oak Canyon, the vegetation is largely oak and walnut woodland community. Directly between Toyon Landfill and Oak Canyon are numerous vegetation communities including, from west to east: oak walnut woodland, mixed scrub, pine, oak, and mixed chaparral.

Oak Canyon, Composting Educational Facility, and Points East

Due north of Toyon Canyon is Oak Canyon, which acclimated in a general east-west direction. A segment of Griffith Park Drive runs through the middle of Oak Canyon. Parallel south of Griffith Park Drive is the Oak Canyon Trail, which originates just west of Travel Town and terminates at Mount Hollywood Drive. Other named trails within the Oak Canyon vicinity include Migdal Trail and the western portion of Skyline Trail, both along the northern ridge of Oak Canyon. Though the majority of Oak Canyon is mixed chaparral, the canyon also features oak, sycamore riparian woodland plant communities. The Travel Town Transportation Museum, previously described, is located due north of Oak Canyon. Between it and the Los Angeles Live Steamers complex located to the east of it is Rattlesnake Trail, which originates off of Zoo Drive and winds southward until it meets Griffith Park Drive. Two metal water towers are present due east of Rattlesnake Trail in an area behind Los Angeles Live Steamers. To the east of Oak Canyon is a Composting Educational Facility. Skyline Trail runs along the ridge due north of the Composting Facility. Skyline Trail continues eastward atop a ridgeline that is roughly parallel to Zoo Drive below it, and this trail ends at the northern boundary of the Los Angeles Zoo. In the general vicinity of where Skyline Trail passes above Pecan Grove Picnic Area, a metal clad water tank is present. Just east of the Composting facility is Condor Trail, which originates off of Skyline Trail and moves southward, ending at a bend in Griffith Park Drive near the Mineral Wells picnic area. The land vegetation between the composting educational facility and the Los Angeles Zoo is primarily mixed chaparral, with an oak community adjacent a northwest portion of the Los Angeles Zoo.

Equestrian and Bike Paths in the Los Angeles River Vicinity

In addition to trails present within the wilderness portion of Griffith Park, additional equestrian trails are present that run along the perimeter of the Park where it meets the State Route 134 and Interstate 5 freeways. Additional equestrian trails are located along the perimeter of the Los Angeles Equestrian Center, between the center and the Bette Davis Picnic Area, along the Los Angeles River near the Equestrian center, and through the Martinez Area just west of Travel Town. Additionally, the LA River Bike Path runs parallel the river through Griffith Park from the Pecan Grove Picnic Area due east and then bending south with the river and ultimately beyond the southern boundary of Griffith Park itself. The Baum Bicycle Bridge, previously described, is part of the LA River Bike Path and crosses over Los Feliz Boulevard within Griffith Park. According to the 2007 Griffith Park Master Plan, there is no pre-existing, original vegetation in any of the Park due north and east of the Los Angeles River.

The May 2007 Fire

On May 8, 2007, a windswept fire burned 817 acres within the central, wilderness portion of Griffith Park. Named features that were either destroyed or seriously damaged include Captain's Roost, Dante's View, and non-built land within the Bird Sanctuary. The few buildings, structures objects present within these resources survived intact, though the majority of plant life was burned. Originating as an accidental, human-caused fire off of Commonwealth Canyon Drive above the Roosevelt Golf Course, the fire charred the east portion of the wilderness area, including the areas of and around Beacon Hill, Fern Canyon, Glendale Peak, Aberdeen Canyon, Mt. Hollywood, Spring Canyon, and Bee Rock. Lost in the burn area was the majority of the naturally occurring ground cover, most of which was chaparral and trees. As of March 2008 new plant life, much of which is ruderal, is beginning to reappear and efforts are underway by a variety of municipal, non-profit and private entities to restore the lost habitat.

ATTACHMENT D: Griffith Park Significance

Summary

The result of a remarkable act of generosity, Griffith Park is the largest interurban wilderness park in the United States, and is now surrounded by the vast metropolis once predicted by Colonel Griffith J. Griffith. At 4,218 acres, Griffith Park comprises one-fourth the total acreage of Los Angeles City parkland. Aside from natural wilderness, Griffith Park consists of numerous educational, recreational, and other built amenities, some of which are already vested with historic significance as icons for the City. Griffith Park represents the largest private land gift Los Angeles has ever received and is unique, even at a national level, for possessing a large-scale, mostly untouched landscape in the center of an urban metropolis. Large portions of this landscape appear to retain integrity dating back to the period of the Gabrielino Indians who were the earliest known inhabitants of the region.

Griffith Park meets **the first Criterion for City of Los Angeles Historic Cultural Monument (HCM) eligibility, "...in which the broad cultural, political, economic, or social history of the nation, state, or community is reflected or exemplified:"**

> Colonel Griffith specifically mandated that the property forever be available as a park to people of "modest means." The gift of Griffith Park to the City and its people in 1896 by Colonel Griffith and his wife Mary Agnes Christina Mesmer (Tina Griffith) is a historically significant gesture completed within the turn-of-the-century context of large-scale philanthropy from the wealthy to the many, in addition to the context of the City Beautiful Movement. Griffith Park is also significant in the City's historic pursuit of a reliable year-round supply of water for its rapidly increasing population at the end of the 19th century.

Griffith Park meets the **second City of Los Angeles HCM Criterion, "...which are identified with historic personages or with events in the main currents of national, state, or local history:"**

Griffith Park is historically associated with ***Colonel Griffith J. Griffith*** and his wife ***Tina Griffith*** who deeded 3,015 acres of their property to the City of Los Angeles. Prior to this act, Colonel Griffith's consistent and substantial deeds of philanthropy to the City in the late 19th century made him one of the "wheel horses," as he was called by contemporaries, of the City's early development. Aside from donating the park land itself, Colonel Griffith underwrote the Greek Theatre and the Griffith Observatory, both completed after his death in 1919.

Griffith Park is historically associated with ***Van Griffith***, Colonel Griffith's son, who as park developer and commissioner in the years following his father's death implemented and defended his father's wishes for Griffith Park. Griffith Park is historically associated with Park Superintendent ***Frank Shearer*** who oversaw the first recreational and irrigation developments in the park. Griffith Park is also historically associated to later Recreation and Parks Superintendent ***George Hjelte***, a noted national authority on recreation who oversaw the expansion of various recreational activities in Griffith Park during the World War II era. Many of these recreational amenities are primary reasons why the Los Angeles citizenry and their children make Griffith Park a destination today.

The history of Griffith Park presents passing associations with other important Angelinos, including ***Corporal Jose Vicente Feliz***, the first *Comisionado* (Manager) of the Los Angeles Pueblo and original owner of the Feliz Rancho—the majority of which is today Griffith Park; ***Don Coronel***, a *Californio* and early Los Angeles mayor who later owned and lived on the rancho; and ***Walt Disney***, who was a frequent park visitor and whose model railroad workshop was moved to the Los Angeles Live Steamers Railroad Museum. The diversity of these individuals points to Griffith Park's significance as an early testament of a transforming Los Angeles—from open rancho to Anglo settlement, and its later association to people intimately identified with the City and its image across the world.

Griffith Park is eligible for City HCM listing under **the third City monuments Criterion: "...which embody the distinguishing characteristics of an architectural-type specimen, inherently valuable for a study of a period, style, or method of construction:"**

Within Griffith Park are numerous structures and buildings that are intact and expressive examples of the Spanish Revival, Moderne, and Second Greek Revival design systems. The vast majority of these resources were completed within the Park's period of significance: 1896-1958. Additionally, throughout Griffith Park are many excellent examples of retaining walls, culverts, drainage channels, barriers, pedestrian bridges, and drinking fountains primarily completed by various federally assisted

work groups of the 1930s including the Reconstruction Finance Corporation (RFC) and the Civilian Conservation Corps (CCC). These objects are built in the rustic, "Park Style" of design as seen within National Parks of the same era.

The National Park Service defines a Cultural Landscape as "a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values."[1] Taken as a whole, Griffith Park's eligibility under the above mentioned criteria render it a historically significant cultural landscape for the City of Los Angeles.

Griffith Park is significant under **the fourth City Monuments Criterion, "...which are a notable work of a master builder, designer, or architect whose individual genius influenced his or her age:"**

Griffith Park contains the Griffith Observatory, completed by the firm of ***John C. Austin & Frederic M. Ashley*** who were architects of Los Angeles City Hall. Their work was done in consultation with the unsung architect ***Russell W. Porter***, a noted expert in the field of telescope design who contributed greatly to the final design of the Griffith Park Observatory. Other locally significant architects with buildings in Griffith Park include ***Peter K. Schabarum***, architect of the Greek Theatre; ***William L. Pereira & Associates***: architects of the former Children's Theater Costume Workshop—today called "LA Shares"—and the Modernist firm of ***Jones, Emmons & Contini***, architects of the Griffith Park Girls' Camp.

[1] National Park Service, U.S. Department of the Interior (Charles A. Birnbaum, ASLA), "Preservation Briefs 36: Protecting Cultural Landscapes." online version. Washington D.C.: National Park Service, 1994. http://www.nps.gov/history/hps/tps/briefs/brief36.htm viewed 24 April 2008.



Colonel Griffith J. Griffith
Courtesy Los Angeles Public Library Photo Collection



Mary Agnes Christina "Tina" Griffith (Mesmer)
Courtesy: UCLA Special Collections

Colonel Griffith J. Griffith and his wife Tina Griffith together donated Griffith Park to the City of Los Angeles.

Early History

The land that would become Griffith Park was originally a portion of the 6,647-acre Rancho Los Feliz. Jose Vicente Feliz, originally from Sonora, Mexico, had trekked through Griffith Park as a soldier with the party of Juan Bautista de Anza, a Spanish settler who colonized what became the first Pueblo in Alta California, and is today San Jose.[2] The De Anza party had camped within a portion of the park located near the bend in the Los Angeles River. In June 1781, Jose Vicente Feliz, now a corporal, was one of the soldiers who escorted the original 11 families from Sonora to the settlement that would become the Pueblo of Los Angeles in September of that year. Feliz later became the Pueblo's first *Commisionado*—a role akin to a supervisor—and as such he had the highest authority of any single individual within the original Pueblo.

Sometime between 1795 and 1800, near the time of Feliz's retirement from public service, the Spanish Crown granted Feliz the 6,647 acre rancho as a gift for his loyalty. The earliest extant building in Griffith Park, a thick, walled adobe residence off of Crystal Springs Drive, was built in the 1830s by one of Jose Vicente Feliz's children: Jose Paco Feliz. Dona Maria Ygnacia Feliz, a daughter-in-law to Jose Vicente Feliz, assumed ownership of the property upon her husband's death and early on secured the water rights to the Rancho. These water rights later became a significant factor in the City's acceptance of the park

[2] Mike Eberts, Griffith Park: A Centennial History (Los Angeles: The Historical Society of Southern California, 1996) 11-12.

as a gift from Colonel Griffith. The land that now comprises Griffith Park was later acquired by Dona Maria's brother in law, Antonio Feliz, who in turned willed it to Don Antonio Coronel. This transaction took place against the wishes of Feliz's niece Petranilla, who had lived with him on the property, and who stood to be its sole heir. Upon finding that she was not to receive the property, according to popular legend, she is believed to have cursed it.

Don Antonio Coronel was the lawyer for the Feliz family.[3] Additionally, Coronel was an early Justice of the Peace, and was later a captain in the Mexican army during the Mexican-American War. Once California fell under United States' rule, Coronel took an active role in local politics, becoming the first County Assessor and later mayor of the City of Los Angeles. Coronel established the City's first Department of Public Works and later became State Treasurer. Helen Hunt Jackson developed the initial idea for the romantic novel that would become *Ramona* while staying with Don Antonio and his wife, Dona Mariana. In 1883 Don Antonio helped create the Historical Society of Southern California, and his collection of various Spanish, Mexican, and native artifacts is housed at the Los Angeles County Museum of Natural History.[4] The Rancho was later sold to John Baldwin, who had intended to make the Rancho profitable, but failed, and supposedly sold the Rancho to pay off his mortgage.[5]



Don Antonio Coronel, early *Californio* and former owner of the Griffith Park property.
Courtesy Los Angeles Public Library Photo Collection

[3] Mike Eberts, Griffith Park, 20.
[4] John R. Kielbasa, Historic Adobes of Los Angeles County (Pittsburgh: Dorrance Publishing Company, 1997) 96.
[5] Eberts, "Griffith Park," 18.

From 1873 to 1882, Griffith had lived in San Francisco , where his journalism education yielded him a job as the business manager for the Herald Publishing Company.[6] By 1878, Griffith became the mining correspondent for the *Daily Alta California*, a San Francisco newspaper that was at the time the region's largest.[7] During this period, with his knowledge of the mining industry expanding, Griffith became acquainted with various mining companies of the United States along with their leaders. Griffith himself become a mining consultant through their acquaintance, and began investing in various mining activities across California, Arizona, Nevada, and New Mexico.[8] These were the activities that netted Griffith a small fortune.

Griffith visited Los Angeles twice between c.1873 and 1882. In 1882, he sold part of his Mexico mining interests for $50,000.00, toured the world—an event that Griffith claimed influenced his donation of Griffith Park—and moved onto the Rancho, 4,071 acres of which he had purchased from Thomas Bell on December 8, 1882, for an unknown price ranging anywhere from $8,000 to $50,000.[9]

In his first years in Los Angeles, Griffith focused his energies on developing his ranch and stocked it with the highest quality cattle available.[10] During this time, Griffith Park was still located 3 miles outside of city limits, in an area perceived as the outskirts. During the Los Angeles housing boom of the 1880s, Griffith profited handsomely by selling large portions of his Los Feliz, Kenilworth, and Ivanhoe sections of the Rancho for housing development.[11] The rugged, rocky portions of the Rancho remained unsold during this time. However, the section of Griffith Park that today features the merry-go-round was originally home to an ostrich farm and amusement facility during the mid and late 1880s.[12] This ostrich facility, run by Dr. Charles J. Sketchley of South Africa, was the first recreational attraction in what would later become Griffith Park. The ostrich farm was instrumental in bringing the public to the park for the first time. Dr. Sketchley and Colonel Griffith even constructed a narrow gauge railroad to bring people to the ostrich farm from a point beginning at the present day Sunset and Beaudry Avenues. Similar to lion and alligator farms, which were also common during that time, ostriches were a popular, "exotic" amusement. Their plumage was fashionable in women's clothing during this period, particularly hats. Other ostrich farms in the region were present in South Pasadena, Eastlake Park, and in Anaheim. Colonel Griffith saw the ostrich farm and the railroad leading up to it as highly advantageous. At that time Griffith had subdivided much of the Rancho, and the train trip to the ostrich farm served as free advertising for the land traversed by the line. Though Griffith succeeded in selling much of his

[6] "Death Claims G.J. Griffith," Los Angeles Times, 7 Jul 1919: II1.
[7] "Copied from notes lent me by Miss M. Morgan," Van Griffith family papers, 1845-1973, UCLA special collections.
[8] "Griffith's Generous Gift," Los Angeles Times, Dec 17 1896: 9.
[9] Griffith's brother in law Joseph Mesmer stated Griffith paid $8,000 for the property (Mesmer felt the property was worth less than that), and the $50,000 estimated price is quoted from son Van Griffith. Eberts, Griffith Park,35, 38-39; "Chronological," single sheet, Van Griffith family papers, 1845-1973, UCLA. Special Collections.
[10] Ibid, 37.
[11] Today, Ivanhoe and Kenilworth are portions of Silverlake.
[12] Eberts, Griffith Park, 21.

property for residential subdivision, by the time that the housing boom ceased in the late 1880s, the inner, hilly portion of the Rancho remained unsold. Griffith offered 100 acres to the City for a park at $750/acre: an offer that the city declined. The ostrich farm was closed by the end of the 1880s.

By 1885, Griffith was spending less time at his Ranch and more in the City proper. During his city-dwelling years, Griffith began to evolve the big and expressive personality by which many would later identify him. During this time, Griffith exhibited the first tendencies of a charitable streak toward the City of Los Angeles. According to his half-sister, Margaret Morgan, Griffith donated:

> East Adams street 82-1/2 feet in width from San Pedro to Hooper, and a mile of Central Ave. from Washington Street south.... Later he donated $3,000 for the first car line built south on that boulevard. In order to make Washington Street straight and uniform he moved his fence back and donated 48 feet of that 80-foot street the entire distance from San Pedro St. to Central Ave.
>
> The curve, corner of Vermont and Hollywood Blvd., he gave to the city, also half of the Blvd. for a block west, and served for two years with Hollywood people in opening and widening Sunset Blvd. to 100 feet, and offered to furnish enough gravel free to macadamize it from city to the sea.[13]

According to George Rice in the 1912 pamphlet, "His Reward:"

> Col Griffith was one of the "Wheel Horses" for every great movement for the upbuilding of this community. The greatest event in our history was the commencement of work on the San Pedro breakwater, which was celebrated for two days. It was on his motion in the Chamber of Commerce that the event was christened "Free Harbor Jubilee." It required $22,000 to make that celebration a success, and Col Griffith was one of the largest contributors to that fund, as well as to many other enterprises I might mention.[14]

Perhaps the most significant of these early charitable gifts came in 1884 and 1885 when Griffith sold to the City the right to access water from the section of the Los Angeles River that flowed through his Feliz Rancho. Griffith sold these rights for $50,000, although they were believed to be worth much more at the time, another demonstration of his charity.

Water was a particularly valuable resource in the 1880s at the time of the sale, because it was during this time that Los Angeles experienced its first significant boom in population and growth. The boom period, which lasted from 1885 to 1888, was fed by the completion of the Southern Pacific and Santa Fe transcontinental rail lines into the City, which in turn initiated a price war and a tremendous influx of new residents. The population of Los Angeles jumped from 11,183 people in 1880 to 50,395 people in 1890.[15]

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[13] Ibid.

[14] George Rice, "His Reward," pamphlet, 1912. Transcribed page. Van Griffith family papers, 1845-1973. UCLA Special Collections.

[15] Phillip J. Ethington, "The Growth of Los Angeles," in Hylda L. Rudd, Ed., et.al, The Development of Los Angeles City Government: An Institutional History, 1850-2000, Volume 2 (Los Angeles: Los Angeles Historical Society, 2007) 658.

In 1887, during the peak of this boom, Griffith married Christina Mesmer, a descendant of the Verdugo family (who themselves were briefly associated to the Feliz Rancho), and the daughter of the owners of the United States Hotel, one of the more lavish hotels in the City. Though Griffith had already earned a significant amount of money in his lifetime, through this marriage his wealth increased considerably. Officially, it was together with his wife that Griffith would present to the City his grandest charitable gift yet: the large section of the Feliz Rancho that became Griffith Park.

The "Christmas Present"

On December 16, 1896, Colonel Griffith J. Griffith, extravagantly dressed and leading an entourage of four dozen prominent citizens, strode into a special meeting of City Council whose purpose had been kept secret from the public. In this meeting, Mayor Frank Rader, who had been in on the meeting's secret intent, introduced Colonel Griffith, who presented the mayor a roll of paper tied in a blue ribbon. This roll included the property deed, its stipulations, and a memorandum letter stating Griffith's intention to donate 3,015 acres of his Los Feliz Rancho to the City of Los Angeles to be made available to the public as a city park. This was, in Griffith's words, a "Christmas Present," to the City of Los Angeles.



Griffith Park illustration from 1896 Los Angeles Times article announcing the donation.[16]

[16] "Griffith's Generous Gift," Los Angeles Times Dec 17, 1896: 9, courtesy ProQuest Historical Newspapers Los Angeles Times (1881 - 1986).

For the City of Los Angeles, the occasion was momentous not just for the acquisition of a new park, but primarily for the free and clear water rights that came with it. The mayor stated as much on receiving the gift from Griffith during this presentation.[17] Water acquisition was both reason for and necessity of the City's significant growth of this period. Providing water for irrigation and domestic consumption has always been one of Los Angeles' most important services. The City's efforts to secure water are a character-defining feature of its early history, and its early water system relied heavily on the flow of the Los Angeles River. Wells tapped pockets of groundwater, and a system of irrigation ditches, or zanjas, conveyed water to various sections of the city.[18] Until 1902, Los Angeles did not possess its own water utility but rather relied on private interests to provide water for the City, notably "The Los Angeles City Water Company," which was chiefly responsible for the distribution of water throughout the City.



Zanja in Griffith Park connecting to Los Angeles River.
Courtesy Los Angeles Public Library Photo Collection

With the gift Griffith specifically stipulated that his water rights were to be owned by the City, and the Griffiths donated large provisions to make sure of this. For the park, Griffith and his wife originally intended to donate "only" 2,000 acres, but after speaking with Mayor Rader in private prior to the donation, Griffith added to the gift an additional 1,000 acres of property that ran along 4.5 miles of the Los Angeles River. Though Griffith had already sold the City the use of his water in the mid-1880s, water laws of the time were highly complicated and still left the City vulnerable to possible litigation by Griffith or

[17] "Griffith's Generous Gift," Los Angeles Times , Dec 17, 1896.
[18] Hetzel, Christopher (Historic Resources Group), Echo Park. City of Los Angeles Historic Cultural Monument Nomination. Los Angeles, CA, 2005: continuation sheet 7.

other owners of riverside property. The expanded donation of land not only made for a significantly larger park, but provided the City security that it now had clear access to enough water that it need not hassle with other river-adjacent property owners over water rights and ownership. Griffith's water gift occurred 17 years before the opening of the Owens Valley Aqueduct.

By early 1898 the necessary property survey was complete and the formal deed transfer was conducted in a ceremony on March 5. As part of the ceremony, prominent politicians including Mayor M. F. Snyder, Senator Stephen D. White, and Judge J.W. McKinley all gave speeches commending the remarkable generosity of Colonel Griffith, and Griffith was designated a life honorary member of the City Chamber of Commerce, the first time such a title had been conferred upon an individual in the City.

The donation of the land included a couple of basic stipulations. If they were broken, the park was to revert to Griffith, his family, or his heirs. In giving the land, Griffith stated that the land was to be used as a park, "for the purposes of recreation, health and pleasure, for the use and benefit of the inhabitants of the said City of Los Angeles forever." Aside from mandating that the land always be used as a park, and always be made available to individuals of modest means, Griffith mandated that the property always be known as Griffith Park.[19] In stipulating the land as a park available to everyone, Griffith answered to broader concerns of the time that cities were incapable of fostering healthy populations.

The City Beautiful Movement

Development of Los Angeles' parks facilities was part of the "City Beautiful" movement, a progressive, nationwide social movement aimed at city beautification and urban revitalization. [20] A reaction against the perceived ills of the Industrial Revolution as inflicted on cities, the City Beautiful movement promoted the philosophy that the problems of urban poverty, slums, and industrial growth could be eradicated or controlled by the creation of parks, green space, and other forms of recreation.

In the mid-nineteenth century, this movement began with the creation of large, municipal parks in many eastern and midwestern cities. The creation of New York City's Central Park in 1858, for example, inaugurated this movement as a conscious effort to control urban growth. The park caused the value of adjacent land to increase and significantly affected the physical and cultural development of New York City.[21]

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[19] In addition to these stipulations, Griffith clearly stated allowances for the City to have ownership of all water rights upon the property and also stated that transportation uses through or within the park would also be permissible.

[20] The primary ideas and writing of this section are authored by Christoper Hetzel, Jones & Stokes. November, 2007.

[21] For more information on New York's Central Park see Roy Rosenzweig and Elizabeth Blackmar, The Park and the People: A History of Central Park (Ithaca, NY: Cornell University Press, 1992.

Such planning later turned to preserving the natural environment. The United States Congress established Yellowstone National Park in 1875, and New York state formed the New York State Reservation at Niagara Falls in 1885. Industrial development threatened the natural character of these two areas, and many people adamantly supported their protection. Meanwhile, the desire to escape from the ills of urbanization and industrialization in American cities manifested itself in the creation of the first theme parks and pleasure resorts at Coney Island and Atlantic City and the many zoos and menageries. In architecture, the City Beautiful movement manifested itself through Beaux-Arts design and principles as promulgated at the 1893 Columbian World Exposition in Chicago.

Los Angeles developed somewhat slower than the rest of the country in this regard, primarily due to its small size and a vast supply of readily available space in the late nineteenth century. The area remained semi-agricultural through the 1880s and 1890s, and an imagery of an urban arcadia prevailed. Matters of public recreational space were further complicated by the City's inheritance of conflicting land surveys, a result of early survey methods, and a resistance to government restrictions on land speculation. People supported this movement for various reasons. Some promoters were genuinely concerned for cities and their residents, while others supported the movement because it furthered their own interests. Proponents generally offered three major reasons for "city beautification," each with corollary benefits and advantages.

First, the creation of landscaped parks effectively increased, or at least stabilized, the value of surrounding property. City planners hoped to make areas of the City more attractive and desirable to residents in order to improve land values. Closely associated with land speculation, the strongest park promoters were frequently those living adjacent to public land and those who would most benefit from its use.

A second argument was the belief that such developments affected the social behavior of city residents. Supporters believed that nature had positive psychological effects on social behavior and argued that parks provided working class populations with an escape from the toils of everyday living. Nature was thought to make workers happier and more productive, and park advocates maintained that city beautification and the establishment of public recreation facilities created a sense of civic pride by increasing a citizen's emotional attachment to the community. For politicians, these benefits meant their constituency would be happier, more unified, and easier to control. People viewed parks and recreation centers as public places where members of all income levels could associate, thus serving as instruments of class reconciliation and democratization. Easily accessible through the use of public transit, such as the Los Angeles' Red Car lines, many public parks were frequented by rich and poor alike.

Proponents offered health benefits as yet another reason for the establishment of parks and recreation facilities. Many people believed that qualities of the natural environment reduced the prevalence of disease and improved public health. Ocean breezes and sea water, for example, were thought to have remedial properties and that public beaches provided escape from the crowded and filthy

conditions of urban living. In the late nineteenth and early twentieth centuries, people knew little about the cause of disease. They only knew that patients were cured, or their conditions improved, when exposed to natural surroundings.

In keeping with the zeitgeist of the times, city leaders during the turn of the century spoke highly of the need for public parks, and how the local climate would be advantageous to their development. In 1889, the City established the country's first Department of Parks to administer the City's parks, which included the Plaza (1781), Pershing Square (1870), Westlake Park (1887), Eastlake Park (1889), and Elysian Park (1886).

The City Beautiful Movement and Griffith Park

Among the symptoms of the industrial movement that City Beautiful aimed to combat were pollution, unchecked urban growth, tenements, and grueling labor, particularly for children and the poor. Perhaps having viewed this in the Pennsylvania and New York of his modest youth, Griffith saw one possible future for fast-growing Los Angeles. Griffith correctly predicted that one day Los Angeles would be a vast metropolis, and therefore parks, including his own massive donation, were vital to the future health of people and the City.

Griffith himself articulated this need in various statements, which included the writing of a 1910 self-published book entitled *Parks, Boulevards, and Playgrounds*:

> That there must be an outlet for the population that chokes in the streets and alleys of our cities; that fresh air, communion with nature and amusements other than those afforded by the cheap theatre, moving picture show or saloon, are requisites of public health, and is worth spending money on—all this has become a settled conviction among those who think at all.[22]

> Sunlight and air are the first requisites of sanity and health....Public parks are a safety valve of great cities and should be made accessible and attractive, where neither race nor creed nor color should be excluded....Give nature a chance to do her good work and nature will give every person a greater strength in health, strength and mental power.[23]

[22] Griffith, Griffith J, Parks, Boulevards, and Playgrounds (Los Angeles: Prison reform League Publishing Co., 1910). Excerpted from Eberts, Mike, Griffith Park: A Centennial History (Los Angeles: The Historical Society of Southern California, 1996).

[23] Eberts, "Griffith Park," 5, 399 (Griffith J. Griffith, "The Autobiography of Colonel Griffith Jenkins Griffith," p.30, manuscript, Van Griffith Papers, Collection 2060, UCLA Special Collections.)



Griffith Park, 1912. Courtesy Los Angeles Public Library Photo Collection

Aside from the Plaza, which was the City's first park, early City parks were either funded in part by private citizens and became genteel and exclusive spaces for repose, or often were built on bona fide unimprovable land. Through donating the land to the City as a park, Griffith was no longer responsible to pay taxes on land that was virtually unimprovable, and he joked about this on the day of the donation.[24] Though he was successful in subdividing portions of the Rancho into communities that today are portions of Los Feliz and Silverlake, the large, hilly portion of the Rancho that is today within Griffith Park was seen as too full of canyons, too craggy, and too rocky for subdivision, and too arid for animal grazing or crops. In 1890, Griffith had offered some of the property to the City for $750.00/acre, an offer they declined.

Nonetheless, the gift appears to have been very much a generous donation, one that the Griffiths wanted to give free and clear, on terms that would satisfy the City. Along with the property itself, Griffith covered an $80,000 mortgage, and included $10,000 worth of water-related improvements to accompany the water rights themselves.[25] The total valuation of the gift was estimated at more than $300,000.[26] Griffith and Mesmer's gift of a park space that instantly became the largest city park in the country falls within a category of big and benevolent philanthropy that was a feature of the late nineteenth century and brought with it the presence of "standing" within a community.

Turn of the Century Philanthropy

As previously mentioned, Griffith's charitable giving predated the donation of the Griffith Park land, and Griffith was considered one of the early "wheel horses" for the upbuilding of the City. Colonel Griffith was wealthy at a time in the history of the United States when excess wealth from individual efforts and

[24] Boyle Workman, Boyle Workman's The City That Grew (Los Angeles: Southland Pub. Co, 1936) 229.
[25] Gift of the Rancho. Transcribed page. Van Griffith family papers, 1845-1973. UCLA Special Collections.
[26] Eberts, "Griffith Park," 3, 399 (Henry Winfred Splinter, "Los Angeles Recreation, 1846-1900," Southern California Quarterly, XVIII (June 1961): 192) and "Griffith's Generous Gift: Three Thousand Acres Presented to be a City Park Forever," Los Angeles Times, Dec 17 1896: 9.

accomplishments through industry, rather than through pre-inherited land or monarchy, was a new phenomenon.

Griffith's philanthropy falls in line with a common trend among industrialists at the turn of the century of making charitable contributions that they felt would benefit and improve a wide swath of the populace. In the United States, for example, this trend was best exemplified in the giving of two of Griffith's contemporaries: J.D. Rockefeller, Sr., and Andrew Carnegie. In the process of becoming innovators within their respective industries (oil and steel), J.D. Rockefeller and Andrew Carnegie are the best-known examples of capitalist philanthropists from the first generation of Americans to profit abundantly from the Industrial Revolution.

J.D. Rockefeller, Sr., widely credited as the richest American in history, made tens of millions of dollars through the company he founded, Standard Oil. Rockefeller subsequently donated millions of dollars to the fields of medical research and education. His son J.D. Rockefeller, Jr. continued this trend of giving throughout the first half of the twentieth century, continuing to establish charitable organizations, donating thousands of acres to national parks, and even donating the land on which the United Nations headquarters was later built. Similarly, Andrew Carnegie made a fortune in steel and the ability to produce it efficiently. The U.S. rail industry used his steel to build thousands of miles of rail across the country. In 1901, Carnegie Steel was sold to J.P. Morgan and was merged into U.S. Steel. With the earnings from this transaction, Andrew Carnegie donated tens of millions of dollars for numerous projects related to education and social advancement, including the construction of hundreds of public libraries, popularly called "Carnegie Libraries," across the United States, Canada, Northern Europe and Australia. All three of these individuals were seen as "Captains of Industry," and implicitly perceived as among the most successful capitalists, and therefore most powerful individuals in the United States.

For Los Angeles, Griffith's gestures and giving are a regional manifestation of this trend. Through his extravagant dress, robustness of presence, and through the giving itself, it appears that Griffith may have consciously intended such an association. Though Griffith certainly succeeded in making a bold statement through the gift, Griffith himself—like Andrew Carnegie—was an immigrant born of the "plain people." He stipulated the park always be made available for such people. Griffith's half-sister, Margaret Morgan, stated that "He was sympathetic with the poor because he had been a poor boy."[27]

Born in Glamorganshire, Wales, on January 4, 1850, Griffith J. Griffith arrived in the United States at age 16 with an uncle who had already been living in the country. Griffith settled in Ashland, Pennsylvania, where he attended school and was virtually adopted for a period of five years by Benjamin and Jane Mowry of Danville, Pennsylvania. The Mowrys were a religiously devout couple who lost their son in the Civil War. Once Griffith became wealthy, the first individuals of "modest means" to whom he reached out were not the future patrons of Griffith

[27] "Visited Miss Margaret Morgan April 8." type-written single sheet note, Van Griffith family papers, 1845-1973, UCLA special collections.

Park but his own family members, including those who reared him. Griffith moved his by-then-separated parents to the United States, settling his father's family with him at the Feliz Rancho and settling his mother's family in Pennsylvania. Griffith also financially took care of the Mowrys the rest of their lives once he had heard of their later destitution.

At the time of the Colonel and Tina Griffith's donation, Griffith Park, at 3,015 acres, became the largest interurban park with wilderness in the Western world. This is in comparison to similar parks of the time, including the Bois de Bolougne in Paris, France, at 2,090 acres; Lincoln Park in Chicago at 1,200 acres; Balboa Park in San Diego also at 1,200 acres; Golden Gate Park in San Francisco at 1,017 acres; Central Park in New York City at 843 acres; and Hyde Park in London combined with the adjacent Kensington Gardens at 625 acres. Fairmount Park in Philadelphia is a 4,000-acre park space, but has historically been divided into three separate, affixed parks.

Griffith Park in the First Part of the Twentieth Century

Following Griffith's 1896 donation to the City, wealthy individuals began making donations to improve the park. Some donations came in the form of money, while others were in the form of direct goods, such as trees. An early vision to turn the chaparral-covered hillsides of the park into an Olmstead-like park of manicured grounds failed because of the expense and impracticality such a plan required. Early efforts by Colonel Griffith to pass a bond measure to pay for park improvements such as roads were unsuccessful. Colonel Griffith was, however, named to the Board of Park Commissioners in 1903.

In spite of the City's early, rapid growth, the growth and development of parks in Los Angeles usually took place at the behest of private individuals and corporations. Events in Colonel Griffith's life during this period hindered political support for his requests to the City for bettering the park. On September 3, 1903, while vacationing with his wife and 15-year-old son Van Griffith, at the Arcadia Hotel in Santa Monica, Griffith accused his wife of infidelity in an alcoholic rage and proceeded to shoot her, thereby permanently disfiguring her right eye. The trial for attempted murder became a public referendum on his alcoholism and an abrasive, outspoken personality that had long rubbed certain people the wrong way. Colonel Griffith was sentenced to two years in San Quentin Federal Penitentiary. The incident and trial destroyed his reputation, and hindered the City's willingness to fully invest in Griffith's vision and requests for the park. Griffith served his full two-year sentence and on his release became passionate about prison reform. While this new passion took much of his energy, it dovetailed with his earlier belief in the value of public parks. Griffith viewed public parks as a key component of cities to foster wholesome, crime-free lives in their citizens.

Despite problems with funding and the slow pace of road development, Griffith Park was a site for recreation from the park's founding. People rode horses both

as a means of transportation and as a recreational pursuit throughout the park. In 1909 the City authorized 10 workers to clear a foot-trail up to Mt. Hollywood, which at 1,626 feet is the highest peak in Griffith Park.[28] By this time, hiking in Griffith Park was already a popular activity. These activities and others reflected shifting concepts of recreation that were popularized throughout the United States during the early twentieth century.

An outgrowth of the larger City Beautiful Movement, progressive era reformers began promoting the social role that parks played in society in the late 1890s and called for the creation of new active recreational facilities in public parks across the country. Formalized as the Parks and Playgrounds Movement, reformers urged municipal governments to construct playgrounds and promote physical activities in locations physically separated from the perceived dangers of the urban environment. Organized recreation was seen as having positive benefits on an individual's mental, moral, and physical well being, and aided them in becoming responsible, well-adjusted citizens. Contemporaries believed that the psychological benefits of disciplined health and exercise led to greater happiness among workers and, especially among immigrants, provided a means to more quickly enter mainstream American culture. Improved production in the workplace, increased buying power, and a stronger local economy all were perceived benefits; as demonstrated in an oft quoted motto at the time, "The test of whether a civilization will live or die is the way it spends its leisure."[29]

In the 1910s, 1920s, and 1930s, many new forms of recreation were introduced to Griffith Park. Such activities marked a new manner of experiencing the park; away from simply being-in the rustic landscapes of the City Beautiful movement and toward pro-active physical activities. Among these new leisure activities was golf, which has a long history in Griffith Park as one of its first recreational activities. Prior to 1884, General John M. Baldwin, a Spanish-American War veteran who occupied part of the former Feliz Rancho, built a golf course near the site of the current clubhouse. What remained of this course after heavy flooding damage was refashioned in 1900 into the park's first municipal golf course, known as the Riverside Course. In 1914, the course was improved, and although it consisted mostly of dirt and sand links, it was free and popular with the public. In 1923, grass-seeded Wilson Golf Course opened. The Park Department then turned its attention to seeding Riverside Golf Course with grass, and renamed it Warren G. Harding Golf Course. In keeping with Colonel Griffith's stipulation that the park serve those of modest means and not charge an admission fee, the golf courses in Griffith Park served the public for nominal cost. Although they maintained a clubhouse and various other support buildings, as municipal courses, the early courses at Griffith Park were simple, rather than elaborate.

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[28] Eberts, Griffith Park, 76.

[29] For more information on the Parks & Playgrounds Movement, see: Dominick Cavallo, Muscles and Morals: Organized Playgrounds and Urban Reform, 1880–1920 (Philadelphia, University of Pennsylvania Press, 1981); and Galen Cranz, "Changing Roles of Urban Parks: From Pleasure Garden to Open Space," San Francisco Planning and Urban Research Association Newsletter (http://www.spur.org/documents/000601_article_01.shtm), June 2000.

Griffith Park became a contiguous part of the City of Los Angeles in 1910, together with the surrounding land of East Hollywood and Ivanhoe. Annexation to the City was a popular move for many neighborhoods in the Los Angeles basin because it gave them access to the City's water rights, and thus an avenue for growth. The park, while already owned by the City, was surrounded for the first time by City lands, which quickly began filling up with roads, residences, and other commercial buildings.

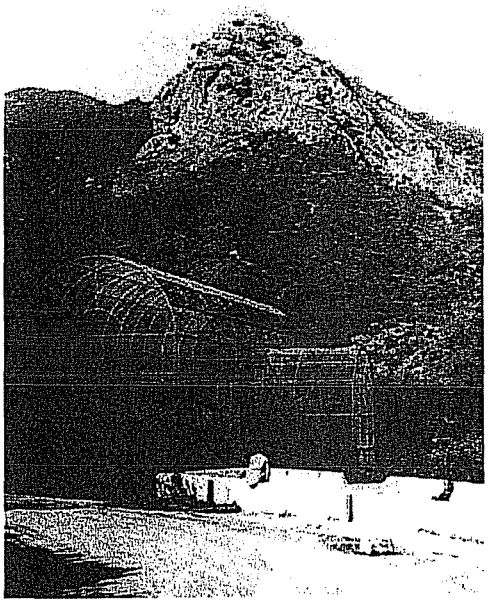
The Trails and the Wilderness[30]

> "Here are groves of live oak beneath which many a grizzly has dozed away the summer noon, and deep jungles of chaparral in which cattle as wild as the bear escaped for life the branding iron. The eagle yet nests in the ancient sycamores, and the deer still drinks at the spring of his fathers. Leagues of winding drives will show but the half of it, while several varieties of climate will puzzle the stranger still more. On the north side he can find dense shades in the summer and on the south the cool breezes of the sea; or in winter he may find the warmer sun on the south with the softer land-breath on the north. Around its feet will be many acres of cultivated garden and lawns, but art will suddenly stop and California assert itself."[31]

The largely untamed hilly core of Griffith Park has charmed hikers, equestrians, and assorted naturalists for more than 100 years. Made accessible by a 53-mile network of trails, the park's rugged, hilly core is the largest, and perhaps most fragile, historic feature of the park.

Col. Griffith J. Griffith enjoyed exploring the hilly portion of his ranch "enjoying the life of a country gentleman," often hunting jack rabbits with his pack of hounds[32], even before he gave it over to the City. Col. Griffith viewed the natural areas of the park as among its most important attributes. He held the Victorian view that city life was potentially harmful to a person's health and spirituality. In his 1910 book, *Parks, Boulevards and Playgrounds*, he said that America's cities "are vast reservoirs of wealth, with all the luxury that wealth begets," but "they are also hotbeds of disease, poverty, vice and indescribable misery."

[30] This section was written in March, 2007 by Dr. Mike Eberts, the preeminent of Griffith Park and a Professor of Mass Communications at Glendale Community College in Glendale, CA.
[31] T.S. Van Dyke, "The Parks of Los Angeles," Land of Sunshine, 8 (December 1897): 99.
[32] John C. Scherer, History of Glendale and Vicinity (Glendale, CA: Glendale History Publishing Co., 1921), p. 59.



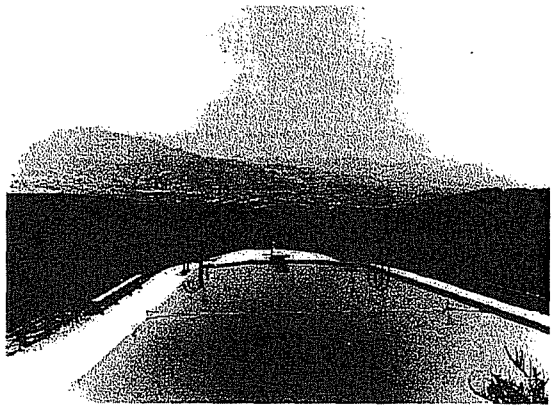
Bee Rock, seen in the background, was one of the earliest hiking destinations in Griffith Park. Griffith himself had the still extant Bee Rock Trail cleared, and the landmark is also known as "Griffith's Altar." An aviary formerly of the Old Los Angeles Zoo is seen in the foreground. Courtesy Los Angeles Public Library Photo Collection.

Open space—rustic and available to all—was the cure. The Colonel wrote: "Give nature a chance to do her good work and nature will give every person a greater opportunity in health, strength and mental power."[33] One of the earliest hiker destinations in the park is the rock outcropping briefly known as Griffith's Altar, but known today as Bee Rock. When showing off the City's newest and largest park to newspaper reporters and dignitaries Colonel Griffith would often take them to that spot. By the 1920s, growing numbers of hikers were exploring the park's rugged interior. In 1926 the *Los Angeles Times* predicted "people of all ages will be flocking every day to the miles of trails winding through the Griffith Park woods."[34] Vincent Jones wrote in 1928 that beauty "like a blessed benediction" lies around every bend in Griffith Park's trails. "Did we not lift our gaze to the south we would not know there was a city near."[35] Wrote Dana Tyson in 1929:

[33] Griffith J. Griffith, "The Autobiography of Colonel Griffith Jenkins Griffith," p. 30, manuscript, Van M. Griffith Papers, Collection 2060, UCLA Special Collections.
[34] Harold M. Finley, "Irrigation Invoked to Create Wilderness," Los Angeles Sunday Times Farm and Orchard Magazine, 16 May 1926.
[35] Vincent Jones, "On the Trails of Griffith Park," Los Angeles Saturday Night ,8 (10 March 1928): 4.

> Griffith Park is the place where ... native wild life may be seen, for here on an early morning hike, if we are quiet and keep our eyes peeled, a small band of deer may be seen wandering about the hills.[36]

In the 1920s, even the mayor was out on the park's trails. Los Angeles Mayor George Cryer would hike up Vermont Canyon, climb over the top of Mt. Hollywood, and have his chauffeur pick him up on the east side of the park, near Crystal Springs. "That was his regular exercise one afternoon a week," recalled Van Griffith, Col. Griffith's son. "He loved to hike."[37] Children and teenagers also began to hike the trails in the 1920s. Cross country teams ran there and at least one local high school formed a hiking club that often used the trails. Younger hikers discovered the trails when boys and girls camps were established in the park in 1926. The girls camp was so remote that provisions had to be carried up park trails by burro.



Girl's Camp Pool, constructed 1926, with view of Glendale/ Eagle Rock. Though abandoned, this pool is still extant. Courtesy Los Angeles Public Library Photo Collection

Among the various built objects within the wilderness component of Griffith Park is one that is highly iconic the world over: the Hollywood Sign. The Hollywood Sign exists on a portion of the park annexed in 1945 by the City of Los Angeles, and is placed along the south face of Mt. Lee. Aside from the radio towers atop the mountain, the historic viewshed and backdrop around the Hollywood Sign have been the Griffith Park wilderness itself. Prior to the City acquiring the Mt. Lee portion of Griffith Park, the flat hilltop at Mt. Lee was to be the site of an estate for movie mogul Mack Sennett of Keystone Cop fame; the house was never built. [38] Near the Hollywood Sign, this western portion of the

[36] Dana R. Tyson, "Birds and Animals in Parks," L.A. City Employee, 3 (November 1929): 19-20.
[37] Oral History Interview of Van Griffith, p. 155.
[38] Robinson, C.E., Torrence, and Bruce T. The Hollywood Sign. First Federal Savings and Loan Association of Hollywood, 1976.

wilderness has one anomaly. A rectangular portion of the property due west of the Hollywood sign and also facing south upon Mt. Lee was never acquired by the Recreation and Parks Department. This property was originally owned by Howard Hughes, who had planned to build a residence upon the property. For the time being, this property reads as continuous with the rest of the Griffith Park wilderness component. Aside from natural cycles, the slight intrusion of Mt. Lee Drive at its western end, and an unnamed hiking trail, this property is unchanged from the Rancho period, and is covered with the same chaparral as seen upon the rest of Mt. Lee. Aside from residences built for caretakers and other park employees, no residences have been constructed in the wilderness component since the park, in various phases, was annexed by the City of Los Angeles.

The western portion of the park began to open up to hikers around the World War I era. As development began in Fern Dell around 1916, trails appeared in Western Canyon, connecting with the rest of the park. To the west of that, trails were built in Brush Canyon, with a spur to the nearby former rock quarry at Bronson Canyon. Bronson Canyon has cultural significance as a movie location site, with the cave becoming famous in the 1950s science fiction film "Invasion of the Body Snatchers" and a decade later as the Bat Cave in the 1960s "Batman" television series. The extension of Mulholland Scenic Highway, originally planned as a thoroughfare for automobiles, eventually became a graded fire road—known today as Mulholland Trail—for the enjoyment of hikers and equestrians. Among other things, this fire road traverses Mt. Lee, site of the world famous Hollywood Sign.



Women Hikers in Griffith Park,1928. "Most of us dressed up because you never knew who you'd meet." — Barbara Larsen (in bow tie at right).
Courtesy: Barbara Larsen

Also by the 1920s, Mt. Hollywood was gaining in popularity as a destination of Griffith Park hikers. Col. Griffith originally envisioned putting his dream observatory on the peak, with the public coming and going by funicular railway. Said one prominent local astronomer about the peak, "It occupies almost precisely the center of what is to become the largest and by far the most splendid

city in the Western hemisphere."[39] Mt. Hollywood is one of several peaks in the park where, in the same vista, one can see the downtown skyline, the southern portion of the city to San Pedro, the Westside to the beach, and much of the San Fernando Valley.

Work crews of unemployed men added more trails to the park during the Great Depression. Early efforts of this type were locally funded, but eventually federal dollars were added. Among other places in the park, the trails around Beacon Hill (then known as Shale Hill) on the east end of the park were constructed by the unemployed. Eventually, young men of the Civilian Conservation Corps built and maintained trails in the park. By the post-war period, the first of the park's volunteer-tended gardens, Captain's Roost, was established on the west-facing slope of Mt. Hollywood. It has a fine view of Los Angeles' west side, the Pacific Ocean, and Catalina Island. Its beginnings, its founder, and the identities of some subsequent tenders are a mystery. The Captain, whose identity is not known, didn't rule the Roost for very long. Several hikers remember meeting him in the mid-1940s at his small garden where he had fashioned a hand-carved table and bench. By 1949, he was gone, according to long-time Griffith Park Ranger Bill Eckert. An elderly woman Eckert knew only as Rae succeeded the Captain. Under Rae the garden bloomed. "It was beautiful," he recalled. Rae took care of the Roost for perhaps 10 years.[40] Two other important volunteer-tended gardens—Dante's View and Amir's Garden—would be added in the years after the period of historic significance.

Frank Shearer

Frank Shearer was hired by the Park Department as a landscape engineer and draftsman in January 1910 and by May of that year was the acting superintendant. Most irrigation projects didn't get off the ground until the Works Progress Administration (WPA) involvement in the 1930s; Shearer, however, had been an early advocate of large-scale irrigation in Griffith Park. Shearer was the mastermind behind Fern Dell, a garden of ferns, bridges and terraced pools. Located at 5375 Red Oak Avenue near the Western Avenue entrance to the park, Fern Dell's dams and pools were constructed using boulders from other areas of the park.

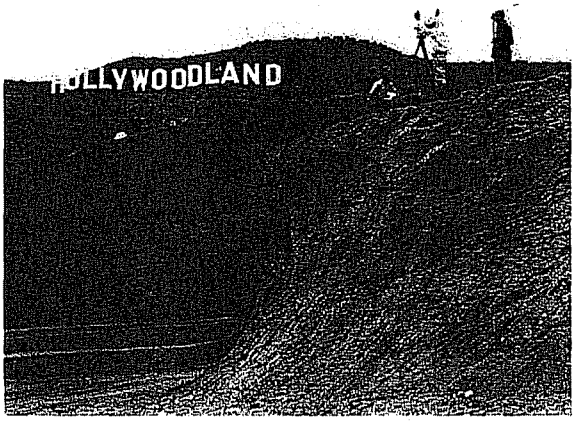
[39] Edgar Lucien Larkin, Los Angeles Christmas Present, pamphlet, 1912, ibid.
[40] Interview of Bill Eckert, 20 May 1994.



Women walking through Fern Dell, c.1930.
Courtesy Los Angeles Public Library Photo Collection

Concrete was used not only in the pool construction but formed and scored to resemble tree logs and branches. Imported and native ferns were brought in to populate the grounds. As with many park attractions, it was improved on slowly over the years. It was immediately popular when the first stage was completed in 1914, and often photographed. The lush, landscaped grounds fit within the context of the City Beautiful movement and the desire of planners to improve upon nature and make it accessible to the common person.

Located near the residential areas of Los Feliz and the Hollywood Hills—even at that time, home to many people in the film industry—Griffith Park was directlyaffected by the film industry early on. Now located within Griffith Park, the "HOLLYWOODLAND" sign was erected in 1923 as an advertisement for the Hollywoodland residential tract, located near the southwest corner of the park. Portions of the tract too hilly to be sold for houses, including the land containing the sign, were donated to the City for the park, continuing the trend that initially gave birth to Griffith Park. Later, the "LAND" portion of the sign was removed, and the Hollywood Sign has become a globally recognized icon of the City of Los Angeles.



Hollywoodland Sign, Circa 1920.
Courtesy Los Angeles Public Library Photo Collection

Van Griffith

In 1920, one year after Colonel Griffith's passing, Griffith's only son, Van Griffith, became a park developer. Prior to this, in 1914, Van had served as Commissioner for a small bus line into Griffith Park, which at that time was the most feasible access into the park for those who did not have automobiles. By 1925,when a new City charter was implemented that guaranteed more funding for the park system, Van Griffith became a Park Commissioner. Throughout his years of involvement in the Park's affairs—virtually his whole life—Van Griffith was a champion of his father's original will, seeking new ways to expand the park's offerings to the public while preserving open space. A primary early idea of Van Griffith's was reforestation of the park. Griffith saw reforestation not just as beautification, but as fire prevention, as it would have included a massive irrigation system. In the late 1920s, largely through the efforts of Van Griffith, a massive irrigation system was installed, including sheet metal water tanks. With this, Van Griffith spearheaded the construction of the Municipal Nursery in Commonwealth Canyon, which opened in 1927. Joe Kladler, whose father was the chief groundskeeper to Emperor Franz Joseph of Austria, oversaw the nursery, which in its first 18 months had overseen the development and raising of approximately two million plants.[41]

[41] Eberts, Griffith Park, 82.



Van Griffith with Ocelots
Courtesy Los Angeles Public Library Photo Collection

Immediately after his father's death in 1919, Van Griffith was a catalyst to securing additional property for Griffith Park. This additional property was originally the 351-acre Griffith reservation located at the northwest portion of the park. Because the property was located upon flat lands, it was prime for redevelopment, and the Griffith Trust at the advice of Security National Bank, had actually advocated its redevelopment. Realizing that the trust had enough money to fulfill its original aims, Van Griffith went against this proposal, and worked the deal for the land from both sides of the table, as Park Commissioner and Griffith's only son. Though redevelopment would have netted Van Griffith and other members of the Trust at that time a handsome sum of money, Griffith opted instead to fulfill his father's wishes for the property, and in 1921 sold it to the City, on behalf of the Griffith Family Trust, at 40% below market value.[42] A chart documenting other land acquisitions that have expanded Griffith Park is included in Appendix A.

Present upon the former reservation land was the Griffith Aviation Park, which had opened in 1912 largely as a result of Van Griffith's primary hobby: flying. The airfield, which is today in the general vicinity of the Los Angeles Zoo Parking lot to the John Ferraro Soccer Fields, was one of the first of its kind in Los Angeles. Among early flight entrepreneurs to establish businesses at the airfield was aviation pioneer Glenn Martin, who at this time founded a company that he would oversee for the better part of the following 40 years. The Glenn L. Martin Aircraft Company would become one of the most significant producers of war aircraft in the country. While at Griffith Aviation Park, Martin would become teacher and supervisor to others who would go on to became significant leaders in aviation: William Boeing was one of Martin's students, and Donald Douglas was an engineer that Martin had hired. The only remnant of aviation activity still present at Griffith Park today is a clearing where a former beacon once stood on "Beacon Hill," which overlooks the Golden State Freeway.[43]

[42] Ibid, 86.
[43] Eberts, Griffith Park, 119.

The Griffith Aviation Park closed by 1916. In 1925 the field reopened as a temporary home to the California National Guard: 115th Observation Squadron, 40th Division Air Service. The "115th" conducted various operations in California and Mexico, including searching for enemy submarine bases off of Mexico, and the photo documentation of all federal projects along the West Coast.[44] During this time the 115th was headed by Major C.C. Moseley, an aviation pioneer who later became one of the founders of Western Airlines. Van Griffith resigned as Parks Commissioner in 1929. Even after this time, Van was steadfast in defending his father's vision for the park. It was Van Griffith who adamantly stated in 1932 that the National Guard's stay was to be temporary. The 115th would eventually relocate to Paso Robles in 1941, reform at Van Nuys airport after World War II, and later relocate to Point Magu in 1987.

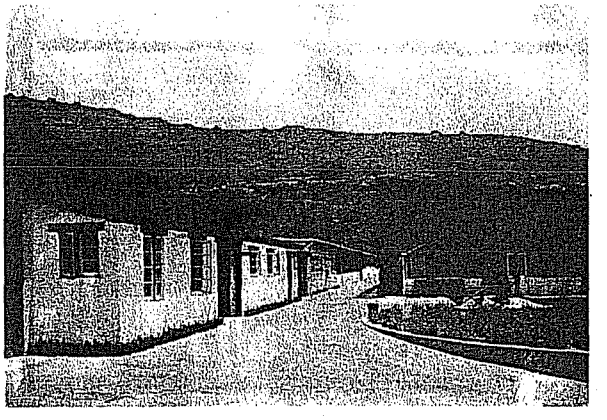
By 1933, Frank Shaw, the newly elected Mayor of Los Angeles, was proposing an airport at Griffith Park to replace Mines Field, which is today the site of Los Angeles International Airport. Once again, it was Van Griffith who rallied various entities including the California Taxpayers Association, the Municipal League, and numerous Women's organizations to defend the park from this proposal. The idea was ultimately abandoned in March 1934.[45] During this effort to stave off an airport, a quote of Van Griffith's succinctly summarizes his position, and echoes the will of his father, "Every foot of Griffith Park should be preserved for the recreation of people, and no part of it should be commercialized in any way whatsoever."[46]

The 1925 City Charter

The year 1925 is significant to Griffith Park's development due to the enactment of a new City charter. The charter ensured the City's right to invest in its infrastructure and increase that investment over time to keep pace with growth. In a number of key areas, the charter was decades ahead of its time when compared to the rest of the country. For example, the charter abolished at-large elections for city council, effectively prohibiting racial gerrymandering by requiring that voting districts be composed of contiguous and compact territory. As it relates to Griffith Park, the charter required a fixed percentage of property tax revenue be given to the park system. Prior to this arrangement, the Park Department relied on appropriations from the City Council granted on a case-by-case basis. Guaranteed funding allowed both large-scale and deferred maintenance at Griffith Park to commence in earnest. "Reforestation" of Griffith Park was a longtime dream of Van Griffith's, and the funding promised by the 1925 City Charter made it a possibility. Griffith's vision included forests on the hillsides and water running down the hillsides to create streams that could be stocked with trout. More than $100,000 was spent by 1929 on the irrigation system alone. The project never reached the scale that Griffith hoped for, but nevertheless was a massive undertaking. Portions of the irrigation system (and also lines installed by the WPA in the 1930s) were exposed during the 2007 fire. A Municipal Nursery complex was opened in 1927 adjacent to Commonwealth

[44] Ibid., 118.
[45] Eberts, Griffith Park, 118.
[46] Ibid., 118.

Canyon and supported Van Griffith's reforestation efforts, in addition to functioning as regular nursery with hothouse plants. Many of the wood-framed, single-story buildings in the complex today were constructed when the nursery was founded or soon after.



Municipal Nursery Buildings, 1927. Photo: 1928. The wood hothouse to the right is now removed. The office and garage buildings to the left are still present.
Courtesy Los Angeles Public Library Photo Collection

Together, the complex comprises an intact example of early Los Angeles infrastructure that retains its integrity from the original period of development, and is still used for its original purpose. By 1930, the nursery had produced tens of thousands of native plants and trees for the park. In 1929, Mayor of Los Angeles John C. Mayor objected to the reforestation project, and the pace of plantings slowed. This led directly to Van Griffith's resignation from the Parks Commission.

The Municipal Plunge facility, which opened in summer 1927, was a direct result of the 1925 City Charter that increased the budget of the Playground and Recreation Department. By 1927, the complex included tennis, basketball and volleyball courts, baseball and other fields, horseshoe pits, a playground, and the pool. A two-story bathhouse and boys' and girls' field houses were built around three sides of the pool. Pergolas are located on either side of the pool house building. Although the eastern field house and at least one other building in the pool complex were demolished for construction of the Interstate 5 (I-5) freeway, the two remaining buildings (the pool house and western field house) are significant examples of the Spanish Colonial Revival style adapted for municipal use. In addition to recreation, the pool was used for canoe paddling and pageants, reflecting the role of Griffith Park and especially the Playground Department in the 1920s and 1930s as a playground and entertainment venue for the masses.



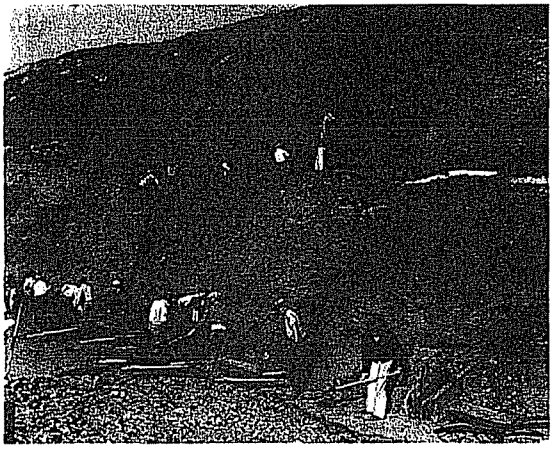
"Enchanted Pool" pageant participant at Municipal Plunge and Poolhouse, constructed 1927. The pool itself, the largest municipal pool in the City, and the Poolhouse are still present and retain excellent integrity. Courtesy Los Angeles Public Library Photo Collection

Two camps available to children of modest means were built after the charter was passed, broadening the park's efforts to provide recreational and outdoor activities to all Angelenos. The Boys' Camp was located on land that was once the Municipal Prison Farm from roughly 1918 to 1924. The Boys' Camp opened in 1926, north of today's Travel Town. Facilities included a swimming pool, tennis courts, baseball diamonds, football field, and gymnasium recycled from an old barn. In keeping with the spirit of Griffith's gift, the camp was affordable and accessible to boys of modest means. The site was abandoned when the Los Angeles River was lined and its course altered. Part of the site was later used for transient boys and a Civilian Conservation Corps (CCC) camp; the I-5 Freeway was also built over part of the original site. The Girls' Camp also opened in 1926, in Dam Canyon. Facilities included cabins, a lodge, dining hall, and outdoor sports area. The character-defining feature of the Girls' Camp was the pool, situated on a ledge with views of the surrounding valleys. In 1992, arson fires destroyed the main dining hall and director's cabin. They have since been rebuilt, and renovations to the site using modern materials have been completed. Both the boys' and girls' camps operated full-time in the summer and on the weekends during the rest of the year. Two major road projects in the 1920s were the construction of Riverside Drive and Mulholland Scenic Highway. Riverside Drive served commuter traffic from the San Fernando Valley to downtown Los Angeles. Mulholland Highway was imagined as a "parkway, bridle path, and spacious drive" that would follow the crest of the Santa Monica Mountains from Griffith Park to the Pacific Ocean. The road was graded but never became a

thoroughfare in the park; throughout its history it has been accessible only for hiking and horseback riding.

Griffith Park in the 1930s

Though the 1930s was one of the most economically trying times for Los Angeles and the United States, Griffith Park prospered and transformed during the Depression years more so than in any other decade of its existence. This is ironic, if not fitting, since Colonel Griffith mandated the park to be free and available to people of modest means. During the 1930s, that group turned out to include almost everybody. In regard to its built environment, Griffith Park became the recipient of thousands of hours of labor by these people sponsored through various programs such as the WPA (Works Progress Administration), the PWA (Public Works Administration), the CCC, and the Reconstruction Finance Corporation (RFC). Additionally, numerous activities, also funded by local and federal government organizations, served as a means to keep the unemployed occupied, if they were not working through the above-mentioned organizations. During this time, the Los Angeles Associated City Employees voluntarily contributed 1% of their salary to keep men employed, and this included clearing fire breaks in Griffith Park.[47]



Civil Works Administration work crew in Griffith Park, 1933. Courtesy Los Angeles Public Library Photo Collection

In 1931, early in the Depression and prior to the swearing-in of President Franklin Delano Roosevelt in 1933, the City of Los Angeles passed a $5 million unemployment relief bond measure. Of this money, $1 million was devoted to the parks, which employed 25,000 for part-time work for four months. This resulted in the creation of 13 miles of bridle trails, the creation and improvement

[47] Feldman, Frances Lomas, "Human Services," in Hylda L. Rudd, Ed., et.al, The Development of Los Angeles City Government: An Institutional History, 1850-2000, Volume 2 (Los Angeles: Los Angeles Historical Society, 2007) 535.

of picnic areas, expanded parking areas, and the improvements at the bird sanctuary and Fern Dell. Men were hired part-time and paid $4.00/day.[48]

By 1933 this City bond money was exhausted and Griffith Park began to be the recipient of monies and assistance by the RFC. Among the projects by the RFC were the lining of curbs along Western and Vermont Canyon roads, the surfacing and widening of roads, new bridle trails, the clearing of weeds, various planting projects, the construction of horseshoe courts, installation of streetlamps to the soon-to be completed observatory, plus the building of tennis courts, cricket and hockey fields. It was Reconstruction Finance Agency workers who were, on October 3, 1933, victims in Griffith Park's worst tragedy, and the deadliest fire in the history of Los Angeles. On that hot day 29 laborers employed by the County through RFC money were killed fighting an out-of-control brush fire in Mineral Wells Canyon. It was a fire originally seen as minor when it first broke out, and could have been promptly handled by professional firefighters. However, the RFC crews were not trained in such matters, and because the fire was in a windy canyon, it acted erratically and rapidly grew. A plaque commemorating their sacrifice was placed at the entrance to Vermont Canyon but went missing many years ago.

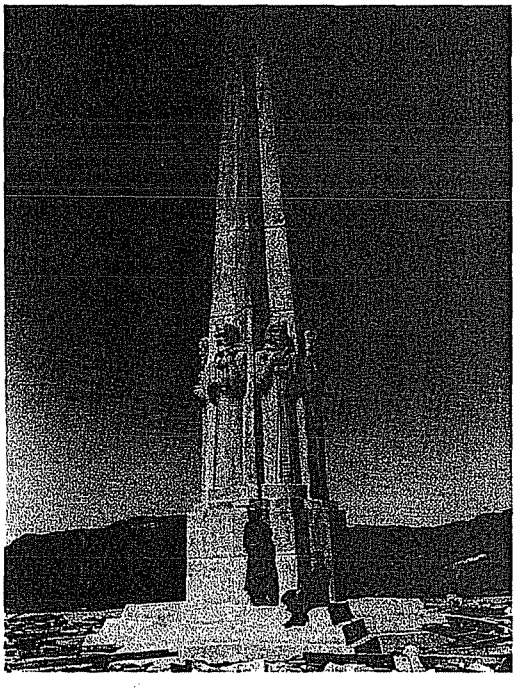
From 1933 through the end of the Great Depression, Public Works Agency support allocated to Los Angeles, including the large amount invested in Griffith Park, was largely due to the efforts, experience, and political abilities of City Engineer Lloyd Aldrich. Aldrich, who served in this position from 1933 to 1955, was invited to Washington by WPA Administrator Harry Hopkins to draft national regulations for governing the WPA, including regulations for hundreds of construction projects.[49] Beginning in 1935, the WPA—a Federal Assistance Organization comprised of skilled workers and artisans—constructed the Roosevelt Golf course, flood control along the river, and expanded the 1913 Los Angeles Zoo (today called the "Old Zoo"), creating elk and deer paddocks, new lion and bear grottos, and other zoo buildings. The old zoo buildings are unique in the park for their artistic translation of a "primitive" aesthetic of oversized boulders made from concrete nestled into the hillside landscape above Park Center. Artistically, the Old Zoo is of a programmatic aesthetic unique to many other structures in the park. During the 1930s the Old Zoo was one of the United States' few free admission zoos.

In 1937 the WPA constructed a new golf clubhouse in a sprawling, expressive version of the Spanish Colonial Revival style, and a plaque is present at the entry stating the project as a WPA project. The WPA also improved the three golf courses at Griffith Park: the 18-hole Wilson-Harding golf courses in addition to the 9-hole Roosevelt Golf Course (which was relocated to the southeast portion of the park to make room for the new Los Angeles Zoo in the 1960s). Prior to this time, these golf courses featured not grass but sand. Irrigation systems were installed, and the Wilson Harding Golf courses were considered so well-designed

[48] Ibid., 536.

[49] Roth, Matthew W. "Los Angeles Transportation," in Hylda L. Rudd, Ed., et.al, The Development of Los Angeles City Government: An Institutional History, 1850-2000, Volume 1 (Los Angeles: Los Angeles Historical Society, 2007) 464.

that they were used for national golf tournaments. Other WPA projects in Griffith Park included the astronomers monument at the Observatory (November, 1934. Sculptors: Archibald Garner, George Stanley, Roger Noble Burnham, Arnold Foerester, Gordon Newell, and Djey el Djey) and the original science exhibits within the observatory.



Women at the Astronomer's Monument, C.1934. Hollywoodland Sign is in background. Courtesy Los Angeles Public Library Photo Collection

An inevitable outgrowth of the WPA was the Civilian Conservation Corps (CCC), which consisted not of skilled workers but of young men willing to commit to physical labor of various kinds. Three camps were located at various points along the northern portion of the park. The most prominent of these became the Crystal Springs picnic grounds after it was dismantled in 1936. This camp, one of the few in the country established for World War I veterans, was visited by President Roosevelt, and featured the statue "Iron Mike" by the artist Palo-Kangas. A re-creation of this statue is present in Travel Town. The CCC cleared firebreaks, drainage channels, upgraded pools and cascades in Fern dell, created hiking and riding trails, access roads, picnic areas, and campgrounds (including bathrooms, tables, water systems, etc.).[50]

[50] Thomas Breckner, a former Los Angeles Recreation and Parks employee provided an abundance of information regarding the 1930s era federal assistance organizations in Griffith Park, in addition to information regarding infrastructure objects throughout Griffith Park. Breckner provided this information through a round of e.mails with the author exchanged between September 11 and October 1, 2007 (e.mail stream titled, "Griffith Park historic project"). Thomas Breckner, along with Mike Eberts, are primary authorities regarding Griffith Park and its history.

Throughout Griffith Park there are an abundance of infrastructure elements that are physically integrated into the surrounding landscape. Taken individually, many of these features could be easy to miss. Yet as a grouping these features, which include drainage channels, culverts, barrier walls, stoppage dams, bridges, and drinking fountains, appear where the natural environment appears and are its most intimately associated built resources. Taken together, the design of these features and the history behind the 1930s era examples both contribute to Griffith Park's significance as an important Cultural Landscape.

Though many of these resources are believed to have been completed by the CCC, it is uncertain just which organization created which object, of which there are at least a hundred throughout the park. What is known is that the vast majority of these objects was created in the 1930s, and were improved or repaired in a similar style through the 1950s by City workers who often incorporated recycled pieces of city infrastructure into designs. The style in which these features were built is called the "Park Style," which is summarized in the 1938 book *Park and Recreation Structures* by Albert Good, who was Superintendent of the National Park Service. *Park and Recreation Structures* documents 1930s era examples of various park infrastructure elements. Chapter titles include: "Barriers, Walls and Fences," "Drinking Fountains and Water Supply," "Trail Steps," "Crossings and Culverts," and "Bridges," among others. There is a high degree of similarity between these features as built in Griffith Park and as they appear in Good's book.

Albert Good advocated the use of materials that were integral with the surrounding physical context, and made from natural, regionally contextual materials that could be found nearby. For many of the features throughout Griffith Park, river rock from the adjacent Los Angeles River appears to have been employed. A degree of "protective coloration" was encouraged that would further integrate these commonplace but necessary features into the surrounding landscape.[51] Additionally, and seen frequently throughout Griffith Park, Good advocated "variety within reason." The designs of the majority of these features are subtly different from one another in details such as composition, pattern, color, coursework, stones used, and the cut or lack thereof of each given stone. Throughout Griffith Park, such variety provides numerous design variations to objects that are commonplace but necessary. The resourcefulness of the materials is expressive of both the economic context of the Great Depression and a specific aesthetic codified by the National Park Service that called for a regional and natural integration of various objects into the landscape. The variegation present among these features expresses the idea that these objects are the result of numerous workers, many of which had creative inclinations expressed through a handmade, if not folk quality, to the design of the given object.

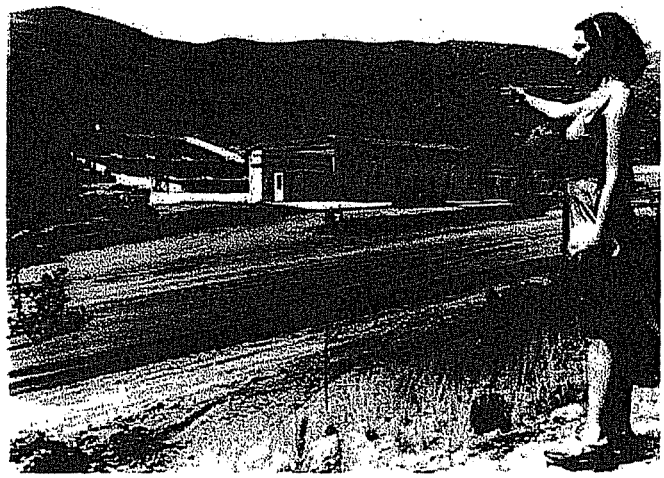
To a degree, Good's book also discussed architecture, specifically the construction of Superintendents' residences within given National Parks. Good advocated the construction of such resources in styles that were specific to a

[51] Good, Albert H, Park and Recreation Structures (Washington DC: US Government Printing Office, 1938) 3Ibid., 175

given region of the United States. For Los Angeles and within Griffith Park, the response to this idea was to design various on-site residences for Park workers in a Spanish Revival design system. Houses in Griffith Park possessing these design features include the Ranger's House above Fern Dell and the [altered] arborist house adjacent west of the Nursery. Other buildings completed in the 1930s in Griffith Park in this style include the 1927 Plunge and its associated buildings, plus the previously mentioned Golf Lodge. Aside from the infrastructure and recreational amenities mentioned above, these various service organizations completed various landscape projects, including the planting of the various redwood trees present in Cedar Grove and within the Wilson Harding Golf course. As a result, Griffith Park features more redwood trees than any other landscape in Southern California.

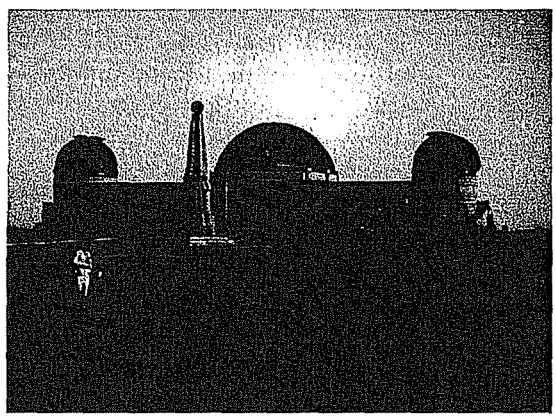
The Greek Theatre and the Griffith Observatory

The decade of the 1930s in Griffith Park also saw the completion of two buildings that were, like the park itself, the result of donations by Griffith J. Griffith. The early development of the Greek Theatre began as the idea of Elmer S. Todd, a local minister who had longed for an open-air theatre in Vermont Canyon. Invited to speak by Dr. Todd on January 21, 1913, Colonel Griffith declared that he would fund the cost of such a theatre to be constructed, and his contribution totaled $127,000. Colonel Griffith himself was involved in the site selection process, which included hiring the singer Ellen Baech Yaw to yodel into various areas in and around Vermont Canyon. Griffith died in 1919, and by the time construction began on the theatre in 1929, his son Van Griffith would be tasked with overseeing the Parks Commission and the construction of the Greek Theatre itself. The Greek Theatre was completed in 1930. The architect of record was City architect Peter K. Scabarum, who had also completed Van Nuys City Hall (Art Deco 1932), the Hollywood Police Station—(Renaissance Revival, 1930), and the Los Angeles Police Academy/Gymnasium Administration Building (PWA Moderne/Spanish Colonial, 1936, Elysian Park). The theatre is a notable example of the Second Greek Revival style, featuring a proscenium with extended Greek porticos, which had been hidden from public view for over 40 years before being re-exposed in a recent restoration. The two-story Greek Theatre is made of 1-foot-thick poured in place concrete walls that feature a decorative engaged pilaster colonnade. Though various additions were added to the primary building between 1959 and 1984, because of the durability of the reinforced concrete original building, these features are considered reversible.



Greek Theater, 1930. Courtesy Los Angeles Public Library Photo Collection

During the 1930s in Griffith Park, the Federal Theatre Project (FTP) was also highly active in the park and provided opportunities for various actors and other entertainers. The Greek Theatre during the mid-1930s was monopolized by the FTP, and during this period nearly 100,000 children viewed free marionette shows at the Greek Theatre. Additionally, the FTP created "living newspaper" productions of various current issues. The related Federal Music Project would occupy the Greek Theater from 1938 to 1940.



Griffith Observatory, Opening Day, 1935.
Courtesy Los Angeles Public Library Photo Collection

The $100,000 seed money for the Griffith Observatory was provided by Colonel Griffith, as the second "Christmas Gift" to the City, announced as such by Griffith on December 12, 1912, in a grandiose ceremony to the Mayor and City Council. Originally designated for Mt. Hollywood—the highest elevation in the

park, the Observatory was eventually built above Vermont Canyon. Groundbreaking for the Observatory would not take place until June of 1933: 14 years after Colonel Griffith's passing. This groundbreaking occurred just three months after the 6.3 magnitude Long Beach earthquake, and the Observatory, made of concrete as per Colonel Griffith's wishes, was further designed to withstand strong lateral thrusts. The Griffith Observatory was opened to the public on May 15, 1935. The Los Angeles architectural firm of Austin and Ashley, architects of Los Angeles City Hall, designed the observatory with considerable input from the Astronomer Russell Porter. The Observatory is completed in the classically inspired PWA Moderne style, and is highly viewable from numerous points within the eastern portion of the City. The Griffith Observatory is City Historic Cultural Monument number 168, and is considered an iconic building for the City of Los Angeles.

The Ralph Cornell Master Plan

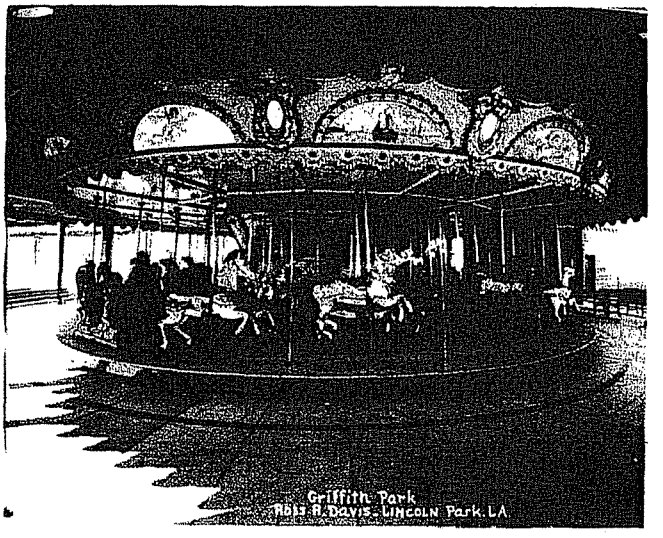
By the end of the 1930s, the National Park Service required that a Master Plan be completed for Griffith Park before it would qualify for any further CCC projects. To fulfill this request, the City Parks department hired Ralph Cornell, who had been the consulting landscape architect at UCLA during this period. Cornell proposed grouping together the recreational amenities of the park upon the flatland areas that surrounded the untouched, upper park portions comprising the middle of Griffith Park. Cornell was an admirer of the open, upper park portion, and saw it as highly unique among city parks anywhere in the United States for being essentially a wilderness in the city. Cornell's Master Plan was originally envisioned to be the first of many successive plans of greater detail. Nonetheless, Griffith Park today has followed many of Cornell's ideas. These include: the grouping of various recreational amenities, including the Wilson-Harding Golf Courses, along the lower portions of the park; the placement of the new zoo; an equestrian trail paralleling Crystal Springs Drive in addition to an equestrian entrance at the west end of the park; and the relative openness of the Upper Park, including the maintenance of its indigenous chaparral landscape and lack of numerous automobile roads.

The Merry-Go-Round

During the 1930s, one other resource that came to Griffith Park through a context of relative randomness was the Merry-Go-Round.[52] A nickel a ride, or six rides for a quarter, the Merry-Go-Round provided further amusement for children at a reasonable cost for Depression-era parents. The original Merry-Go-Round, a three-abreast Spillman with various animals, was installed in 1935 as a City franchise. The franchisee, Ross Davis, chose to place the Merry-Go-Round near the location of the Old Zoo—where many children would be present. The red and white canopy and enclosure structure was built around the Merry-Go-Round in 1936. The present Merry-Go-Round, a four abreast all-horse Spillman, was installed in 1937 and was relocated from Mission Beach Park in San Diego. This carousel, which is believed to feature Looff carved horses from the 1880s, was

[52] Information regarding the Merry-Go-Round is found in: Eberts, Griffith Park, 192-195.

visited often by Walt Disney and his children, and is documented as being influential upon Disney in his creation of Disneyland.[53]



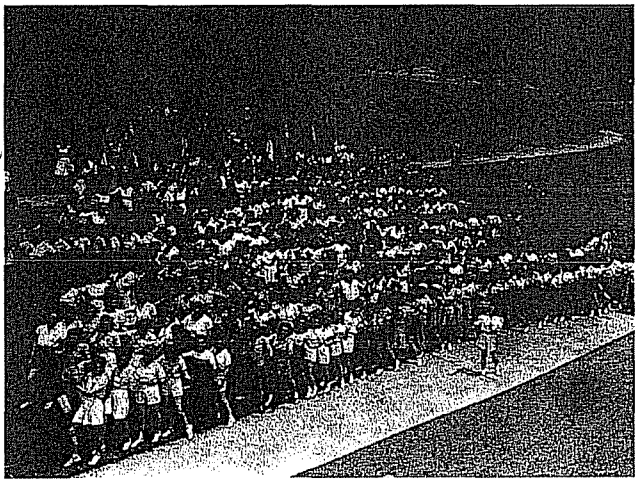
Merry-Go-Round, 1937. Courtesy Bill Eckert

Griffith Park in the 1940s and 1950s

As the 1930s came to a close and the next decade began, Griffith Park would become the repository for numerous designations, plaques, and commemorative objects. The earliest known of these was a bronze plaque, now missing, that was located at the entrance to Vermont canyon that honored those who lost their lives in the 1933 fire. Similarly lost is the original "Spirit of the CCC" statue that was originally located at an early CCC camp that had been visited by Franklin Delano Roosevelt. A reproduction of this statue is today located in Travel Town. Various social service organizations, including the Women's League and the Soroptimists International of Los Angeles, placed plaques in Griffith Park. Often it was these organizations that donated trees, or constructed picnic areas that further enhanced the park, and carried on a long and consistent pattern, still the norm at this time, of private donation, much in the line of Griffith himself, as a means to enhance the park. Beginning in the 1930s and continuing on through the War years, organized recreational activities were common in Griffith Park as an inexpensive means to keep people occupied and active. Many of these activities were geared toward specific groups, including housewives, children or

[53] Pete Martin, An Interview of Walt Disney, Walt Disney Archives, n.d., p.17. (footnote in Eberts, Griffith Park, 415).

newly arrived immigrants. Folk dancing shows were presented in the park, children's doll shows, and "Housewife Play Days," where women could dress down and participate in various fun and physical activities.



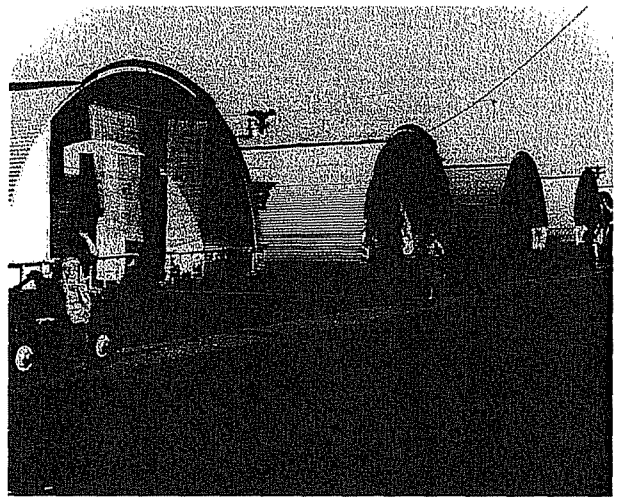
Housewives dance to Latin Tempos and form a conga line in the front row at a Pan-American themes Griffith park "Housewife Playday." Photo: June, 1941.
Courtesy Los Angeles Public Library Photo Collection

World War II

Just as it had during the Great Depression, with the advent of World War II Griffith Park once again was a prime destination for residents of Los Angeles and the surrounding vicinity. Because of gas rationing, long trips to both area mountains and beaches were out of question for many Angelinos. By this time development had long connected Griffith Park to the rest of Los Angeles, and the park was seen as the close-by recreational alternative. Because of its massive size, Griffith Park more than any other City park during World War II found various ways to serve the country and the cause. Just prior to and during the war, the park was the site of strength training exercises for boys and men called "toughening up" sessions, an idea first proposed by Parks Supervisor George Hjelte. The pool, which was staffed with female lifeguards for the first time in 1943, was used to train servicemen to swim. The pool-adjacent playground area was occupied by the 125th infantry for five months during the war. The former CCC camp on the site where Travel Town now stands became a POW camp for Japanese, German and Italian prisoners at various times. The Greek Theatre and the Griffith Observatory were offered to the Red Cross as convalescent hospitals. Furthermore, at the Observatory lived a small group of the 121st artillery who were to operate a searchlight in case of aerial attack. The Planetarium was used to teach pilots celestial navigation, and Dr. Dinsmore Alter of the Observatory invented a device to allow artillery to be oriented by the stars. A hydraulic model yard was created at the present-day site of the Live Steamers, and nearby was a camouflage experimental laboratory of which very little is known. In this

vicinity of the park, the Western Signal Corps photo center produced army training films, with as many as 200 assigned to the facility by 1944.

After World War II, the former site of the Griffith Aviation Park and later California National Guard base would become Rodger Young Village: a temporary, Quonset hut neighborhood of 1,500 dwellings and 6,000 people. The purpose of Rodger Young Village was to alleviate a housing shortage for returning World War II GIs.



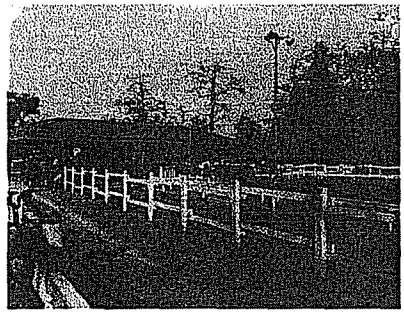
Children at play in Rodger Young Village. Photo: 1951.
Courtesy Los Angeles Public Library Photo Collection

Though this remedy was readily supported by Mayor Fletcher Bowron, the City Council, and Recreation and Parks, Van Griffith alone opposed it as not concurring with the intended recreational use of the park. Though Van proposed an alternate option involving the use of 30,000 parcels acquired by the City during the Great Depression, his option was quickly disregarded, and Rodger Young Village proceeded to be built. The largest veteran's housing project in the region, a fully furnished unit went for $40.00 a month, utilities included. By the early 1950s, as the GI housing crunch eased, support for Rodger Young Village, by both the City and the public, began to wane, and the village was shut down in 1954. Van Griffith's dream of this former Griffith Reservation property being fully assimilated into the park was short-lived. During this same period, plans were being initiated in Sacramento to place the Ventura freeway upon a portion of the former reservation property, and into a multi-mile stretch of Griffith Park.

Post-War Recreational Developments

At the turn of the twentieth century and before, parks were seen as places of contemplation, rejuvenation, and restful repose, with recreational activities more associated to "Playgrounds" during that time. Just as Colonel Griffith's original

intention for the park was to give the Los Angeles citizenry a place to be close to nature, it appears that he accepted that restful repose alone was not the only way to experience nature, but that it could be enjoyed through various recreational activities taking place within it. After World War II, the idea that proximity to nature alone was sufficient was subsumed by an invigorated energy informed by the Allied victory. It was an energy whose aspiration, ambition, and optimism affected much of the built environment of Los Angeles, and informed changes at Griffith Park. At that time the City Recreation and Parks departments merged, and Griffith Park developed numerous recreation-focused amenities that are now part of its historic identity. Griffith Park had long contained recreational amenities aside from nature itself, beginning with the first municipal links in the 1910s, and later through the addition of the pool/tennis/playground complex of the late 1920s. However, the post-World War II era saw great expansion at the park in this regard. A 9-hole pitch and putt called the Coolidge Golf Course was added west of and above the Pony Rides with an additional nine steep holes. Today this course is three holes and was rechristened the Marty Tregnan Golf Academy in 2000. In the late 1940s Tommy Wright began the pony ride concession off of Crystal Springs Drive which had originated in Lincoln Park. The original fenced path for the Pony Rides, its waiting canopy and ticket kiosk are all still present and unaltered.



Griffith Park Pony Rides, 1947.
Courtesy Los Angeles Public Library Photo Collection



Griffith Park & Southern Railroad, 1947, 1963. Photo: 1963. The above pictured canopy and decorative water tower are still present.
Courtesy Los Angeles Public Library Photo Collection

Adjacent and behind the Pony Rides in 1947 Samuel Borenstein received permission to construct a 1/3 scale railroad surrounded by 5/8 scale buildings called the Griffith Park and Southern Railroad. Originally Charles and Ray Eames were design consultants on this project, though it appears that their contribution is no longer present, save for a couple of structures.[54] The Griffith Park and Southern Railroad is surrounded by various buildings including a car garage, a Victorian-styled ticket kiosk, an open, woodshed canopy, a truss bridge, and a water tower. The right-of-way has been altered as the railroad was affected by the addition of the I-5 freeway running through the park in 1957. Much of this focus upon recreation was influenced by George Hjelte, who served as

[54] The ticket kiosk, the truss bridge, the engine storage, and the water tower appear to be part of the original Eames scheme, but further research is necessary to validate this assertion.

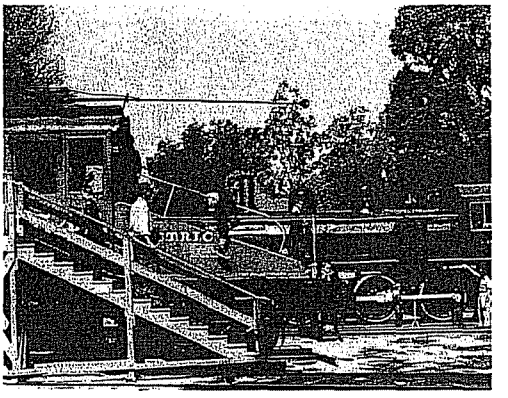
Recreation and Parks Director during this time, and who was a published, national expert on regarding recreational activities within parks. During the 1950s the Ranger program was first developed, and rangers were expected to be educators for and protectors of the park. On April 20, 1952, the Fern Dell watchman's house became a nature museum, and various exhibits regarding nature in Griffith Park were presented there.

Travel Town and Live Steamers

After the end of World War II, as Americans found that they had more time and money, the concept of "hobbies" became more popular, and Griffith Park became a hobbyists park for the city. As Griffith Park became a hobbyist destination in the mid-1950s, railroading became a particularly focal hobby associated with the park. Not only had the Griffith Park and Southern Railroad developed in the park, but by 1952, Griffith Park saw the development of the Travel Town Transportation Museum.

Similar in development to various recreational amenities in the park, where one individual oversees the franchise, development, or operation of a given resource, the genesis of Travel Town was largely the result of the efforts of one individual: Charlie Atkins. Beginning in the late 1940s, Mr. Atkins, who was a Recreation and Parks employee and rail fan, began to ask railroad companies for various steam locomotives that he knew were being phased out as train companies converted to diesel engines, and as the automobile gained prevalence in Los Angeles and the western world. Assisting Atkins in this process was D.J. Russell, the president of the Southern Pacific Railway at that time who facilitated reception of a 1904 ALCO Atlantic 4-4-2 locomotive and its tender. The site in Griffith Park where this and later locomotives would be placed was called "Travel Town," and would be located at the former site of a CCC and later POW camp. The amassed collection of locomotives and later other forms of transportation is not of exceptionally rare examples of its type, but rather is significant as a sizeable accumulation of common locomotives and other methods of transportation.

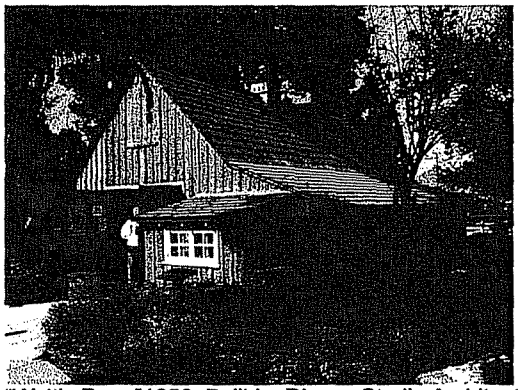
The collection was largely completed through the singlehanded efforts of Charlie Atkins. Once he passed away on August 8, 1958, the rate of accumulation of engines at Travel Town radically declined, though also there were simply less of these to be had over time. Travel town still contains auxiliary buildings that date from its 1952 opening: a restroom facility and an office facility. An early Southern Pacific depot in a Folk Victorian style has been moved upon the property and is itself a contributing resource to the Griffith Park property. However, much of the grounds has been redone and improved after the period of significance. In the early 1960s the Travel Town site had to be consolidated to make room for the 134 freeway. The collection itself, which is the largest of its type west of St. Louis, is itself significant.



Travel Town Transportation Museum. Photo: 1955.
Courtesy Los Angeles Public Library Photo Collection

Adjacent to Travel Town, in the tradition of hobbyist context, is the Griffith Park Live Steamers. The Live Steamers is a collection of various small-scale railways that are rideable. Atkins, along with fellow Recreation and Parks employee Dick Bagley (and supported by Hjelte), encouraged and facilitated the conditional use permit that would lead to the presence of the Live Steamers adjacent Travel Town. Live Steamers opened on May 5, 1957. With a passenger car given by Atkins as their headquarters, the group initially created three separate scales upon decomposed granite that was also made possible by Atkins. In 1965 Walt Disney donated the track from a rail that had been in his backyard, and is today a right of way in Live Steamers called the "Disney Loop." Much of the original track of the Disney Loop has been replaced in-kind due to wear and tear. For Walt Disney, miniature railroading had been a hobby since the late 1940s, when he established a 1/8 scale track on his Holmby Hills property called the Carolwood Pacific Railroad, named after the street of his childhood home. A testament to Disney's love of railroading, Disney's Carolwood line predates the railroad which encircles Disneyland, and Disneyland itself. In 1999, the workshop in which Disney created his miniature railroad and its components was relocated to the Live Steamers property. Known as "Walt's Barn," the resource, which was built by Disney Studio Architect John Kowles Jr. in 1950, is based upon an early barn that was located upon the Disney's childhood family farm in Marceline, Missouri. As a young boy, it was within this earlier barn that Walt Disney both played and entertained.

After the 1997 passing of Walt's wife Lily Disney, Diane Disney Miller, Walt's eldest daughter, arranged to have the Barn moved to Live Steamers, where Walt had been an honorary member. Bill Evans, who had originally landscaped Walt's Holmby Hills property, recreated the landscape around the newly relocated barn, which was opened to the public at Live Steamers in July of 1999. Though the roof of the Barn was reconstructed, the reast of the fabric is historic. The resource retains very good integrity. Walt's Barn serves as a museum focused upon the love of railroading by Walt Disney, and features numerous model railroading items that once belonged to Disney. The Carolwood Pacific track switchboard and workbenches, all built by Disney himself, are also present within Walt's Barn.



"Walt's Barn,"1950. Built by Disney Studio Architect John Kowles Jr.
Los Angeles Live Steamers Railroad Museum.
Photo: ICF Jones & Stokes, January, 2008

End of the Period of Significance

In 1938 the City Bureau of Engineering initiated what would be the last WPA/CCC project relating to Griffith Park, the concreting of the Los Angeles River. This would be the first of three large-scale impacts that would alter the setting of the park. However, the Los Angeles River had been prone to serious flooding, including two large floods in the late 1930s that damaged many of the flatlands areas of Griffith Park. In 1957, the park would be severed from the river by the construction of the I-5 freeways through its flatlands. The construction of the 134 freeway along the upper portion of Griffith Park against the Los Angeles River occurred during the early 1960s. The advent of these freeways undid the park's historically pre-existing physical relationship to the Los Angeles River, a significant component of Griffith Park history as it relates to Los Angeles. In 1958, Toyon Canyon in Griffith Park would become a landfill handling much of the trash for the City. Both events were the effects of rapid post-war growth in Los Angeles. As the City's population spanned outward away from the City center during this time, Griffith Park was rendered more vulnerable to such developments. The period of significance for Griffith Park begins in 1896 and ends in 1958.

Conclusion

Given to the City of Los Angeles by Colonel Griffith J. Griffith and his wife Tina Griffith, Griffith Park has fulfilled its donor's stated vision for the property. One of the largest municipal parks not just in the country but in the Western world, Griffith Park is free and accessible to all, and its visitors have made the park a popular destination. For almost all of Griffith Park's long history and as of now, picnicking, horseback riding, and hiking have been key to experiencing Griffith Park as intended. Additionally, the Los Angeles citizenry has embraced the various built amenities upon the property, including resources made possible by the additional generosity of Colonel Griffith. The Griffith Observatory has

recently undergone a multi-million-dollar renovation and the Greek Theater is a popular concert destination. As a historically significant cultural landscape, Griffith Park expresses its various layers and decades of history through an abundance of buildings, structures, and objects that together have made the park a cornerstone of the City's identity. These resources are set within the massive open wilderness that is Griffith Park's physical core and primary identifier; an open space which Colonel Griffith saw as vital for the Los Angeles that was to come, and has long since arrived.

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GRIFFITH PARK HISTORIC-CULTURAL MONUMENT APPLICATION:

APPENDICES LIST

Appendix 1: Colonel Griffith J. Griffith: Text from original letter of intent to donate dated December 16, 1896 and gift deed text dated March 5 1898. From: "A Gift to the People of Los Angeles," Griffith Park Quarterly 1 2(1978): 4-9.

Appendix 2: Office of the Assessor, Secured Basic File Abstract (DSO4) Record Layout, Definitions, and Griffith Park Information

Appendix 3: Pre-Existing Los Angeles City Parks with Historic Cultural Monument Designation

Appendix 4: Griffith Park Resources: Coordinate Points

Appendix 5: Selected pages from: Good, Albert H. Park and Recreation Structures, Part 1: Administrative and basic Service Facilities. United States: Department of the Interior, National Park Service [Washington D.C.: U.S. Government Printing Office], 1938.

Appendix 6: Griffith Park Fire Survey Field Notes. Conducted by Jones & Stokes. July, 2007.

Appendix 7: The Ferns of Fern Dell, C. 1958

Appendix 8: Griffith Park Plant List, October 2007. Conducted by Dan Cooper, Cooper Ecological & Rick Fisher, LA PW/BOE/ARCH

Appendix 9: Wildlife Species Checklist for Griffith Park, January, 2008. Daniel S. Cooper, Cooper Ecological Monitoring, Inc.

Appendix 10: A Preliminary Large Mammal and Herptile Survey of Griffith Park, Los Angeles, California, August 15, 2007. Paul Mathewson, Stephanie Spehar, and Daniel Cooper.

Appendix 11: Annotated Checklist of Birds of Griffith Park. April 2007. Daniel S. Cooper, Cooper Ecological Monitoring, Inc.

Appendix 12: Preliminary Insect (Butterfly) Survey at Griffith Park, Los Angeles, California. October 30, 2003. Kathy Keane, Keane Biological Consulting

Appendix 13: Griffith Park Historic Areas and Resources GIS Map, 24"x36"
ICF Jones & Stokes, April 2008

Appendix 1:

Colonel Griffith J. Griffith: Text from original letter of intent to donate dated December 16, 1896 and gift deed text dated March 5 1898. From: "A Gift to the People of Los Angeles," Griffith Park Quarterly 1 2(1978): 4-9.

GRIFFITH PARK HISTORICAL SOCIETY

UNDER THE AUSPICES

OF

ADVISORY COMMITTEE FOR GRIFFITH PARK

Chairman of Historical Society

EDWIN E. CURL

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WILLIAM ECKERT

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PHONE: 665-5188

Judy Nelson, Newsletter Editor

A VERY UNIQUE CITY PARK

WITH A ROMANTIC HISTORY

GRIFFITH PARK QUARTERLY

The Publication of the

GRIFFITH PARK

HISTORICAL SOCIETY

Under the Auspices of

Advisory Committee

for Griffith Park

January, 1978

VOLUME ONE • NUMBER TWO



A GIFT TO THE PEOPLE OF LOS ANGELES.

In December 1896, the Mayor and City Council of Los Angeles, received a letter from one of its citizens, offering a gift of 3015 acres of land, mountainous in terrain, to be used as a park. The donor was a well known businessman of the city named Colonel Griffith Jenkins Griffith. From the city files we have a copy of that letter:

"To the Mayor and City Council of Los Angeles

Your Honor and Gentlemen,

In the course of twenty-three years of active business life in California I have become proudly attached to our beautiful city of Los Angeles, which through its great natural advantages and its matchless climate, averaging three hundred sunny days in the year, is destined to soon become a great metropolis. The arduous work of these years has been rewarded with fair success and recognizing the duty which one who has acquired some little wealth owes to the community in which he has prospered and desiring to aid the advancement and happiness of the city that has been for so long and always will be my home, I am impelled to make an offer, the acceptance of which by yourselves, acting for the people, I believe will be a source of enjoyment and pride to my fellows and add a charm to our beloved city. Realizing that public parks are the most desirable feature of all cities which have them and that they lend an attractiveness and beauty that no other adjunct can. I hereby

propose to present to the city of Los Angeles, as a Christmas gift, a public park of about three thousand acres of land in one body, situated a fraction over a mile north of the northern city line, including fully two and a half miles of the frostless foothills bordering on the Cahuenga valley, five miles of the Los Angeles river bottom, the lands generally known as the Ostrich Farm and the beautiful little valley which was called the Press Colony site. Also with these lands the improvements thereon, consisting of several buildings and a water plant with tunnels and piping, the original cost of these having been over $10,000, and all of which will be of service and benefit in improving the park. This park will include over two thousand acres of tillable land and some of the most romantic scenery of any park in the world. Not only will it be the largest city park in the world but its diversity of picturesque valley, hill, river and mountain, with its many varities of trees and its rich undergrowth, render it susceptible of being cultivated into the most beautifull of parks.

I will deed this land to the city as soon as the city engineer has established the lines satisfactorily, but in making this donation I would like to impose the condition, if after consideration it should appear that it may be legally done, that no railroad to this park be chartered with the right to charge a larger fare tham five cents. I wish to impose this condition to insure this fare, so that this park will be in every sense the peoples' recreation grounds and transportation to it be kept within the reach of the most modest means.

I wish to make this gift while I am still in the full vigor of life that I may enjoy with my neighbors its beauties and pleasures and that I may bear with me, when I cross the clouded river, the pleasing knowledge of the fruition of a wish long dear to

me. I trust that you will accept this gift for the people of Los Angeles, in the same spirit in which it is offered.

Respectfully yours,

(signed) G. J. Griffith

Los Angeles, Cal., Dec. 16th, 1896."

This letter from Colonel Griffith J. Griffith was written with a great deal of thought. Is it the only side of the story? Or, from the standpoint of history should we present another view? It is a wonderful gift but to avoid criticism from historians we must quote from a book, titled "The City That Grew", by Boyle Workman. A history of Los Angeles from 1840-1936.

"Griffith J. Griffith presented the hills of Griffith Park to Los Angeles during my father's years as park commissioner.

Griffith grew very weary of paying taxes on these extensive lands. Father suggested he donate them to the city for a park. When he did so he reserved the bottom lands for himself.

In order to obtain a site for the municipal golf links and the clubhouse of which project Henry W. Keller was the originator, the city later had to purchase this bottom land. I was president of the City Council when that land between the hills and the river was bought."

The gift was presented and surveys were started. A year and a little less than three months later Colonel Griffith was able to present to the city a deed. The park was granted as follows:-

"THIS INDENTURE made this fifth of March, in the year of our Lord one thousand eight

Hundred and ninety-eight, by and between GRIFFITH JENKINS GRIFFITH, and MARY AGNES CHRISTINA GRIFFITH, his wife, both of the City of Los Angeles, County of Los Angeles, State of California, parties of the first part, and the CITY OF LOS ANGELES, a Public Municipal Corporation within said County and State, the party of the second part.. WITNESSETH: That the said parties of the first part do hereby give, grant, convey and confirm unto the said party of the second part and its successors forever, for the uses and purposes, and upon the conditions hereinafter named, all that certain tract of land situate in the County of Los Angeles, State of California, being a part of the RANCHO LOS FELIZ, and which is particularly bounded and described as follows:"

DESCRIPTION

The description is long and technical. We are not including it in the deed.

"To be used as a PUBLIC PARK for purposes of recreation, health and pleasure, for the use and benefit of the inhabitants of the said City of Los Angeles, forever.
And this gift and grant is made, and said property is hereby conveyed upon condition that said land shall be used and maintained by said City of Los Angeles and its successors in interest and estate, exclusively as a public park and pleasure ground, for the amusement, recreation, health and pleasure of its inhabitants, and upon the further condition that the name of said park now established by ordinance of said City, to wit, "GRIFFITH PARK" be continued as the official name and designation of said park; and whenever said tract of land

hereby conveyed, or any part thereof shall cease to be used as a park, and for pleasure amusement, recreation, health, and uses incident to the aforesaid uses according to the intents and meanings of the same, and if said City or its successors in interest or estate shall at any time change the official name of said park from GRIFFITH PARK to some other name or designation, then the lands hereby conveyed shall immediately upon the happening of either said events, revert to said parties of the first part or their heirs It is understood that the use of any part of said premises for the development, collection, transportation, accumulation or storage of water for the use of said City or its inhabitants, or for railroad or other transportation purposes for carrying the inhabitants of said City into and through said park, shall not be considered a violation of any of the conditions upon which this donation and grant are made, anything herein to the contrary thereto notwithstanding. To have and to hold the said premises, together with the appurtenances, unto the said party of the second part and its successors in interest and estate, for the uses, purposes, and upon the conditions aforesaid, forever.

IN WITNESS WHEREOF the said parties of the first part have hereunto set their hands and seals, the day and year first herein written!

(signed) GRIFFITH JENKINS GRIFFITH
(signed) MARY AGNES CHRISTINA GRIFFITH

RECORDED
At the request of the City of Los Angeles, March fifth, A. D. one thousand eight hundred and ninety-eight at 14 minutes past 4 P. M., in Book 1226 of Deeds, pages 40-43 et seq.

(Signed) E. C. Hodgeman
County Recorder
(Signed) A. Caldwell
Deputy.

Appendix 2:

Office of the Assessor, Secured Basic File Abstract (DSO4)
Record Layout, Definitions, and Griffith Park Information

OFFICE OF THE ASSESSOR

COUNTY OF LOS ANGELES
CALIFORNIA

SECURED BASIC FILE ABSTRACT
(DS04)

RECORD LAYOUT
AND
FIELD DEFINITIONS

DOCUMENTS UPDATED

MARCH 2005

COUNTY OF LOS ANGELES
OFFICE OF THE ASSESSOR
INFORMATION TECHNOLOGY DIVISION

RECORD LAYOUT

FILE: SBF ABSTRACT (DS04)

SIZE: 1,147 BYTES x 28 RECORDS = 32,116 BYTES/BLOCK **Effective 8/1/04**

DATA ELEMENT NAME	Data Type & Size	Byte Location
Assessor ID Number (AIN):		
Mapbook	9(04)	1-4
Page	9(03)	5-7
Parcel	9(03)	8-10
Tax Rate Area (TRA)	9(05)	11-15
Agency Classification Number	9(06)	16-21
Land:		
Current Roll Year	9(04)	22-25
Current Value	9(09)	26-34
Improvement:		
Current Roll Year	9(04)	35-38
Current Value	9(09)	39-47
Situs Address:		
House Number	9(05)	48-52
Fraction	X(03)	53-55
Direction	X(01)	56
Street Name	X(32)	57-88
Unit	X(08)	89-96
City and State	X(24)	97-120
ZIP Code	9(09)	121-129

DATA ELEMENT NAME	Data Type & Size	Byte Location
Mail Address (Current Owner):		
House Number	9(05)	130-134
Fraction	X(03)	135-137
Direction	X(01)	138
Street Name	X(32)	139-170
Unit	X(08)	171-178
City and State	X(24)	179-202
ZIP Code	9(09)	203-211
First Owner Assessee Name (Last Name First)	X(32)	212-243
First Owner Name Overflow	X(32)	244-275
Special Name Legend	X(05)	276-280
Special Name Assessee	X(32)	281-312
Second Owner Assessee Name	X(32)	313-344
Recording Date (YYYYMMDD)	9(08)	345-352
Tax Status:		
Key	9(01)	353
Year Sold to State	9(04)	354-357
Hazard Abatement:		
City Key	X(01)	358
Information	9(10)	359-368
Zoning Code	X(15)	369-383
Use Code	X(04)	384-387
Partial Interest	9(03)	388-390
Document Reason Code	X(01)	391
Ownership Code	X(01)	392
Exemption Claim Type	X(01)	393

DATA ELEMENT NAME	Data Type & Size	Byte Location
Building Data (cont'd):		
Line Two:		
Subpart (Part XX of XX Parts)	9(04)	537-540
Design Type	X(04)	541-544
Quality, Class & Shape	X(05)	545-549
Year Built	9(04)	550-553
Number of Units	9(03)	554-556
Number of Bedrooms	9(02)	557-558
Number of Baths	9(02)	559-560
Square Feet of Main Improvement	9(07)	561-567
Line Three:		
Subpart (Part XX of XX Parts)	9(04)	568-571
Design Type	X(04)	572-575
Quality, Class & Shape	X(05)	576-580
Year Built	9(04)	581-584
Number of Units	9(03)	585-587
Number of Bedrooms	9(02)	588-589
Number of Baths	9(02)	590-591
Square Feet of Main Improvement	9(07)	592-598
Line Four:		
Subpart (Part XX of XX Parts)	9(04)	599-602
Design Type	X(04)	603-606
Quality, Class & Shape	X(05)	607-611
Year Built	9(04)	612-615
Number of Units	9(03)	616-618
Number of Bedrooms	9(02)	619-620
Number of Baths	9(02)	621-622
Square Feet of Main Improvement	9(07)	623-629
Line Five:		
Subpart (Part XX of XX Parts)	9(04)	630-633
Design Type	X(04)	634-637
Quality, Class & Shape	X(05)	638-642
Year Built	9(04)	643-646
Number of Units	9(03)	647-649
Number of Bedrooms	9(02)	650-651
Number of Baths	9(02)	652-653
Square Feet of Main Improvement	9(07)	654-660

DATA ELEMENT NAME	Data Type & Size	Byte Location
Legal Description:		
First Line	X(40)	661-700
Second Line	X(40)	701-740
Third Line	X(40)	741-780
Fourth Line	X(40)	781-820
Fifth Line	X(40)	821-860
Last Line	X(40)	861-900
Current Land Base Year	9(04)	901-904
Current Improvement Base Year	9(04)	905-908
Current Land Base Value	9(09)	909-917
Current Improvement Base Value	9(09)	918-926
Cluster Code:		
Cluster Location	9(02)	927-928
Cluster Type	9(01)	929
Cluster Appraisal Unit	9(02)	930-931
Land Reason Key	X(01)	932
Impairment Key	9(05)	933-937
Document Transfer Tax (DTT) Sales Amount	9(09)	938-946
Building Data:		
Line One:		
Year Changed	9(04)	947-950
Unit Cost Main	9(05)	951-955
RCN Main	9(09)	956-964
Line Two:		
Year Changed	9(04)	965-968
Unit Cost Main	9(05)	969-973
RCN Main	9(09)	974-982

DATA ELEMENT NAME	Data Type & Size	Byte Location
Building Data (cont'd):		
Line Three:		
Year Changed	9(04)	983-986
Unit Cost Main	9(05)	987-991
RCN Main	9(09)	992-1000
Line Four:		
Year Changed	9(04)	1001-1004
Unit Cost Main	9(05)	1005-1009
RCN Main	9(09)	1010-1018
Line Five:		
Year Changed	9(04)	1019-1022
Unit Cost Main	9(05)	1023-1027
RCN Main	9(09)	1028-1036
Landlord Information:		
Reappraisal Year	9(04)	1037-1040
Number of Units	9(03)	1041-1043
First Transferee Name	X(32)	1044-1075
First Transferee Name Overflow	X(32)	1076-1107
Second Transferee Name	X(32)	1108-1139
Last Document:		
Recorder's Document Info:		
Document Key	X(01)	1140
Document Number	9(07)	1141-1147

DATA ELEMENT NAME	Data Type & Size	Byte Location
Summary Record:		
Assessor ID Number (All Nines)	9(10)	1-10
Mapbook Count	9(05)	11-15
Record Count	9(15)	16-30
Land Value	9(15)	31-45
Improvement Value	9(15)	46-60
Personal Property Value	9(15)	61-75
Personal Property Exemption Value	9(15)	76-90
Fixture Value	9(15)	91-105
Fixture Exemption Value	9(15)	106-120
Homeowner Exemption Value	9(15)	121-135
Real Estate Exemption Value	9(15)	136-150
Parcels with Land Value	9(15)	151-165
Parcels with Improvement Value	9(15)	166-180
Parcels with Pers. Property Value	9(15)	181-195
Parcels with Pers. Property Exempt. Value	9(15)	196-210
Parcels with Fixture Value	9(15)	211-225
Parcels with Fixture-Exemption Value	9(15)	226-240
Parcels with Homeowner Exemption Value	9(15)	241-255
Parcels with Real Estate Exemption Value	9(15)	256-270
Filler	X(877)	271-1147

DATA DEFINITIONS

Parcel Number

This is the primary identification assigned to each parcel of land to facilitate locating it on the assessment records for the purpose of assessing properties and collecting taxes. It consists of a Mapbook number (4 digits), page number (3 digits), and parcel number (3 digits). No two parcels on the Secured File can have the same parcel number. The Assessor's Secured Basic File Abstract is set up in Mapbook, Page, and Parcel order.

Tax Rate Area (TRA)

This is a five-digit TRA indicating the geographical area to which a tax rate pertaining to this parcel is applicable.

Agency Classification Number

This is a six-digit code identifying the assessee agency on a public-owned parcel. The first 3 digits represent a general category and the remaining 3 digits represent specific agencies within a category. For example, 443039 is an agency classification number for L.A. City, Harbor Department. (A complete list is available upon request.)

Land

- Current Roll Year

  The four digits of the applicable roll year.

- Current Value

  The land value in the current value field of the Assessor's Secured Basic File (SBF) used to produce the SBF Abstract. If the file used is the same as the file which produced the Assessor's Roll, then the roll year and the value are the same as the last published roll. If the most current Assessor's Secured Basic File is used, then the roll year indicates the next published roll and value in preparation. The value may or may not be changed before the next roll is published.

Improvement

- Current Roll Year

  The four digits of the applicable roll year.

- Current Value

  The improvement value in the current value field of the Assessor's Secured Basic File (SBF) used to produce the SBF Abstract. If the file used is the same as the file which produced the Assessor's Roll, then the roll year and the value are the same as the last published roll. If the most current Assessor's Secured Basic File is used, then the roll year indicates the next published roll and value in preparation. The value may or may not be changed before the next roll is published.

SITUS ADDRESS

- House Number:
  This is a five-digit field reflecting the number of the house in an address.

- Fraction:
  This is a three-digit field indicating the fractional portion of a house number, if any (e.g., 1/2).

- Direction:
  A single, alpha character indicating unit identification, if any (e.g., S).

- Unit:
  This is an eight-digit field indicating unit identification, if any (e.g., Apt. 102).

- ZIP Code:
  This is a nine-digit field reflecting the ZIP Code for this address.

- Street Name:
  This is a 32-character field containing street number and name for the parcel.

- City and State:
  This is a 24-character field containing the city and state for the parcel (e.g., Los Angeles, California).

MAIL ADDRESS

- House Number:
  This five-digit field reflects house number in an address.

- Fraction:
  This is a three-digit field reflecting the fractional portion of a house number, if any (e.g., 1/2).

- Direction:
  This is a single, alpha character indicating street direction, if any (e.g., S).

- Unit:
  This is an eight-digit field indicating unit identification, if any (e.g., Apt. 102).

- ZIP Code:
  This nine-character field reflects the ZIP Code for this address.

- Street Name:
  This is a 32-character field containing street number and name for the parcel.

- City and State:
  This is a 24-character field containing the city and state for the parcel (e.g., Los Angeles, California).

First Owner Assessee Name

This is the name of the first owner assessee as of the current roll lien date (January 1). A maximum of 32 alphanumeric characters have been provided with the family name coming first.

First Owner Overflow Name

This contains any overflow from the (for names exceeding 32 characters) from the first assessee name. A maximum of 32 characters have been provided.

Special Name Legend

This is a five-character legend which indicates the type of Special Name present for the parcel. It may be any of the following:

DBA = Doing Business As
C/O = Care of
TR # = Trust Number
Spaces

Special Name Assessee

This is a thirty-two-character name associated with the mailing address where tax bills are mailed. It may be a savings and loan association, a trust number, a "care of" name, and the like.

Second Owner - Assessee

This is the name of the Second Owner Assessee as of the current roll lien date. As in the First Owner Assessee, the family name comes first. A maximum of 32 characters have been provided.

Recording Date

This is the date of last change or correction of ownership. There are eight digits provided for this date: the first through fourth representing the year; the fifth and sixth, the month; and the seventh and eighth, the day.

Tax Status

This consists of the following:

- Tax Status Key - A one-digit code that indicates whether or not property taxes are delinquent. It may be any of the following:

0 - Taxes paid (not delinquent)
1 - Sold to state (delinquent 1 to 5 years)
2 - Deeded to state (delinquent 6 years and over)
3 - SBE or government owned (non-assessable)

- Year Sold to State - If parcel is delinquent, this indicates the four digits of the year in which taxes first became delinquent.

Hazard (Weed) Abatement Key and Information

This indicates whether the parcel presents a hazard problem because of excessive growth of weeds, brush, etc.

- City Key - A key indicating the city supplying the information. The weed abatement key may be any of the following:

\- No abatement
1 - Los Angeles City (Lot Cleaning Division)
2 - Board of Supervisors of the County of Los Angeles
3 - Monrovia
4 - Commerce
5 - Palos Verdes
6 - Glendale
7 - Arcadia
8 - Santa Fe Springs
9 - El Monte
A - La Habra Heights
B - La Verne
C - Asuza
D - Montebello

- Ten characters represent the information provided by the city for its own use in controlling its hazard abatement operation.

Zone Code

This identifies the incorporated or unincorporated cities in Los Angeles County in which the property is located, the zone of the property, and the minimum lot size and/or height limit. It may include from 3 to 15 characters. The first two characters which are always alphabetic, represent zoning jurisdictions or cities, (e.g., LB - Long Beach, LA - Los Angeles, LC - Los Angeles County). See appendix for complete list.

The third character is always alphabetic too. It may be any of the following:

A = Agricultural **(Note: For Long Beach only, A = Amusement)**
C = Commercial
M = Industrial
R = Residential

The fourth character is alphanumeric and generally represents either the intensity or limit of a property's use; or, in the case of a dash, it is used to separate multiple zones or height districts.

The fifth through the fifteenth characters represent data supplied and used by the Real Estate Division of the L.A. Office of Assessor.

Use Code

This indicates the actual current use of the property regardless of how it is zoned. This consists of 4 alphanumeric characters. The first character denotes the general classification (e.g., 0 = residential, 1 -commercial, etc.). The second character further defines the type of property within the major classification (e.g., "1100" for a commercial store, "1400" for a supermarket, etc.).

The third and fourth characters are usually zeroes except when they are used to indicate the existence of some special features in the parcel (e.g., a 01 as the 3rd and 4th character respectively of the use code indicates the existence of a swimming pool on the property).

Partial Interest

The percentage of property involved in a transfer of ownership. First two digits are percentage of property being transferred rounded to nearest whole. Third digit indicates the specific interest being transferred (whose, 1st owner, 2nd owner, etc.).

Document Reason Code

This element contains a one digit code which identifies the specific reason for a reappraisable or a non-reappraisable status.

Document Reason Code-Reappraisal

- A - Good Transfer - No Special Instruction
- B - Parcel Change - New Owner Per Tract Map
- C - Parcel Change - New Transferee
- G - Development Rights - Acquiring Parcels
- H - Development Rights - Transferring Parcels
- 9 - Parcel Change - Mult. B.Y. (OWN-216)
- M - Partial Interest - Complete OWN-216
- P - Trustee Sale - May Not Be Market
- Q - Life Estate - Goes to Grantee
- 5 - Base Year Value Transfer (Prop. 3 - Public Taking) §68
- 7 - Base Year Value Transfer (Prop. 50 - Disaster Taking) §69
- 8 - Base Year Value Transfer (Prop. 60 - Senior Citizen - Age 55) §69.5

Document Reason Code-Non Reappraisal

- 1 - Interspousal §63 Exclusion
- 6 - Affiliated Corp. §64(b) Exclusion
- R - Transfer Not Changing % Interests §62(a)
- S - Perfection of Title §62(b)
- T - Security Interest (any) §62(c)
- U - Trust §62(d)
- V - Grantor Retains Life Estate - Estate for Years §62(e)
- W - Joint Tenancy §62(f), §65(c)
- Y - Parent-Child Transfers §63.1 (Prop. 58)
- Z - Other §'s 62.1, 62.2, 66

Historical Document Reason Code - Obsolete codes that still may appear in the Secured Basic File.

Document Reason Code - Reappraisal

- D - Parcel Change Old Owne

Document Reason Code - Non-Reappraisal

- 0 - Filler - Used by Valuations

Ownership Code

This element contains a code that describes the relationships between the recording and valuation dates.

OC1

- L - Land Only
- M - Improvement Only
- 3 - Review Not Required
- 4 - Review Required Before Processing Subsequent Document

OC2

- A - Date of Death
- B - Execution Date
- C - Other Unrecorded Event
- 5 - Recording Date & Valuation Date Match
- 7 - Use for all Non-Reappraisal Transfers (MUST BE USED WITH DOCUMENT TYPE - NON-REAPPRAISAL)

Historical Ownership Code - Obsolete codes that still may appear in the Secured Basic File.

OC2

- 6 - Non-Match

Exemption Claim Type

This is an alphanumeric key which indicates the type of exemption processed. It may be any of the following:

0 - Veteran number on file, no claim
1 - Veteran
2 - Delete veteran exemption
3 - Church, wholly exempt
4 - Welfare, wholly exempt
5 - Full religious
6 - Church, partially exempt
7 - Welfare, partially exempt
8 - Religious, partially exempt
9 - Delete real estate exemption

Personal Property

- Personal Property key - Identifies the source of personal property and may be any of the following:

3 - Computed (landlords)
4 - Statement value
5 - Constant personal property value
6 - Bypass 14% check (statement)
7 - "Force-on" statement - bypass all checks

- Personal Property Value* - Personal property value exclusive of inventory value.

Personal Property Exemption Value*

This is the amount of exemption allowed on personal property.

Fixture Value*

This is the value of fixtures located on the parcel to which they are liened.

Fixture Exemption Value*

This is the amount of exemption allowed on the fixtures.

Homeowner's Exemption*

- Number of Homeowner Exemptions - 3 digits indicating the number of Homeowner Exemptions applied to this parcel.

- Homeowner Exemption Value - Indicates the amount of Homeowner's Exemption allowed on the parcel.

Real Estate Exemption Value*

This is the amount of exemption allowed on real property (land and/or improvement).

Last Sale #1 through Last Sale #3

These represent unverified information on the latest three sales of the parcel. Last Sale #1 represents the most recent sale; Last Sale #2, the second to the most recent; and the Last Sale #3, the oldest. Sales information consists of the following:

- Verification Key - Only unverified sales appear on the Secured Basic File Abstract. The codes are:
  Key 1 - Single parcel - Unverified
  Keys 2-9 - Multiple parcel - Unverified
- Sale Amount - For keys 1 thru 9 this is the sales price computed from the Deed Transfer Tax stamps. If the key is greater than one, then it is difficult to ascertain the sales price of this particular parcel.
- Sale Date - Present for both verified and unverified sales. This is date of sale in year, month, and day format (YYYYMMDD).

NOTE: **If the sale is a verified sale (non-numeric character as indicated on the verifications key), the sale amount will not show.**

Building Data Lines #1 through #5

A building data line is a synopsis or summary of salient building features of improvements existing on the parcel. The building data line here consists of the following data:

- Sub-part
  This denotes the number of this improvement and the total number of major improvements on this parcel; e.g., 0103 refers to the first of three improvements on the parcel.
- Design Type
  This describes the original purpose for which the improvement was intended, provided the building has not been extensively remodeled.
- Quality, Class and Shape

This is a five-character code which identifies the following: (See "Quality Class Code" for details.)

1st character - class of construction

Next 1, 2, or 3 characters - quality of construction

Last character - shape of perimeter

- Year Built
  This indicates the four digits of the original year the structure was built.
- Number of Units
  This indicates the number of stores, residential units, etc., contained in a multiple unit type structure.
- Number of Bedrooms
  This indicates the number of bedrooms present in a single residence or the total bedrooms in the apartment.
- Number of Bathrooms
  This indicates the number of bathrooms present in a single residence or the total bathrooms in the apartment.
- Square Foot - Main Improvement
  This indicates the square footage, i.e., total area of the main structure. A maximum of five building data lines have been provided in the record.

Legal Description

This is a 240-character field containing legal description of the property for assessment purposes. It is subdivided into six 40-character sub-fields, each representing one line of description. If there are more than 6 lines of description, the first 160 bytes would contain the first 4 lines for description; the next 40 bytes, a legend which says "SEE ASSESSOR MAPBOOK FOR OMITTED PORTION"; and the last 40 bytes, the last line of description. The last line usually carries information on lot number, division and region.

The composition of the entire legal description field is graphically represented below.

# of Description Lines											
1	1										
2	1	Last Line									
3	1	2	Last Line								
4	1	2	3	Last Line							
5	1	2	3	4	Last Line						
6	1	2	3	4	5	Last Line					
7 and over	1	2	3	4	Legend	Last Line					

- Values are as of the last published roll, unless the draw-off takes place between the Assessor's mid-year and year-end housecleaning (approximately between February 5 and July 16); then these fields would contain zeroes.

Current Land Base Year

Year of ownership change if occurring after 1975; otherwise = 1975.

Current Improvement Base Year

This field represents the most recent (latest) year of improvement change. The field will be changed by new construction or transfer.

Current Land Base Value

The land value as established for the current base year. Does not include any inflation trending.

Current Improvement Base Value

The improvement value established for the current base year. Does not include any inflation trending.

Cluster Code

Stratification of properties as to commonality of type and use. The following are the definitions grouped under the heading of "Cluster Code":

Cluster Location

The geographic region by which the property has been stratified. (Byte location 927-928)

Cluster Type

A code that stratifies the property according to usage, i.e., residential, commercial, industrial. (Byte location 929)

Cluster Appraisal Unit

This element is used by the Assessor's Appraisal unit for real estate division classification. (Byte location 930-931)

Land Reason Key

Reason key for the last land value change:

A = AAB's (1975)
B = Auths (1975)
C = Multiple Base Year Values
D = Parcel Change
E = Reserved
F = Relocation
G = 75 Reappraised Value (programmatically generated)
H = Decline in Value (Prop. 8)
J = Special Span for Prop. 13
K = Adjusted 76 or 77 Value (programmatically generated)
L = Lesser Maintenance (Adds and Alters)
M = New Construction
N = Auths Before 1978 Extension
P = Change of Ownership - Partial Interest
R = Cuts
S = Lease Reappraisal
T = Change of Ownership
U = New Mobilehome
V = New Construction - Mobilehomes
W = Misfortune and Calamity
X = Co-ops, OYO's
Y = Auth resulting from special investigation
Z = Mobilehome Delinquent

Impairment Key

A key indicating whether the parcel value has been impaired and describing the impairment according to the value of the key:

00 = No key
02 = Being made inactive -- 02's being changed to other keys.
03 = Water company parcel
04 = Impaired water company parcel
05 = Water distribution systems
06 = Mineral rights - separate ownership
07 = Land physically impaired
08 = Land legal impairment (lease)
09 = Within a lease - unimpaired

Document Transfer Tax (DTT) Sales Amount

The tax charged by the Registrar-Recorder to record the deed based on the value.

Building Data Line:

Year Changed: The assessment year in which the building data line last changed.

Unit Cost Main: The dollar cost per square foot for the main structure.

RCN Main (Replacement Cost New - Main): The cost of replacing the main structure (new): square feet main x unit cost main.

Landlord Information:

Reappraisal Year: Assessment year in which Landlord Statement is to be printed.

Number of Units: Number of rental units on the property.

First Transferee Name

Name of the first assessee to whom title has passed as of a date later than the lien date of the current assessment year.

First Transferee Name Overflow

Data needed to describe fully the First Transferee Name in addition to the 32 characters provided for in the First Transferee field.

Second Transferee Name

Name of Second Assessee to whom title has passed as of a date later than the lien date of the current assessment year.

Last Document:

Document Key: Type of key by which ownership status was changed.

Document Number: This element contains an identifying number of the Registrar-Recorder's Document. This number is assigned by the Registrar-Recorder consecutively, starting with "1" for each document processed by a 3-digit year prefix.

CITY ABBREVIATION LIST

AH	Agoura Hills
AL	Alhambra
AR	Arcadia
AT	Artesia
AV	Avalon
AZ	Azusa
BF	Bellflower
BG	Bell Gardens
BH	Beverly Hills
BL	Bell
BP	Baldwin Park
BR	Bradbury
BU	Burbank
CA	Carson
CC	Culver City
CE	Cerritos
CL	Claremont
CM	Commerce
CO	Compton
CS	Calabasas
CU	Cudahy
CV	Covina
DB	Diamond Bar
DO	Downey
DU	Duarte
EM	El Monte
ES	El Segundo
GA	Gardena
GD	Glendora
GL	Glendale
HA	Hawthorne
HB	Hermosa Beach
HG	Hawaiian Gardens
HH	Hidden Hills
HP	Huntington Park
ID	Industry
IN	Inglewood
IR	Irwindale
LA	Los Angeles
LASP	L.A. San Pedro
LAVN	L.A. Van Nuys
LAWL	L.A. West Los Angeles
LAWV	L.A. West Valley
LB	Long Beach
LC	Los Angeles County
LF	La Canada-Flintridge
LH	La Habra Heights
LK	Lakewood
LM	La Mirada
LN	Lawndale
LO	Lomita
LP	La Puente
LR	Lancaster
LV	La Verne
LY	Lynwood
MA	Malibu
MB	Manhattan Beach
MN	Montebello
MO	Monrovia
MP	Monterey Park
MY	Maywood
NO	Norwalk
PA	Paramount
PD	Palmdale
PO	Pomona
PR	Pico Rivera
PS	Pasadena
PV	Palos Verdes Estates
RB	Redondo Beach
RE	Rolling Hills Estates
RH	Rolling Hills
RM	Rosemead
RP	Rancho Palos Verdes
SC	Santa Clarita
SD	San Dimas
SE	South El Monte
SF	San Fernando
SG	South Gate
SH	Signal Hill
SL	San Gabriel
SM	Santa Monica
SO	San Marino
SP	South Pasadena
SR	Sierra Madre
SS	Santa Fe Springs
TC	Temple City
TO	Torrance
VE	Vernon
WA	Walnut
WC	West Covina
WD	West Hollywood
WH	Whittier
WV	Westlake Village

QUALITY CLASS CODE

The Quality Class and Shape Code consists of the following:

1. An alphabetic construction type code.
2. A numeric quality rating code.
3. An alphabetic shape code.

Examples: D4A, D5.5C, C5B

Construction Type

Class "A" Structures: Buildings have fireproofed structural steel frames carrying all wall, filoor, and roof loads. Wall, floor, and roof structures are built on noncombustible materials.

Class "B" Structures: Buildings having fireproofed reinforced concrete frames carrying all wall, floor, and roof loads. Wall, floor, and roof structures are built of noncombustible materials.

Class "C" Structures: Building having exterior walls built of a noncombustible material such as brick, concrete block, or poured-in-place concrete. Interior partitions and roof structures are built of combustible materials. Floor may be concrete or wood frame.

Class "D" Structures: Buildings having wood or wood and steel frame.

Class "S" Structures: Those specialized buildings that do not fit in any of the above categories.

QUALITY CLASS

The most significant and difficult step in the classification process is the assignment of a quality class. Quality classes are designated by numbers, usually between 1 and 12.5. They are assigned on the basis of a comparison to numbered descriptions of typical buildings of various quality levels. Each section of an appraiser manual dealing with the different design and construction types contains a set of applicable specifications. (See Attachment A for sample.)

Quality classes may be divided into half classes and designated with a decimal number. A building that is better than the 5 quality level but not as good as the 6 level will be designated as Class 5.5 quality. The square foot cost tables will show a cost between the Class 5 and 6 levels for this class. However, the decimal point does not form part of the code on the computer files. For example, a quality class of C5.5A will be encoded as C55A, and D12.5A as D125A.

NOTE: The "C" in C55A and the "D" in D125A refer to construction type above.

When a building is unique from the standpoint of size, construction and/or cost, it may not lend itself to being classified and costed using the standard quality level classification. In these limited situations, the letter "X" classification is used, such as DX or CX, to indicate thus and consequently a derived cost factor that was used in place of the regular cost tables, to arrive at a proper value on the improvement.

Shape classification considers any cost differences that may arise from variations in building outline. Shape classification considerations vary somewhat with different building types.

A. Residential

Building Shape and Its Cost

One of the components of a building's cost is its shape. If, while maintaining the same square footage, a building's desigin is adjusted to have more lineal feet of perimeter wall (increased shape), there will be a corresponding increase in construction costs.

Measurement of Shape

In order to reflect this additional cost, the appraiser needs to have some method of measuring the amount of shape. Briefly stated, this is accomplished by comparing the lineal footage of building perimeter with the building square footage.

NOTE: The assigned shape is most importantly a method of reflecting building cost. The final shape selected by the appraiser as part of the quality class determination process may differ from that initially taken from the shape classification table. In the end, shape is a fine tuning of the assigned quality class in order to properly weight quality additives and subtractives.

B. Commercial/Industrial

1. Most structures for commercial/industrial purposes (manufacturing buildings, general offices, banks, warehouses, etc.) may have one of the following shapes:

   A: The longest dimension does not exceed the shortest dimension by more than 2 times.

   B: The longest dimension does not exceed the shortest dimension by more than 4 times.

   C: The longest dimension exceeds the shortest dimension by 4 or more times.

2. Commercial Stores

   A: Length is less than twice the width.

   B: Length is between 2 and 4 times the width.

   C: Length is more than 4 times the width.

3. Suburban Stores

   A: Depth is greater than the front.

   B: Front is between 1 and 2 times the depth.

   C: Front is between 2 and 4 times the depth.

   D: Front is greater than 4 times the depth.

4. Funeral Homes

   A: Length is less than twice the width, or building has less than 16 corners.

   B: Overall length is greater than twice the overall width, or building has more than 16 corners.

PROPERTY USE CLASSIFICATION CHART

0000 RESIDENTIAL

00 (OPEN)

010V VACANT LAND

01 SINGLE

3rd Character		4th Character	
0	Open	1	Pool
1	High value residence X cost classification	3	Pool and misc.
		4	Therapy pool (spa)
T	Wireless communication tower	5	Tennis court
		8	Guesthouse
		9	Other improvements only
	CONDOMINIUM ONLY	C	Condominium
		D	Planned unit development (PUD)
	3rd Character	E	Condo conversion
D	Detached	F	Cooperative
H	High rise 5 stories or more	G	Mills Act property
		H	Own-your-own
2	Townhouse format	L	Lift (entered by lift desk only.)
		M	Modular
		X	Vacant parcel that has improvement value due to existing non-structural other imps.

02 DOUBLE, DUPLEX OR TWO UNITS
03 THREE UNITS (ANY COMBINATION)
04 FOUR UNITS (ANY COMBINATION)
05 FIVE OR MORE APARTMENTS OR UNITS. COOPERATIVE OR OWN-YOUR-OWN PROJECTS NOT SEPARATELY PARCELED.

3rd Character		4th Character	
0	4 stories or less	1	Pool
5	5 stories or more	3	Pools and misc.
T	Wireless communication tower	9	Other improvements only
		A	Cooperative
		B	Own-your-own
		C	Condominium
		G	Mills Act property
		L	Lift (entered by lift desk only.)
		M	Modular
		V	Vacant
		X	Vacant parcel that has improvement value due to existing non-structural other imps.

06 (OPEN)

07 MANUFACTURED HOMES

3rd Character		4th Character	
0	Single residence	0	Assessed by RP (Permanent foundation)
1	Multiple residence	P	Assessed by PP (No permanent foundation)

08 ROOMING/BOARDING HOUSE

09 MANUFACTURED HOME PARK

3rd Character		4th Character	
0	None	1	Pool
1	Own-your-own lot		
T	Wireless communication tower		

1000 [3] COMMERCIAL

100V VACANT LAND

10 COMMERCIAL

3rd Character	
0	Open
1	Miscellaneous commercial
2	Artist in residence

11 STORE

12 STORE COMBINATION (WITH OFFICE OR RESIDENTIAL)

3rd Character	
0	Store & office combination
1	Store & residential combination

13 DEPARTMENT STORE

3rd Character	
1	Discount department store (Target, etc.)
2	Building supplies (Home Depot, etc.)
3	Home furnishings (Ethan Allen, etc.)
4	Retail-warehouse combo. (Levitz, etc.)
5	Warehouse store (Costco, etc.)

14 SUPERMARKET

3rd Character	
0	Supermarket - 12,000 sf or more
1	Supermarket - 6,000 sf through 11,999 sf
2	Small food store - less than 6,000 sf

15 SHOPPING CENTER (NEIGHBORHOOD, COMMUNITY)

16 SHOPPING CENTER (REGIONAL)

17 OFFICE BUILDING

3rd Character	
1	Loft-type buildings
2	Office and residential

18 HOTEL AND MOTEL

3rd Character	
0	Hotel - under 50 rooms
1	Hotel - 50 rooms and over
2	Motel - under 50 rooms
3	Motel - 50 rooms and over
4	Motel/hotel and apartment combinations - under 50 units
5	Motel/hotel and apartment combinations - 50 units and over

19 PROFESSIONAL BUILDING

3rd Character	
1	Medical dental building
2	Veterinary hospital, clinic

2000 [3] COMMERCIAL

20 (OPEN)

200V VACANT LAND

21 RESTAURANT, COCKTAIL LOUNGE

3rd Character	
0	Restaurant, cocktail lounge, tavern
1	Fast food-walk up
2	Fast food-auto oriented

22 WHOLESALE AND MANUFACTURING OUTLET

23 BANK, SAVINGS & LOAN

24 SERVICE SHOP
RADIO & TELEVISION REPAIR
REFRIGERATION SERVICE
PAINT SHOP
ELECTRIC REPAIR
LAUNDRY

25 SERVICE STATION

3rd Character		4th Character	
0	Full service	0	No add'l services
1	Self service	1	Convenience store
2	W/ Car wash	2	Fast food
3	Card lock (See note)	3	Service bay
		4	Conv. store, fast food,
		5	Conv.store, service bay
		6	Conv. store, fast food, & service bay

Note: Card lock fuel stations are unmanned, automated fueling stations.

26 AUTO, RECREATION EQUIPMENT, CONSTRUCTION EQUIPMENT SALES AND SERVICE

3rd Character	
0	Auto body repair shop
1	Used car sales
2	New car sales and service
3	Car wash only
4	Car wash only, self-service type
5	Recreation equipment sales & service (campers, motor homes & boats)
6	Farm and construction equipment sales & service
7	Auto service centers (no gasoline)

27 PARKING LOT (COMMERCIAL USE PROPERTY)

3rd Character	
0	Lots-patron or employee
1	Lots-commercial parking
2	Parking structures-patron or employee
3	Parking structures-commercial parking

28 ANIMAL KENNEL

29 NURSERY OR GREENHOUSE

[3] For the third and fourth characters.

THIRD CHARACTER

T Describes properties with wireless communication tower.

FOURTH CHARACTER

For improved properties, the 4th character describes the number of stories in the main structure (with the exception of lifts, condominiums or Mills Act.) (See Section 2.4C.)

0	One story	9	Other improvements only
2-5	To indicate the # of stories from 2 through 5	L	Lift (entered by Lift Desk Section ONLY)
6	To indicate 6 through 13 stories	G	Mills Act property
7	To indicate 14 through 20 stories	X	Vacant parcel that has improvement value due to existing non-structural other improvements (e.g., fences, block walls, light fixtures, spur track, paving that is not used for parking, service station canopies, etc.). This is used for Measure B purposes.
8	To indicate over 20 stories		

PROPERTY USE CLASSIFICATION CHART

3000 [4] INDUSTRIAL	4000 [4] IRRIGATED FARM	5000 [4] DRY FARM
300V VACANT LAND	40 (OPEN)	50 (OPEN)
30 INDUSTRIAL *3rd Character* 0 Open 1 Miscellaneous industrial 2 Artist-in-residence	4010 PRIVATE RURAL PUMPING PLANT	51 FRUITS & NUTS
	41 FRUITS & NUTS	52 VINEYARD
	42 VINEYARD	53 FIELD CROPS
31 LIGHT MANUFACTURING SMALL EQUIPMENT MANUFACTURING SMALL MACHINE SHOP INSTRUMENT MANUFACTURING PRINTING PLANT	43 VINE & BUSH FRUITS	54 PASTURE
	44 TRUCK CROPS	55 TIMBER - PINE
32 HEAVY MANUFACTURING	45 FIELD CROPS	56 TIMBER - FIR
33 WAREHOUSING, DISTRIBUTION, STORAGE *3rd Character* 0 Warehousing, distribution, under 10,000 sf 1 Warehousing, distribution, 10,000 to 24,999 sf 2 Warehousing, distribution, 25,000 to 50,000 sf 3 Warehousing, distribution, over 50,000 sf 4 Public storage (Bekins, Lyons) 5 Public storage - mini warehouse	46 PASTURE	57 TIMBER- REDWOOD
	47 DAIRY	58 DESERT
	48 POULTRY, ETC.	59 WASTE
	49 FEED LOT	
34 FOOD PROCESSING PLANT *3rd Character* 0 Meat 1 Beverage 2 Other		
35 MOTION PICTURE, RADIO AND TELEVISION INDUSTRY *3rd Character* 0 Studio 1 Transmission facility 2 Microwave relay tower		
36 LUMBER YARD		
37 MINERAL PROCESSING *3rd Character* 1 Cement, rock & gravel plant 2 Petroleum refinery, chemical plant		
38 PARKING LOT (INDUSTRIAL USE PROPERTY)		
39 OPEN STORAGE *3rd Character* 1 Trucking company, terminal 2 Contractor storage yard		

[4] For the third and fourth characters.

THIRD CHARACTER

T Describes properties with wireless communication tower.

FOURTH CHARACTER

For improved properties, the 4th character describes the number of stories in the main structure (with the exception of lifts, condominiums or Mills Act.) (See Section 2.4C.)

0 One story
2-5 To indicate the # of stories from 2 through 5
6 To indicate 6 through 13 stories
7 To indicate 14 through 20 stories
8 To indicate over 20 stories
9 Other improvements only
L Lift (entered by Lift Desk Section ONLY)
G Mills Act property
X Vacant parcel that has improvement value due to existing non-structural other improvements (e.g., fences, block walls, light fixtures, spur track, paving that is not used for parking, service station canopies, etc.). This is used for Measure B purposes.

PROPERTY USE CLASSIFICATION CHART

6000 [5] RECREATIONAL

60 (OPEN)

61 THEATER

3rd Character
0 Movie - indoor
1 Movie - drive-in
2 Legitimate (stage) theater

62 WATER RECREATION

3rd Character
1 Fee owned boat slip

63 BOWLING ALLEY

64 CLUB, LODGE HALL, FRATERNAL ORGANIZATION

65 ATHLETIC AND AMUSEMENT FACILITY

3rd Character
0 Auditorium, stadium, amphitheater
1 Amusement facility
2 Commercial swimming pools, school
3 Gymnasium, health spa
4 Dance hall
5 Tennis court, club, pro shop

66 GOLF COURSE

3rd Character
1 Non profit
2 Three par
3 Miniature

67 RACE TRACK

3rd Character
1 Horse stable - private

68 CAMP

3rd Character
1 Trailer and camper park (overnight)

69 SKATING RINK

3rd Character
0 Ice
1 Roller

7000 [5] INSTITUIONAL

70 CHILDREN'S DAY CARE CENTER

71 CHURCH

3rd Character
1 Church parking lot

72 SCHOOL (PRIVATE)

73 COLLEGE, UNIVERSITY (PRIVATE)

74 HOSPITAL

3rd Character
1 Convalescent hospital, nursing home

75 HOMES FOR AGED & OTHERS

76 SENIOR DAY CARE CENTER

3rd Character
0 Adult care facility - social and recreational services
1 Adult day services - skilled care services offered

77 CEMETERY, MAUSOLEUM, MORTUARY

3rd Character
0 Cemetery, mausoleum
1 Mortuary, funeral home

78 (OPEN)

79 (OPEN)

8000 MISCELLANEOUS

80 PRIVATELY OWNED

3rd Character
1 Misc. privately owned properties that do not fall into any other classification. (e.g. fire stations, reservoirs, or airports.)

81 UTILITY
COMMERCIAL & MUTUAL: PUMPING PLANT
STATE ASSESSED PROPERTY

82 MINING

83 PETROLEUM & GAS

84 PIPELINE, CANAL

85 RIGHTS OF WAY

86 WATER RIGHTS

87 RIVERS & LAKES

8800 GOVERNMENT OWNED PROPERTY ("900" Parcels)

8800 (OPEN)

880V VACANT LAND

8810 Rights of way, general

8811 Street, road, highway

8812 Future street, alley, etc.

8813 Power transmission lines

8814 Sewers, utilities

8820 Government services, general

8821 City hall, administration center

[5] For the third and fourth characters.

THIRD CHARACTER

T Describes properties with wireless communication tower.

FOURTH CHARACTER

For improved properties, the 4th character describes the number of stories in the main structure (with the exception of lifts, condominiums or Mills Act.) (See Section 2.4C.)

0 One story
2-5 To indicate the # of stories from 2 through 5
6 To indicate 6 through 13 stories
7 To indicate 14 through 20 stories
8 To indicate over 20 stories
9 Other improvements only
L Lift (entered by Lift Desk Section ONLY)
G Mills Act property
X Vacant parcel that has improvement value due to existing non-structural other improvements (e.g., fences, block walls, light fixtures, spur track, paving that is not used for parking, service station canopies, etc.). This is used for Measure B purposes.

PROPERTY USE CLASSIFICATION CHART

8800 GOVERNMENT OWNED PROPERTY ("900" Parcels)	8800 GOVERNMENT OWNED PROPERTY (CONT.) ("900" Parcels)	8800 GOVERNMENT OWNED PROPERTY (CONT.) ("900" Parcels)
8822 Auxiliary and regional center	8850 Water related facilities, general	8899 Government property and possessory interest not classified in any of above
8823 Police and fire station	8851 Small boat marina	8900 Dump site
8824 Utilities office, (power, water, etc.)	8852 Boat slip	
8825 Welfare and social services	8853 Boat mooring	
8826 Postal facility	8854 Pier, wharf	
8827 Library	8855 Flood control drainage	
8828 Court building, jail	8856 Irrigation - related	
8829 Military post	8857 Dam	
8830 Public school, general	8858 Reservoir, tank underground storage	
8831 College	8859 Watershed	
8832 High school	8860 Transportation, general	
8833 Elementary school	8861 Harbor & related	
8834 School administration center	8862 Airport, general	
8835 School service center	8863 Airport, t-hanger	
8840 Recreation, general	8864 Airport, tie-down	
8841 Public park	8865 Airport, fixed - base operator	
8842 Art center, museum	8866 Rapid transit, bus, etc.	
8843 Public swimming pool	8870 Concession on public property	
8844 Sports stadium	8871 Food concession	
8845 Beach	8872 Souvenir shop	
8846 Horse stable	8873 Parking lot lease	
8847 Amusement ride	8874 Office space lease	
8848 Ball field (Little League, etc.)	8890 Community redevelopment	
8849 Youth facility (Scouts, etc.)	8891 Public housing	

BUILDING DESIGN TYPE CLASSIFICATION CHART

0000 [6] RESIDENTIAL

00 (OPEN)

01 SINGLE

3rd Character		4th Character	
0	None or unknown	0	None
1	Floor or wall heat	1	Pool
2	Central heat (any type)	2	Miscellaneous
3	Central refrigeration & heat	3	Pool and miscellaneous
4	Central solar heat	4	Therapy pool (spa)
		5	Pool with solar heating

02 DOUBLE, DUPLEX OR TWO UNITS
03 THREE UNITS (ANY COMBINATION)
04 FOUR UNITS (ANY COMBINATION)
05 FIVE OR MORE APARTMENTS OR UNITS; FOUR STORIES AND LESS

3rd Character		4th Character	
0	None	0	None
1	Kitchen built-ins	1	Pool
2	Refrigerated A/C	2	Miscellaneous
3	Kitchen built-ins + A/C		

0550 MULTI-STORY APARTMENT (5 STORIES & OVER)

4th Character	
0	None
1	Pool
2	Miscellaneous

06 MODULAR HOME

3rd Character		4th Character	
0	None or unknown	0	None
1	Floor or wall heat	1	Pool
2	Central heat	2	Miscellaneous
3	Central refrigeration & heat	3	Pool and miscellaneous
4	Central solar heat	4	Therapy pool (spa)
		5	Pool with solar heating

07 MANUFACTURED HOME

3rd Character		4th Character	
		0	None
S	Single-wide	4	Therapy pool (spa)
D	Double-wide	E	With Expando
Q	Quad-wide	M	Miscellaneous (carport, garage, porch, patio or storage)
L	Licensed by DMV	T	With tag-a-long
T	Triple-wide	Y	With other type of living area

08 ROOMING HOUSE

09 MANUFACTURED HOME PARK

3rd Character		4th Character	
0	None	0	None
		1	Pool
		2	Recreation building
		3	Pool & rec. building

1000 [6] COMMERCIAL

10 (OPEN)

1010 MISCELLANEOUS COMMERCIAL

11 STORE

3rd Character		4th Character	
0	None	0	None
		1	Air conditioned

12 STORE & OFFICE (W OR W/O RESIDENTIAL COMBINATION)

3rd Character		4th Character	
0	None	0	None
1	Residential Combination	1	Air conditioned

13 DEPARTMENT STORE

14 SUPERMARKET (8,000 SF OR MORE)

3rd Character		4th Character	
0	None	0	None
		1	Air conditioned

15 SHOPPING CENTER (NEIGHBORHOOD, COMMUNITY)

16 SHOPPING CENTER (REGIONAL)

17 OFFICE BUILDING

18 HOTEL & MOTEL

3rd Character		4th Character	
0	None	0	None
1	Hotel	1	Pool
2	Motel		

19 PROFESSIONAL BUILDING

3rd Character		4th Character	
0	None	0	None
		1	Air conditioned

2000 [6] COMMERCIAL

20 (OPEN)

21 RESTAURANT, COCKTAIL LOUNGE, DRIVE-IN, COFFEE SHOP, ETC.

3rd Character		4th Character	
0	None	0	None
		1	Air conditioned

22 WHOLESALE AND MANUFACTURING OUTLET

23 BANK, SAVINGS & LOAN

3rd Character		4th Character	
0	None	0	None
1	Bank	1	Air conditioned
2	Savings & loan		
3	Insurance co.		
4	Mortgage co.		

24 SERVICE SHOP
RADIO & TELEVISION REPAIR
REFRIGERATION SERVICE
PAINT SHOP
ELECTRIC REPAIR
LAUNDRY

3rd Character		4th Character	
0	None	0	None
		1	Air conditioned

25 SERVICE STATION

3rd Character		4th Character	
0	None	0	None
1	Equipment only	1	Paving only

26 AUTO, RECREATION EQUIPMENT, CONSTRUCTION EQUIPMENT SALES & SERVICE

27 PARKING LOT (COMMERCIAL OR PATRON)

2710 PARKING - GARAGE STRUCTURE

28 ANIMAL KENNEL

29 NURSERY & GREENHOUSE

3rd Character		4th Character	
0	None	0	None
		1	Air conditioned

[6] FOURTH CHARACTER

X To indicate a subpart which is a non-structural other improvement (e.g., fences, block walls, light fixtures, spur track, paving that is not used for parking, service station canopies, etc.). This is for Measure B purposes.

BUILDING DESIGN TYPE CLASSIFICATION CHART

3000 [7] INDUSTRIAL	4000 [7] IRRIGATED FARM	5000 [7] DRY FARM
30 (OPEN)	40 (OPEN)	50 (OPEN)
3010 MISCELLANEOUS INDUSTRIAL	4010 PRIVATE RURAL PUMPING PLANT	51 FRUIT & NUT TREES
31 LIGHT MANUFACTURING SMALL EQUIPMENT MANUFACTURING SMALL MACHINE SHOP INSTRUMENT MANUFACTURING PRINTING PLANT	41 FRUIT & NUT TREES	52 VINEYARD IMPROVEMENTS
	42 VINEYARD IMPROVEMENTS	53 FIELD CROP IMPROVEMENTS
32 HEAVY INDUSTRIAL *3rd Character* 0 None 1 Aircraft or missile 2 Auto assembly plant 3 Electrical products 4 Cold storage plant 5 Electronic manufacturing 6 Glass or paint & varnish plant 7 Grain mill 8 Metal products manufacturing 9 Movie, television, radio industry B Plastic products (major) C Port & harbor facility D Research & development lab E Rubber products F Wood, paper, or fiber plant G Lease	43 (OPEN)	54 PASTURE IMPROVEMENTS
	44 TRUCK CROP IMPROVEMENTS	55 TIMBER-PINE
	45 FIELD CROP IMPROVEMENTS	56 TIMBER-FIR
	46 PASTURE IMPROVEMENTS	57 TIMBER-REDWOOD
	47 DAIRY IMPROVEMENTS	
	48 POULTRY IMPROVEMENTS	
	49 FEED LOT IMPROVEMENTS	
33 WAREHOUSING, DISTRIBUTION, STORAGE		
34 FOOD PROCESSING PLANT		
35 MOTION PICTURE, RADIO AND TELEVISION INDUSTRY		
36 LUMBER YARD		
37 MINERAL PROCESSING		
38 PARKING LOTS (INDUSTRIAL USE PROPERTY)		
39 OPEN STORAGE		

[7] FOURTH CHARACTER

X To indicate a subpart which is a non-structural other improvement (e.g., fences, block walls, light fixtures, spur track, paving that is not used for parking, service station canopies, etc.). This is for Measure B purposes.

BUILDING DESIGN TYPE CLASSIFICATION CHART

6000 [8] RECREATIONAL	7000 [8] INSTITUTIONAL	8000 [8] MISCELLANEOUS
60 (OPEN)	70 (OPEN)	80 (OPEN)
6010 (OPEN)	71 CHURCH *3rd Character* 1 Convents 2 Rectories	81 UTILITY (COMMERCIAL & MUTUAL PUMPING PLANT) STATE ASSESSED PROPERTY
61 THEATER *3rd Character* 0 Movie indoor 1 Movie drive-in	72 SCHOOL	82 MINING
62 WATER RECREATION *3rd Character* 1 Fee owned boat slip	73 COLLEGE	83 PETROLEUM & GAS
63 BOWLING CENTER	74 HOSPITAL	84 PIPELINE, CANAL
64 CLUB, LODGE HALL, FRATERNAL ORGANIZATION	75 HOME FOR AGED & OTHERS	85 (OPEN)
65 ATHLETIC AND AMUSEMENT FACILITY	76 SENIOR DAY CARE CENTER	86 (OPEN)
66 GOLF COURSE	77 CEMETERY, MAUSOLEUM, MORTUARY *3rd Character* 0 Cemetery Misc. - taxable Measure B 1 Mortuaries - taxable Measure B 2 Mausoleum, columbarium, crypt, niche, vault - not taxable for Measure B 3 Administrative/retail - office, chapel, auditorium, bungalow, flower shop, other retail - taxable Measure B 4 Crematorium, prep rooms, slumber rooms, retorts - taxable Measure B 5 Manufacturing - machine shop, large manufacturing building, large utility building, large maintenance building, large warehouse building, restroom building - taxable Measure B *4th Character* X Minor bldg/RCN other - small shed, pumping plant, greenhouse, gas tanks, pumps, gardens, pools, yard lights, stripes, bumpers, edging, etc. - not taxable for Measure B	87 (OPEN)
67 RACE TRACK IMPROVEMENTS	78 (OPEN)	88 HIGHWAY & STREET; GOVERNMENT OWNED PROPERTY ("900" SERIES PARCELS) *3rd Character* 0 Not in use 1 In use, but not otherwise codeable
68 CAMP IMPROVEMENTS	79 (OPEN)	
69 SKATING RINK		

[8] FOURTH CHARACTER

X. To indicate a subpart which is a non-structural other improvement (e.g., fences, block walls, light fixtures, spur track, paving that is not used for parking, service station canopies, etc.). This is for Measure B purposes.

Note: The 4th digit in "7700" series indicates - Minor building/RCN other - other shed, pumping plant, greenhouse, gas tanks, pumps, gardens, pools, yard lights, stripes, bumpers, edging, not taxable for Measure B.

CLASS SPECIFICATIONS | TYPICAL D7.0 SHAPE A | CLASS WORKSHEET

SUBJECT VARIATIONS | COST ADJUSTMENTS

FOUNDATION - slab to code
STRUCTURAL - wood frame, insulated
WINDOWS - anodized sliding aluminum
EXTERIOR Wall - stucco
Veneer - 1.00% See 531.20, page 70.
Trim - " "
Sliding Doors - (1) or (2) 10 total L.F.
FIREPLACE Type - (1) single, masonry
Facing - 8' x 5' face brick
ROOF STYLE - hip or gable, medium pitch
Overhang - 2 ft., not finished
ROOF COVER - medium shake
ELECTRICAL - romex, 175 amp/ w/A.C.
Fixtures - medium quality
PLUMBING - medium grade
No. Fixtures - 10
Water Heater - 1
INTERIOR FINISH - drywall, spray plaster ceiling
HEATING - forced air
COOLING - refrigeration
FLOOR MATERIAL - ceramic tile entry (6' x 8')
medium quality carpet and lino.
KITCHEN Cabinets - 23 L.F. ash or birch veneer
Counters - 16 L.F. tile or formica; coved, full splash
Built-ins - disposal, range and oven, dishwasher
Features - none

Bath	Master	2	3	4	5
Water Closet	1	1			
Lavatory	1	1			
Tub	1	none			
Shower	O.T. G.D. 5' tile	G.D. tile			
Pullman	5' pl.mbl.	3'pl.mbl			

SPECIAL FEATURES
Wet bar - None
Other -
Vaulted or beamed ceiling (2) rooms
or
(2) panelled walls
7 ft. wide wardrobe each bedroom
5 ft. linen closet

Total Adjustments

SUBJECT CLASS

SBF_GRIFFITH

AIN	TRA	AGENCY_CLASS_NBR	LAND_CURR_ROLL_YR	LAND_CURR_VAL
5581001001	02530	000000	2007	000000352
2443022901	00013	236000	2007	000076916
5434016901	00013	236000	2007	000181874
5434039901	00013	236000	2007	000333011
5581017900	00013	236000	2007	000000000
5581010900	00013	236000	2007	000000000
5581010901	00013	236000	2007	000010625
5581010902	00013	236000	2007	000022538
5581011900	00013	236000	2007	000000000
5581012900	00013	236000	2007	000000000
5581013900	00013	236000	2007	000000000
5581013901	00013	236000	2007	000000000
5581008900	00013	236000	2007	000000000
5581001905	02530	236000	2007	000001276
5581001906	00013	236000	2007	000000000
5581005901	00013	236000	2007	000029851
5581005902	00013	236960	2007	000000000
5581006900	00013	236000	2007	000150811
5588036900	00013	236000	2007	000140895
5588001900	00013	236000	2007	000217749
5587025901	00013	236000	2007	000023818
5594016901	00013	236000	2007	000025227
5594016902	00013	236000	2007	000085431
5593002904	00013	236000	2007	000003964
5593002906	00013	236000	2007	004214201
5593002908	00013	236000	2007	000384268
5593002910	00013	236000	2007	001665183
5593002912	00013	236000	2007	004098922
5593002913	00013	236000	2007	001280910
5593002917	00013	236000	2007	000000000
5593030903	00013	236000	2007	000326627
5593030904	00013	236000	2007	000318941
5581001903	00013	236920	2007	000000124
5593002902	00013	236920	2007	000006528
5434016900	00013	236960	2007	000074286
5587027900	00013	236960	2007	000158827
5434038901	00013	236000	2007	000230560
5582001900	00013	236000	2007	000000000
5581026900	00013	236000	2007	000000000
5583025900	00013	236000	2007	000000000
5593002905	00013	236000	2007	019546749
5593002907	00013	236000	2007	000484179
5593002909	00013	236000	2007	000330469
5593003908	00013	100220	2007	000000124
5581016900	00013	236000	2007	000000000
5581011901	00013	236000	2007	000000000
5581014900	00013	236000	2007	000000000
5581001904	00013	236000	2007	000001914
5587025900	00013	236000	2007	000095293
5593002911	00013	236000	2007	008243960

IMPROVE_CURR_ROLL_YR	IMPROVE_CURR_VAL	SA_HOUSE_NBR	SA_FRACTION	SA_DIRECTION
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2007	000000000	00000		
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2007	000000000	03201		
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2007	000000000	00000		
2007	000000000	00000		

SBF_GRIFFITH

SA_STREET	SA_UNIT	SA_CITY_STATE	SA_ZIP	MA_HOUSE_NBR
			000000000	06312
			000000000	00000
RIVERSIDE DR		LOS ANGELES CA	900270000	03210
RIVERSIDE DR		LOS ANGELES CA	900270000	03201
			000000000	00000
			000000000	00000
			000000000	00000
			000000000	00000
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VERMONT AVE		LOS ANGELES CA	900270000	00000
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			000000000	00000
			000000000	00000
			000000000	00000
			000000000	00000
			000000000	00000
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			000000000	00000
			000000000	00000
RIVERSIDE DR		LOS ANGELES CA	900270000	03401
			000000000	00000
			000000000	00000
			000000000	00000
ZOO DR		LOS ANGELES CA	900270000	00000
			000000000	00000
			000000000	00000
			000000000	00500
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			000000000	00000
			000000000	00000
			000000000	00000
			000000000	00000
			000000000	00000

MA_FRACTION	MA_DIRECTION	MA_STREET	MA_UNIT	MA_CITY_STATE
		ELGIN ST		LOS ANGELES CA
		RIVERSIDE DR		LOS ANGELES CA
		RIVERSIDE DR		LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA
	E	1ST ST	RM 201	LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA
		RIVERSIDE DR		LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA
	W	TEMPLE ST	RM 754	LOS ANGELES CA
		P O BOX 51111		LOS ANGELES CA

MA_ZIP	FIRST_OWNER_NAME	FIRST_OWNER_NAME_OVFW
900420000	CORRAL,ISABEL	
000000000	L A CITY	
900270000	L A CITY	
900270000	L A CITY	
000000000	L A CITY	
000000000	L A CITY	
000000000	L A CITY	
000000000	L A CITY	
000000000	L A CITY	
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900510000	L A CITY	
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900120000	L A CITY	
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900510000	L A CITY	
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900510000	L A CITY	
900510000	L A CITY	
000000000	L A CITY	
900510000	L A CITY DEPT OF WATER AND POWER	
900510000	L A CITY DEPT OF WATER AND POWER	
000000000	L A CITY PARK	
000000000	L A CITY PARK	
900270000	L A CITY	
000000000	L A CITY	
000000000	L A CITY	
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900510000	L A CITY	
900510000	L A CITY	
900510000	L A CITY	
900120000	L A CO FLOOD CONTROL DIST	
000000000	L A CITY	
000000000	L A CITY	
000000000	L A CITY	
000000000	L A CITY	
000000000	L A CITY	
900510000	L A CITY	

SPECIAL_NAME_LEGEND	SPECIAL_NAME_ASSEE	SECND_OWNER_ASSEE_NAME
C/O	REAL EST BUS GROUP-JUNE	
C/O	ROBERT C. HOLLOWAY	
C/O	REAL EST BUS GROUP - JUNE	
C/O	REAL EST BUS GROUP - JUNE	
C/O	REAL EST BUS GROUP - JUNE	
C/O	REAL EST BUS GROUP - JUNE	
C/O	REAL EST BUS GROUP - JUNE	
C/O	REAL EST BUS GROUP - JUNE	
C/O	REAL EST BUS GROUP - JUNE	
C/O	REAL EST BUS GROUP - JUNE	
C/O	REAL EST BUS GROUP - JUNE	
C/O	REAL EST BUS GROUP - JUNE	
C/O	REAL EST BUS GROUP - JUNE	

SBF_GRIFFITH

RECORDING_DATE	TAX_STAT_KEY	TAX_STAT_YR_SOLD_STATE	HA_CITY_KEY	HA_INFO
19640225	0	0000		0000000000
19780000	3	0000		0000000000
19590824	3	0000		0000000000
19590820	3	0000		0000000000
19670245	3	0000		0000000000
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19790405	3	0000		0000000000
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19670245	3	0000		0000000000
19880301	3	0000		0000000000
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ZONING_CODE	USE_CODE	PARTIAL_INT	DOC_REASON_CODE	OWNERSHIP_CODE
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LAOS	8800	000		
LAR1	8800	000		
LAOS	8800	000		
LAOS	8800	000		
LAOS	8800	000		
LAOS	880V	000	K	X
LAOS	880V	000	K	X
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LAA1	8846	000		
LARE40	770V	000	Z	3
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LAA1	770V	000	Z	3
LAOS	8800	000		
LAOS	8800	000		
LAR1	8800	000		
LAOS	8800	000		
LAOS	8800	000		
	8800	000		
	8800	000		
LAOS	8800	000		
LAPF	8800	000		
	8800	000		
	8800	000		
LAOS	8800	000		
LAPF	8800	000		
LAPF	8800	000		
LAOS	8800	000		
LAOS	8800	000		
LAR2	8800	000		
LAR1-1*	8800	000		
LAOS	8800	000		
LAOS	8800	000		
LARE9	8800	000		
LARE15	8800	000		
LAPF	8800	000		
LAOS	8800	000		
LAOS	8800	000		
LAM2	8800	000		
LAOS	8800	000		
LAOS	8800	000		
LAOS	8800	000		
LAOS	8800	000		
LARE11	8800	000		
	8900	000		

SBF_GRIFFITH

EXMPT_CLAIM_TYPE	PP_KEY	PP_VAL	PP_EXMPT_VAL	FIXTURE_VAL	FIXTURE_EXMPT_VAL
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000	000000000	000000000	1

SBF_GRIFFITH

LS1_SALE_AMT	LS1_SALE_DATE	LS2_VERIFICATION_KEY	LS2_SALE_AMT	LS2_SALE_DATE
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000000000	00000000		000000000	00000000

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	000000000	00000000	0000	
	000000000	00000000	0000	

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	0000	000	00	00
	0000	000	00	00

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0000000	0000			0000

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000	00	00	0000000	0000
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		0000	000	00
		0000	000	00

BDL3_NBR_BATHS	BDL3_SQFT_IMPROV	BDL4_SUBPART	BDL4_DESIGN_TYPE	BDL4_QLYCLSSHP
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00	0000000	0000		
00	0000000	0000		

BDL4_YR_BUILT	BDL4_NBR_UNITS	BDL4_NBR_BEDS	BDL4_NBR_BATHS	BDL4_SQFT_IMPROV
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0000	000	00	00	0000000
0000	000	00	00	0000000

BDL5_SUBPART	BDL5_DESIGN_TYPE	BDL5_QLYCLSSHP	BDL5_YR_BUILT	BDL5_NBR_UNITS
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0000			0000	000
0000			0000	000

BDL5_NBR_BEDS	BDL5_NBR_BATHS	BDL5_SQFT_IMPROV
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00	00	0000000
00	00	0000000

LDL1	LDL2
TRACT # 9766 EX OF FLOOD CONTROL	EASEMENT L A RIVER CHANNEL LOT
*TR=SUBDIVISION OF RANCHO PROVIDENCIA	AND SCOTT TRACT*LOT (EX OF ST) COM N
IVANHOE LOT COM NE ON SE LINE OF LOT 36	150 FT FROM MOST S COR OF SD LOT TH NE
IVANHOE EX OF STS LOTS 1,2,3,4,5,6,7 AND	LOT 8 BLK 1
EX OF ST LOT 2 TR NO 10781 AND ALL OF	LOTS 28 AND 29 BLK 4 TR NO 9367
LOT COM AT SW COR OF LOT 2 IN SEC 26 T	1N R 14W TH N ON W LINE OF SD LOT 440 FT
*LOT COM N 89›49' E 2199.99 FT AND N	398.92 FT FROM SW COR OF LOT 2 IN SEC
*LOT COM AT SE COR OF SEC 26 T 1N R	14W TH W 679.90 FT TH N 395.51 FT TH
TRACT NO 10781 LOT 6	
THAT PART DESC IN OR22071-300 S AND E	OF TR NO 10781 E NE 1/4 OF
TRACT NO 10781 LOT 5	
TRACT NO 10781 LOT 8	
LICENSED SURVEYOR'S MAP AS PER BK 22	PG 32 OF L S LOT COM AT MOST N COR OF
LAND DES IN DOC 1990, 74-4-18 TRACT	NO 9766 (EX OF ST) LOTS 181, 182,
M R 43-47-59 FOR DESC SEE ASSESSOR'S	MAPS POR OF SD RO
L S 22-32 FOR DESC SEE ASSESSOR'S MAPS	POR OF LOT 3
POR OF LOTS 2 AND 3 L S 22-32 AND POR OF	PROVIDENCIA PARK TRACT M R 43-47-59
M R 43-47-59 FOR DESC SEE ASSESSOR'S	MAPS POR OF SD RO
HILLHURST PARK 2.69 MORE OR LESS ACS	COM AT MOST W COR OF LOT 103 TRACT
HILLHURST PARK 4.79 MORE OR LESS ACS	BEING EX OF ST COM AT NE COR OF LOT 114
GRIFFITH'S SUB OF THE SOUTHERN SLOPE	OF THE RO LOS FELIZ AND OF LOTS 15 AND
LOT COM AT INTERSECTION OF NW LINE OF	RANCHO SAN RAFAEL PER FM12325 WITH W
LOT COM S 89›52'15" W 284 FT AND N 0›	08' W 150 FT FROM SW COR OF LOT 11 TR
RANCHO LOS FELIS COM AT SW COR OF SEC 29	T 1N R 13W TH E TO NE LINE OF RO LOS
RANCHO LOS FELIS EX OF ST AND EX LAND	DESC IN DDS 1900-274 TO L A CITY
RANCHO LOS FELIS LOT COM AT NW COR OF	SEC 5 T 1S R 13W TH S TO A PT S 81›54' W
RANCHO LOS FELIS LOT EX OF STS COM AT SE	COR OF SEC 24 T 1N R 14W TH N TO SW LINE
RANCHO LOS FELIS SEC 36 T 1N R 14W	
RANCHO LOS FELIS LOT COM AT NW COR OF	SEC 1 T 1S R 14W TH S ON W LINE OF SD
RO LOS FELIS FOR DESC SEE ASSESSOR'S	MAPS POR OF SEC 19 T 1N R 13W
LOT COM AT NW COR OF LOT 14 TR # 5673 TH	N ON W LINE OF SD TR 369.96 FT TH S 89›
LOT COM AT NW COR OF LOT 14 TR # 5673	TH S 610.09 FT TH N 89›52' E 100 FT TH S
SUBDIVISION OF RANCHO PROVIDENCIA	AND SCOTT TRACT THAT PART DESC IN
RANCHO LOS FELIS THAT PART DESC IN	DDS1900-274 IN GRIFFITH PARK
IVANHOE LOT COM AT NW COR OF LOT 30	BLK 3 TH N 86›30' E TO SW LINE OF
HILLHURST PARK LOT COM AT NE COR OF	LOT 25 TR # 4040 TH S ON E LINE OF SD
RANCHO LOS FELIS LOT COM AT INTERSECTION	OF N LINE OF IVANHOE WITH NE LINE OF
TRACT NO 10781 EX OF ST	LOT 1
TRACT NO 10781 LOT COM AT NE COR OF	LOT 2 BLK 19 TR NO 6450 TH S 78›49'19" E
LOT COM AT E 1/4 COR OF SEC 35 T 1N R	14W TH S 0›02'30" E TO S LINE OF SD SEC
LOT EX OF ST COM AT NW COR OF SEC 30 T	1N R 13W TH S TO SW COR OF SD SEC TH E
RANCHO LOS FELIS 72.39 MORE OR LESS ACS	BEING EX OF STS LOT COM AT SW COR OF
RANCHO LOS FELIS LOT COM AT NW COR OF	SEC 6 T 1S R 13W TH E TO NE COR OF SD
THAT PART IN GLENDALE CITY OF LOT COM SE	ON SW LINE OF S P R R R/W 924.56 FT
LOT 3 TRACT NO 10781 AND LOT 26 BLK 6	TRACT NO 9367
TRACT NO 10781 LOT 7	
TRACT NO 10781 LOT 4	
LAND DES IN DOC 1990, 74-4-18 SUBDIVI-	SION OF RANCHO PROVIDENCIA AND SCOTT
LOT COM AT MOST E COR OF LOT 8 TR # 4040	TH SW AND FOLLOWING BDRY LINE OF SD TR
RANCHO LOS FELIS LOT COM AT STA 23 TH N	21›42'55" E TO N LINE OF SEC 25 T 1N R

LDL3
39›42'58" W 20 FT FROM MOST S COR OF
ON SE LINES OF SD LOT AND LOT 37 TO SW
TH E 900 FT TH N 92 FT TH E 1200 FT TH
26 T 1N R 14W TH N 34.68 FT TH W 100
W 645.75 FT TH N 925.41 FT TH SE
SEC 35 T 1N R 14W
LOT 5 TH S 21›24' W 2949.20 FT TH N 13›
183, 184, 185, 186, 187, 188, 189, 190,
NO 27460 TH W ON W PROLONGATION OF N
TH SW ON NW LINE OF SD LOT TO W LINE
17 LICK TRACT LOT BD E AND NW BY FERN
PROLONGATION OF N LINE OF LOT 2 WATTS
11437 TH N 0›08' W 460 FT TH S 89›52'
FELIS PER F M 12325 TH NW THEREON TO W
SEC 31 T 1N R 13W
FROM MOST N COR OF TR # 9050 TH N 81›
OF SUBDIVISION OF RANCHO PROVIDENCIA AND
SEC TO NW COR OF HILLHURST PARK PER
52' W TO SW LINE OF RANCHO SAN RAFAEL
190.04 FT TH N 89›52' E 100 FT TH S 0›
DOC NO 2801, 6-24-71 OF PROVIDENCIA
RIVERSIDE DR TH SE THEREON 28.06 FT TH
TR TO NE LINE OF BLACK OAK DR TH SE
RIVERSIDE DR TH N 86›09' E TO SW LINE OF
56.43 FT TH NE ON A CURVE CONCAVE TO SE
TH W ON SD S LINE TO A PT E THEREON 60
TO SE COR OF SD SEC TH N TO NE LINE OF
SEC 32 T 1N R 13W TH N TO NW COR OF SD
SEC TH S TO A PT S 81›54' W FROM MOST N
FROM MOST N COR OF LOT 6 TR NO 646 TH S
TR AS PER BK 43 PGS 47 TO 59 OF M R
TO W LINE OF LOT 1 SD TR TH S 89›55'30"
14W TH E AND FOLLOWING BDRY LINE OF SD

LDL4
LOT 6 TR NO 9213 TH N 39›42'58" W TO
LINE OF RIVERSIDE DR TH NW THEREON TO NW
S 92 FT TH E 100 FT TH S TO S LINE OF
FT TH N 92 FT TH W TO W LINE OF LOT 3
1330.90 FT TH S 1230.47 FT TO BEG POR
12'27" W TO NW LINE OF SD LOT TH N 57›
AND LOT 191
LINE OF SD LOT TO E LINE OF FERN DELL
OF SD LOT TH S THEREON TO N LINE OF RED
DELL DR AND SE BY LOS FELIZ BLVD PART
SUB OF A PART OF THE RANCHO SAN RAFAEL
15" W TO NW LINE OF RANCHO SAN RAFAEL
LINE OF SD SEC TH S TO BEG PART OF
54' E TO SD MOST N COR TH S 22›20'55" E
SCOTT TR TH NW AND FOLLOWING BDRY LINE
MB22-190-191 TH N 72›25'40" E TO E LINE
PER F M 12325 TH S 51›30' E TO STA 12
08' E 150 FT TH S 89›52' W 373.99 FT TH
PARK TRACT
SW ON SE LINE OF LOT 33 SD BLK 415.58 FT
THEREON AND N ON W LINE OF FERN DELL DR
GOLDEN STATE FRWY TH NW AND FOLLOWING SD
RADIUS EQUALS 65 FT 43.51 FT TH N 53›
FT FROM NW COR OF LOT 1 BLK 15 TR
RO LOS FELIS PER F M 12325 TH NW THEREON
SEC TH E TO NE LINE OF RO LOS FELIS PER
COR OF TR # 9050 TH S 81›54' W TO A PT S
71›46'06" W 169.34 FT TH S 73›26' W
LOT COM AT MOST S COR OF TR NO 9766 TH
49.94 FT TH S 0›04'30" E 244.37 FT TH
SEC TO BEG PART OF

LDL5	LDL_LAST
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	PARK TRACT
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 37
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	PART OF N 1/2 OF SEC 35 T 1N R 14W
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	SEC 26 T 1N R 14W
OF SE 1/4 OF SE 1/4 OF	SEC 26 T 1N R 14W
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 5
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 115
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 114
OF LOTS 2 AND LOT 3 BLK 82	
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	THE RANCHO SAN RAFAEL
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	T 1N R 13W RANCHO LOS FELIS
SEC 29 T 1N R 13W	
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	SEC 5 T 1S R 13W
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	TO BEG PART OF LOT BLK 24
OF SD SEC TH N TO NE COR OF SD SEC TH W	TO BEG PART OF SEC 1 T 1S R 14W
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	13W RANCHO LOS FELIS
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOS FELIS
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 33 BLK 3
AND SW ON SE LINE OF RED OAK DR TO BEG	PART OF LOT 114
FRWY TO E LINE OF LOS FELIZ BLVD TH S	THEREON AND SE ON SD NE LINE TO BEG
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	LOT 9
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	SEC 35 T 1N R 14W
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	RANCHO SAN RAFAEL
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	PART OF SEC 32 T 1N R 13W
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	TO BEG PART OF SEC 6 T 1S R 13W
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	TRACT NO 646
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	THEREON TO BEG
SEE ASSESSOR MAPBOOK FOR MISSING PORTION	FELIZ AND OF LOTS 15 AND 17 LICK TRACT
SEC 25 T 1N R 14W	

CURRENT_LAND_BASE_YR	CURRENT_IMPRV_BASE_YR	CURRENT_LAND_BASE_VAL
1975	1975	000000212
1975	1975	000065000
1975	1975	000142000
1975	1975	000260000
1975	1975	000000000
1975	1975	000000000
1975	1975	000009162
1975	1975	000019431
1975	1975	000000000
1975	1975	000000000
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1975	1975	000000000
1975	1975	000001000
1975	0000	000000000
1975	1975	000028697
2000	2000	001515981
1975	1975	000117747
1975	1975	000110000
1975	1975	000170000
1975	1975	000018600
1975	1975	000019700
1975	1975	000066700
1975	1975	000003100
1975	1975	003290000
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1975	1975	001300000
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1975	1975	015260000
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1975	1975	000000000
1975	1975	000001500
1975	1975	000074400
1975	1975	006436000

CURRENT_IMPROV_BASE_VAL	CLUSTER_LOCATION	CLUSTER_TYPE	CLUSTER_APPRAISAL_UNIT
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000000000	03	1	83
000000000	25	6	97
000000000	22	8	07
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000000000	28	6	01
000000000	28	6	01
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000000000	04	1	90
000000000	04	1	90
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LAND_REASON_KEY	IMPAIRMENT_KEY	DOC_XFER_TAX_SALES_AMT	BDL1_YR_CHANGED
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R	00000	000000009	0000
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G	00000	000000000	0000

BDL1_UNIT_COST_MAIN	BDL1_RCN_MAIN	BDL2_YR_CHANGED	BDL2_UNIT_COST_MAIN
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BDL2_RCN_MAIN	BDL3_YR_CHANGED	BDL3_UNIT_COST_MAIN	BDL3_RCN_MAIN
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000000000	0000	00000	000000000
000000000	0000	00000	000000000

BDL4_YR_CHANGED	BDL4_UNIT_COST_MAIN	BDL4_RCN_MAIN	BDL5_YR_CHANGED
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0000	00000	000000000	0000
0000	00000	000000000	0000

BDL5_UNIT_COST_MAIN	BDL5_RCN_MAIN	LANDLORD_REAPPRAISAL_YR	LANDLORD_NBR_UNITS
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00000	000000000	0000	000
00000	000000000	0000	000

SBF_GRIFFITH

FIRST_TRANSFEREE_NAME	FIRST_TRANSFEREE_NAME_OVRFW	SECOND_TRANSFEREE_NAME

RECORDERS_DOC_KEY	RECORDERS_DOC_NBR
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Appendix 3:

Pre-Existing Los Angeles City Parks with Historic Cultural Monument Designation

Los Angeles Parks Declared City Historic Cultural Monuments (HCM)

HCM NO. 25 General Phineas Banning Residence and Banning Park

Built in 1864, it was the home of General Phineas Banning, founder of Wilmington, California in 1858.

Location: Banning Park, 401 East M street, Wilmington

Declared: 10.11.1963

HCM NO. 34 Barnsdall Art Park

Eleven acres on the crown of Olive Hill were donated to the City of Los Angeles in 1927 by Aline Barnsdall with the stipulation that the land be used for a park and playground. It is the site of the Los Angeles Municipal Art Gallery, Junior Arts Center, Hollyhock House, Gallery Theater and Barnsdall Arts Center.

Location:4800 Hollywood Boulevard

Declared: 2.26.1965

HCM NO. 48 Chavez Ravine Arboretum

This area was Southern Califronia's first botanical garden. In 1893 the Los Angeles Horticultural Society began planting of rare trees in the upper part of the ravine.

Location: Elysian Park, Los Angeles

Declared: 4.26.1967

HCM NO. 64 Plaza Park

Part of the original Spanish land grant, it was on the plaza that Governor Felipe de Neve constructed formal ceremonies on September 4, 1781 establishing El Pueblo de Nuestra Senora la Reina de Los Angeles. The present site of the existing plaza is not precisely its original location.

Location: Area approximately bounded by Cesar R. Chavez Avenue, Alameda, Los Angeles, Arcadia, New High and Main Streets, Los Angeles

Declared: 4.1.1970

HCM NO. 100 General Douglas Macarthur Park

The parkland was acquired by Los Angeles on January 6, 1886 and was named Westlake Park. In 1890 the lake, which had been a neglected pond, was enlarged and in 1896 a bandstand erected. The park was renamed in 1942 at the height of the general's popularity.

Location: 2230 W. 6th Street, Los Angeles

Declared: 5.1.1972

HCM NO. 210 Terrace Park and Powers Place

This 1.17-acre site was dedicated for public use on August 22, 1904. The Terrace Park area is an integral part of the Alvarado Terrace complex. The brick paving of Powers Place recalls the era when horse-drawn vehicles were prevalent.

Location: Powers Place and 14th Street, Los Angeles

Declared: 2.21.1979

HCM NO. 579 Wattles Park, Mansion and Gardens

Built in 1907 and designed by Myron Hunt and Elmer Grey, the Wattles estate is typical of the winter homes built by wealthy Eastern families long before Hollywood became the movie capital of the world. It stands as one of the last remaining such estates in Hollywood. The mansion is in the Mission Revival style with an Italian Renaissance park and a Japanese garden.

Location: 1824-1850 North Curson Avenue, Hollywood

Declared: 5.25.1993

HCM NO. 836 Echo Park

Echo Park is one of Los Angeles' earliest city parks and is the location of the City's second established, and oldest remaining, municipal playground. The history of Echo park's creation and development represents significant trends in the provision of municipally funded parks and recreation facilities in Los Angeles during the early twentieth century. It is also significant as a remnant of Los Angeles' early water system and the trends and policies that shaped thecity's distribution and use of public lands in the late nineteenth century.

Location: 751 North Echo Park Avenue

Declared: 3.01.2006

Appendix 4:

Griffith Park Resources: Coordinate Points

GRIFFITH PARK RESOURCES: COORDINATE POINTS		
LOCATION AND RESOURCE	**NORTH**	**WEST**
RIVERSIDE DRIVE SOUTHEAST OF CRYSTAL SPRINGS DRIVE		
Riverside Dr. Edison Station	34°06'46.51"	118°16'03.53
Breakfast Club	34°06'50.37"	118°16'07.80
Ranger House	34°06'54.30"	118°16'07.80"
Soccer Fields	34°06'57.09"	118°16'10.73"
Tennis Pro Shop	34°06'58.73"	118°16'12.84"
Main Tennis Court	34°06'59.23"	118°16'14.56"
Tennis Courts	34°07'00.63"	118°16'12.34"
Plunge: Main Building	34°07'04.29"	118°16'14.19"
Pool	34°07'04.72"	118°16'14.75"
Day Care Building	34°07'03.40"	118°16'15.87"
Playground	34°07'02.48"	118°16'15.82"
Former Costume Workshop and Area/ LA Shares	34°06'50.70"	118°16'11.76"
CRYSTAL SPRINGS DRIVE:		
Griffith J. Griffith Statue	34°07'03.93"	118°16'19.01"
Pony Stables	34°07'12.07"	118°16'22.17"
Pony Ride	34°07'15.64"	118°16'24.64"
1984 Olympics Benches	34°07'15.69"	118°17'25.27"
Concessions Building	34°07'16.52"	118°16'24.15"
Griffith Park & Southern RR & Assoc. Resources	34°07'18.95"	118°16'24.21"
DWP Building	34°07'20.81"	118°16'25.30"
CRYSTAL SPRINGS: PICNIC AREA, POTE FIELD, RANGERS STATION, ETC:		
DWP Building	34°07'51.79"	118°16'33.39"
Pettigrew Complex	34°07'53.80"	118°16'35.75"
Minimal Traditional Restroom Bldg.	34°07'51.29"	118°16'30.28"
Recent Firestation	34°07'54.57"	118°16'33.67"
Pote Field	34°07'59.34"	118°16'41.74"
Pote Field Concessions and Clubhouse	34°07'59.81"	118°16'38.23"
Rangers Headquarters	34°07'59.17"	118°16'45.42"
Education and Visitor's Center	34°07'58.11"	118°16'48.09"
Feliz Adobe	34°07'58.00"	118°16'49.87"
WESTERN HERITAGE DRIVE:		
Zoo Magnet School	34°08'44.23"	118°17'03.68"
Auxilliary (L. A. Zoo) Support Bldgs.	34°08'46.87"	118°16'58.82"
Autry National Center	34°08'55.06"	118°16'52.47"
L.A. Zoo	34°08'54.08"	118°17'08.70"
ZOO DRIVE NORTH:		
Sycamore Grove	34°09'07.40"	118°16'47.69"
Ferraro Soccer Fields	34°09'16.76"	118°16'50.99"
Dog Park	34°09'10.02"	118°17'10.14"

ZOO DRIVE:		
Pecan Grove Picnic Area	34°09'14.41"	118°17'23.30"
De Anza Monument	34°09'15.69"	118°17'25.27"
Riverside Drive Bridge	34°09'22.23"	118°17'39.38"
Picnic Area	34°09'17.25"	118°17'34.17"
Picnic Area	34°09'19.08"	118°17'54.21"
Griffith Maintainence Service Yard	34°09'20.75"	118°18'05.89"
Live Steamers	34°09'18.24"	118°18'08.83"
Picnic Area	34°09'19.46"	118°18'16.24"
Travel Town: Entrance	34°09'14.21"	118°18'30.71"
Travel Town: Early Restroom	34°09'17.64"	118°18'27.96"
Travel Town: Admin Bldg.	34°09'17.93"	118°18'28.31"
Travel Town: "Spirit of CCC" Statue	34°09'16.48"	118°18'26.66"
Martinez Arena	34°09'13.21"	118°18'38.11"
ZOO DRIVE → FOREST LAWN DRIVE:		
Silverlake Headworks	34°09'12.77"	118°19"03.65"
Junior Achievement Center	34°09'97.97"	118°19"08.97"
GRIFFITH PARK DRIVE:		
Mineral Wells Picnic Area	34°08'46.02"	118°17'40.91"
Mineral Wells: C.1950s (?) Bathroom	34°08'47.95"	118°17'42.56"
Mineral Wells: Concessions Stand	34°08'48.33"	118°17'43.81"
Animal Hospital (Recent)	34°08'49.60"	118°17'40.85"
Wilson & Harding Golf Courses (WHGC)	34°08'35.93"	118°17'11.88"
WHGC: Clubhouse	34°08'38.96"	118°17'21.45"
WHGC: Driving Range	34°08'39.52"	118°17'26.12"
WHGC: Restroom	34°08'14.80"	118°17'03.52"
WHGC: Wood Shed	34°08'31.82"	118°17'08.48"
WHGC: Park Style Landscape Features	34°18'96.3"	118°28'51.5"
WHGC: Golf Shop, Café, Restroom Bldg.	34°08'19.28"	118°16'50.49"
GRIFFITH PARK DRIVE→CAMP DRIVE:		
Boy's Camp	34°08'26.63"	118°17'47.87"
Foundations of 1920s Cabins	34°08'22.73"	118°17'49.36"
Abandoned Pool	34°08'19.63"	118°17'53.07"
GRIFFITH PARK DRIVE CTD:		
NYC 3 Picnic Area	34°08'22.57"	118°17'17.65"
NYC 2 Picnic Area	34°08'18.99"	118°17'17.44"
NYC 1 Picnic Area	34°08'12.18"	118°17'17.34"
Remains of Zoo Keepers House	34°08'06.03"	118°17'21.23"
Old Zoo Buildings	34°08'00.59"	118°17'19.33"
Land and Water Conservation Fund Plaque	34°08'05.90"	118°17'11.10"
Shane's Inspiration	34°08'06.77"	118°17'04.50"
Wilson Harding Turf Maintainence Facility	34°08'10.51"	118°17'03.73"
GRIFFITH PARK DRIVE: PARK CENTER:		
Tennis Courts	34°07'59.44"	118°16'57.57"

Merry Go Round	34°07'57.68"	118°17'01.67"
1950s Restroom	34°07'59.19"	118°17'00.77"
Seal Show	34°08'02.40"	118°17'00.43"
c.1930s bathroom	34°08'03.37"	118°17'00.07"
Sycamore row with picnic tables	34°08'01.62"	118°16'56.30"
Mystery Bldg., Square Plan	34°08'03.63"	118°16'59.56"
Spanish Revival Service Facility	34°08'06.59"	118°17'00.91"
Recreation Centers Centennial Plaque	34°08'06.03"	118°17'00.62"
Marty Tregnan Golf Academy	34°07'14.98"	118°16'30.90"
GRIFFITH PARK: AMENITIES EAST AND NORTH OF LOS ANGELES RIVER		
LOS FELIZ BOULEVARD:		
Los Feliz Golf Course (LFGC)	34°07'29.27"	118°16'13.27"
LFGC: Los Feliz Cafe	34°07'24.04"	118°16'09.47"
CHEVY CHASE DRIVE:		
North Atwater Park	34°07'57.76"	118°16'19.88"
Griffith Park Central Servive Yard	34°08'13.40"	118°16'23.30"
RIVERSIDE DRIVE NORTH OF LOS ANGELES RIVER:		
Bette Davis Picnic Area	34°09'27.72"	118°17'47.16"
Los Angeles Equestrian Center	34°09'37.51"	118°18'32.14"
Pollywog	34°09'19.92"	118°19'12.17"
GRIFFITH PARK: SOUTHERN PORTION AMENITIES		
VERMONT CANYON ROAD:		
Rossevelt Municipal Golf Course (RGC)	34°07'11.61"	118°17'26.52"
RGC Café and Shop	34°07'06.02"	118°17'37.39"
Floyd Bailey Plaque and Tree	34°07'06.58"	118°17'37.73"
RCG Auxilliary Buildings	34°07'08.95"	118°17'37.61"
VERMONT CANYON ROAD→Boy Scout Rd:		
Restroom	34°07'05.33"	118°17'40.59"
Picnic Area	34°07'04.55"	118°17'45.34"
Ampitheater	34°07'05.22"	118°17'46.21"
VERMONT CANYON ROAD→COMMONWEALTH CANYON DRIVE:		
Tennis Courts	34°07'15.97"	118°17'36.09"
Nursery Caretaker's House	34°07'14.34"	118°17'09.34"
Picnic Area	34°07'15.99"	118°17'08.87"
Nursery Office	34°07'17.35"	118°17'08.69"
Nursery Multi-Purpose Building	34°07'17.84"	118°17'06.05"
Nursery: Greenhouse	34°07'16.94"	118°17'06.76"
Nursery: Additional Greenhouses	34°07'16.82"	118°17'03.87"

VERMONT CANYON ROAD CTD:		
Greek Theatre	34°07'40.89"	118°17'03.55"
Greek Theatre Box Office	34°07'14.15"	118°17'47.03"
Bird Sanctuary	34°07'28.59"	118°17'49.10"
EAST OBSERVATORY ROAD:		
Griffith Observatory	34°07'06.07"	118°18'01.33"
VERMONT CANYON ROAD→ MT. HOLLYWOOD DRIVE:		
Mt. Hollywood Tunnel	34°07'25.09"	118°18'02.04"
WESTERN CANYON ROAD:		
Rock Wall	34°07'24.75"	118°18'08.54"
Picnic Area	34°07'28.47"	118°18'22.76"
FERN DELL DRIVE/ FERN DELL:		
Fern Dell	34°07'38.02"	118°18'26.60"
Berlin Bear Monument	34°06'30.01"	118°18'26.03"
Rollin Lane Plaque	34°06'30.00"	118°18'29.10"
Lief Erickson Monument	34°06'29.44"	118°18'29.59"
City HCM #112 Plaque/ Fern Dell Entrance	34°06'33.94"	118°18'27.40"
Soroptimist Picnic Area and Plaque	34°06'42.50"	118°18'25.40"
The Trails Café	34°06'50.26"	118°18'23.61"
Pow Wow Gathering Area	34°06'50.06"	118°18'28.29"
Ranger's Facilities	34°06'52.31"	118°18'29.20"
Ranger's House/ Fern Dell Nature Museum	34°06'46.12"	118°18'27.74"
CANYON ROAD:		
Girls Camp	34°06'32.49"	118°18'51.96"
Girls Camp: 1950s Era Cabins	34°06'36.34"	118°18'55.14"
CANYON LAKE DRIVE:		
Lake Hollywood Park	34°07'37.16"	118°19"33.05"
Hollywood Sign	34°08'02.57"	118°19"17.98"
WILDERNESS AREA RESOURCES		
NAMED MOUNTAINS AND PEAKS:		
Beacon Hill	34°07'42.43"	118°16"38.44"
Glendale Peak	34°07'28.47"	118°17"16.00"
Mt. Hollywood	34°07'42.71"	118°18"04.19"
Mt. Lee	34°08'05.07"	118°19"14.22"
Mt. Chapel	34°08'11.30"	118°18"30.21"
Mt. Bell	34°08'10.95"	118°18"14.70"
Bee Rock	34°08'04.11"	118°17"35.78"
NAMED CANYONS:		
Fern Canyon	34°08'04.11"	118°18"14.70"
Aberdeen Canyon	34°07'28.31"	118°17"21.46"
Vermont Canyon	34°07'18.51"	118°17"53.30"

Western Canyon	34°07'19.61"	118°18"27.40"
Brush Canyon	34°07'33.31"	118°18"43.62"
Spring Canyon	34°07'58.60"	118°17"43.88"
Royce's Canyon	34°08'57.44"	118°18"27.91"
Toyon Canyon	34°08'37.09"	118°18"08.38"
Oak Canyon	34°09'02.95"	118°17"59.54"
NATURAL AND LANDSCAPE FEATURES:		
Cedar Grove	34°07'12.23"	118°16"57.94"
Berlin Forest	34°07'19.35"	118°18"01.56"
Bronson Caves	34°06'16.31"	118°18'50.54"
3-Mile Tree	34°07'54.07"	118°18'03.54"
Captain's Roost	34°07'40.82"	118°18"08.48"
Dante's View	34°07'45.77"	118°17"54.14"
Bee Rock, Sandstone Face	34°08'04.30"	118°17"34.59"
Amir's Garden	34°08'32.95"	118°17"34.83"
SELECTED OBJECTS (Non 1930s Park Style)		
Former Site of Airfield Beacon	34°07'42.43"	118°16"38.44"
Early Water Tank Near Cedar Grove	34°07'16.53"	118°16"57.99"
Hogback Bridge	34°07'34.33"	118°17"19.26"
for list of 1930s era infrstructure objects in burn area, please see Appendix 6		
NOTABLE VISTAS:		
Vista View Point	34°07'24.82"	118°17"07.00"
Griffith Observatory	34°07'06.07"	118°18'01.33"
Mt. Hollywood	34°07'42.71"	118°18"04.19"
Dante's View	34°07'45.77"	118°17"54.14"
Lake Hollywood Park	34°07'37.15"	118°19"33.70"
CLOSED TO PUBLIC AUTO ROADS; END POINTS:		
Vista Del Valle Drive, end point northwest	34°08'10.09"	118°18"20.56"
Vista Del Valle Drive, end point southeast	34°07'16.64"	118°17"17.03"
Commonwealth Avenue end point north	34°07'16.62"	118°17"17.00"
Commonwealth Avenue end point south	34°07'07.43"	118°17"10.25"
Mt. Hollywood Drive, end point north	34°08'58.00"	118°18"07.97"
Mt. Hollywood Drive, end point south	34°07'24.23"	118°17"59.12"
Mt. Lee Drive, end point northwest	34°08'04.44"	118°19"17.51"
Mt. Lee Drive, end point southeast	34°08'00.02"	118°18"57.69"

Appendix 5:

Selected pages from:

Good, Albert H. Park and Recreation Structures, Part 1: Administrative and basic Service Facilities. United States: Department of the Interior, National Park Service [Washington D.C.: U.S. Government Printing Office], 1938.

BARRIERS, WALLS, AND FENCES

IF MAN COULD BRING to his creations in natural parks the protective coloration that Nature bestows on wildlife, with how much more harmony he would endow his trespasses! One particularly longs for this quality in barriers, herein considered to embrace obstacles and obstructions to automobile travel—stone walls and wood fences, guard rails and retaining walls. These are unavoidable necessities in parks, generally so extensively required that any treatment short of the most skillful is a source of quick contamination to natural beauty into the farthermost reaches of the area.

For this reason they deserve to be planned thoughtfully and to be constructed with ever alert willingness to adjust the predetermined treatment to conditions actually encountered in the field. The contrary approach, the attempt to warp conditions of site to some blueprint treatment of barrier or retaining wall, usually leads to disaster. Natural quality is so ready to vanish; artificial quality, so prone to persist.

Barriers of stone have one basic advantage over barriers of wood. Stone is the more permanent, a fact which often predisposes its selection as the material for use. The claim of permanence, however, should not alone determine the choice of stone over wood; each must be further considered for its native suitability. Stone imported into areas to which no stone is native seems always inappropriate. There are parks where native stone suitable for building is not present, yet the landscape is of definitely stony character. Here barriers of imported stone can be made effective if skill and artistry are brought to their contriving. But more often than not, unless barriers can be produced from native stone, it is more reasonable to waive the advantage of greater permanence and make use of wood. Timber for barriers in some localities will offset comparative lack of permanence through ready abundance and consequent greater suitability and economy. For wooded areas, regardless of stone supply, there are those who cast their votes in favor of wood, usually log, barriers, which can be made sturdy and unobtrusive and are far from short-lived.

When neither wood nor stone can stake a valid claim to being, or appearing to be, native to a region, the attributes of the area for park purposes may be logically challenged. This premise allowed, we are assured that either wood or stone will appropriately serve as material for the barriers we may require in any tract of true park potentialities. The problem then becomes one of intelligent use of whichever material Nature's bounty indicates.

One cannot visit many parks without becoming conscious of shortcomings of barrier and guard rail treatments in general. Where there is extensive need for guard rail, the use of one type of construction can become very monotonous. This is especially true if the construction is not utterly simple, or is too mathematically precise. Miles of stone barrier with crenelles and merlons of fixed length and height ticking off on the consciousness with pendulumlike routine seem almost to infect Nature itself with dull monotony. Better far to borrow something of Nature's variety. If it is desired to avoid the tiresome regularity of an unbroken coping line, it is merely choosing a different moment to introduce a system of regular and repeated breaks into the silhouette. Changes in coping levels to present varying lengths and [illegible] heights are much more in the rhythm of [illegible]

There are parks wherein the very extent of necessary guard rail seems to cry out for the [illegible] more than one type of construction. [illegible] suggest merit in a hedge-podge [illegible] ments in one area, or in close [illegible] different types. But where [illegible] guard rail construction are [illegible] requiring none, occasionally [illegible] for an isolated stretch would [illegible] reasoned.

A long stretch of elaborate guard rail, not only offends and distracts the viewer, but detracts from the view in direct proportion to its complexity of character. Probably the guard rail most generally satisfying to the eye, and as practical and economical as any, is the log barrier, hub cap high supported on log posts at the joints. Logs and supports must be best of all of ample diameter, for flimsiness here, as in a bridge, registers adversely on the consciousness. Wood supports below grade should be treated with a preservative to prolong their life. They should extend deep into the ground so as to be truly effectual under impact.

Unnecessary indeed is the barrier of bowed, contorted logs that twists and writhes in its course like an attenuated corkscrew. Just as disturbing is the log barrier that bumps along at the roadside unnaturally rising high above the grade, then dipping suddenly to meet it. The log barrier should be kept parallel with the grade of the roadway [illegible] the minutes in the picture.

[illegible] to detail the log guard rail so that [illegible] the adjoining sections [illegible] ration of the accident [illegible] tion of replacement. [illegible] the jutting of [illegible] barrier [illegible]

rock outcrop which it surmounts or abuts. The results in general seem to indicate failure to [illegible] that skillful blending of the man-made to the natural was of the essence of the problem, or that skill was lacking. When the transition is so handled that the precise limits of Nature's handiwork and man's blur to the eye's satisfaction the accomplishment is praiseworthy.

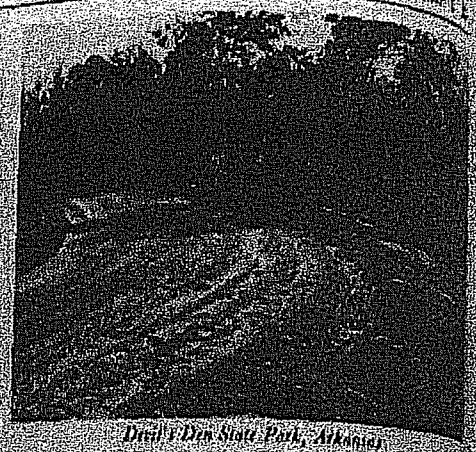
Of particular import is the wall or fence that adjoins the entranceway. Unless it is to be completely planted out, something of the flavor of the entrance structures should be given it. The stone wall so typical of New England, New York, and other localities, and the snake fence once so widely distributed through the Middle West have the advantage of long familiarity and deep significance to us. Because these bring subconsciously to mind the very values that parks seek to recapture—open spaces, unspoiled Nature, release from crowding and artificial existence—they might well serve a far more useful instrument than they have to date in our hands.

Unquestionably there are sometimes required natural areas barriers that must forego protection to warn forcefully of danger ahead, particularly to the motorist. Barriers and obstructions, purposed to prevent traffic accidents, are to be imagined off. They are an acknowledgment of human frailty, necessity even in parks, and certain high types provide many excellent [illegible] purposes and combination. [illegible]

Plate L



Quartz Mountain State Park, Oklahoma



Devil's Den State Park, Arkansas



Quartz Mountain State Park, Oklahoma

ROCK BARRIERS, CURBS, AND WALLS

Three illustrations at upper left picture employment of rock as a roadside barrier in seemingly idyllic distribution—always seemingly very difficult to execute and here better done than usual, especially so at Quartz Mountain State Park, Arkansas. At left is a related barrier, rather more of a wall but still quite informal and disclosing the use of little mortar. This and the barrier to the right feature a buffer curb that permits pedestrians safe between parked automobiles and the barrier proper.

Other examples on these facing pages are generally typical of protective masonry barriers laid with mortar. For the most part these are crenellated. In masonry technique there is considerable range of character.

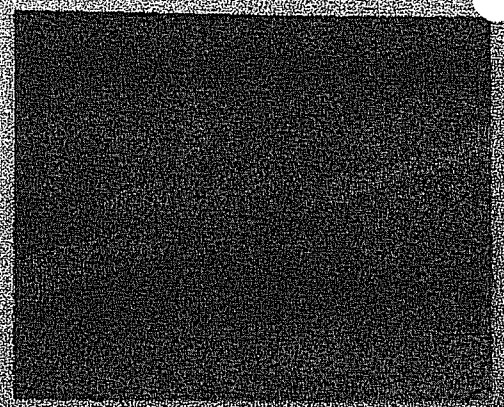
On the next following page stone curbs and walls are paraded in variety. The low formal curb reflects fittingly its location in a groomed metropolitan area; the other curbs typify surroundings less intensively used, settings more primitive. All the walls pictured in the right hand tier suggest modified and mild country in great contrast with most of the landscape to be seen on this present page.



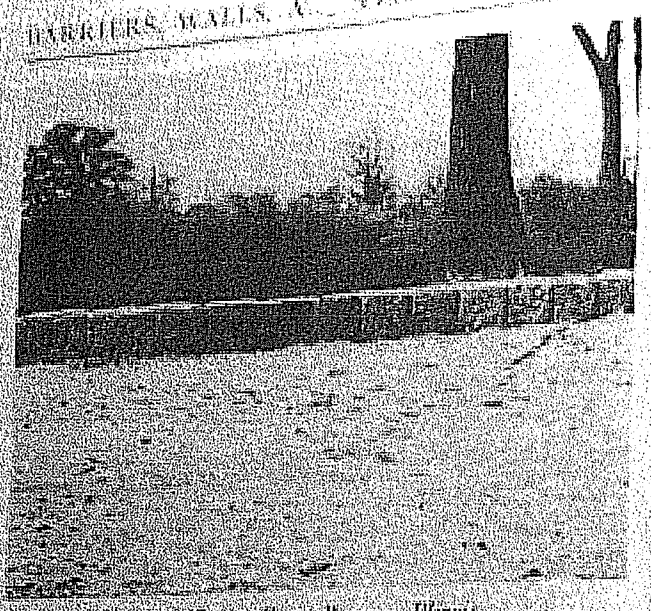
Crater Lake National Park



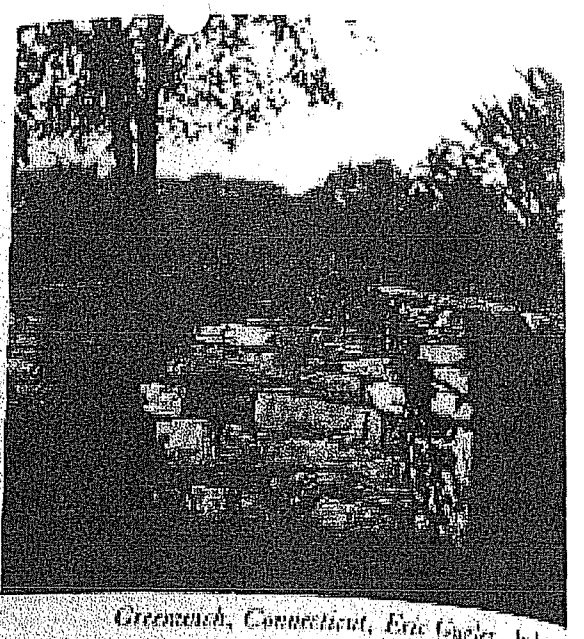
Yellowstone National Park



Great Smoky Mountains National Park



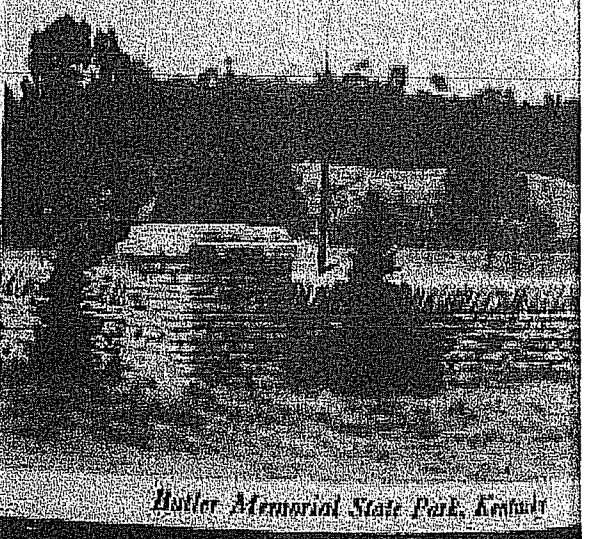
Cook County Forest Preserve, Illinois



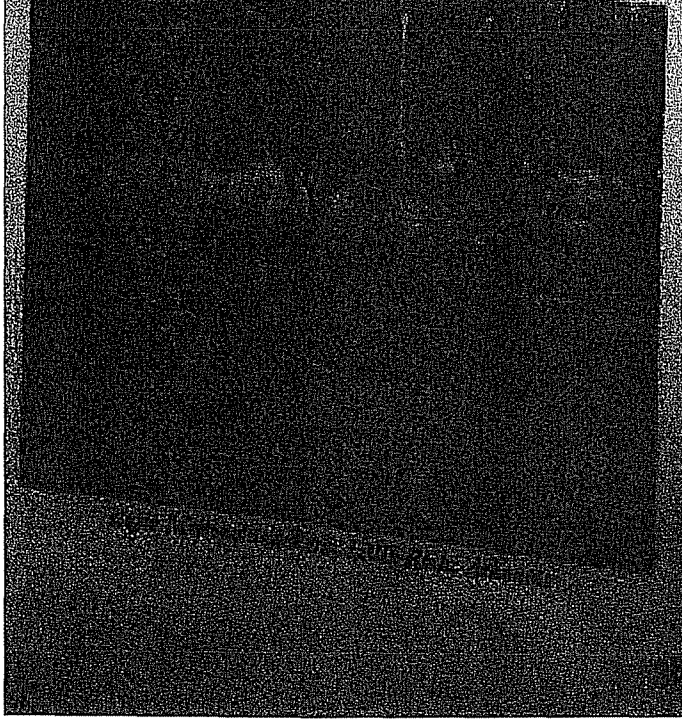
Greenwich, Connecticut, Eric Ingler, Architect

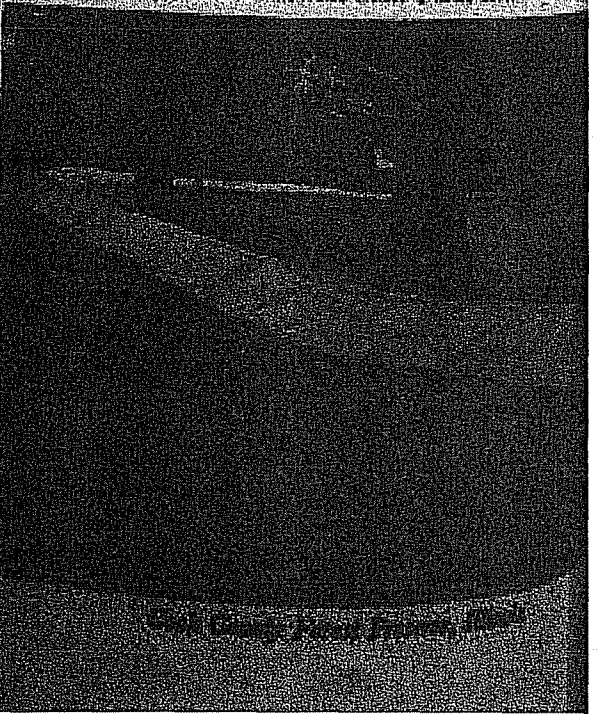


Voorhees State Park, New Jersey



Butler Memorial State Park, Kentucky





Cook County Forest Preserve, Illinois

SUPERINTENDENTS' AND STAFFS' QUARTERS

OFTEN family living quarters for the park superintendent, custodian, or caretaker and other staff members can with propriety reflect in externals the pioneer homesteads of a locality. And being somewhat similar to the pioneer dwellings in most essentials, the modern housing can recall traditional lines without too evident struggle, not always true of adaptations in which the old forms and the modern needs are less closely related. Subject to the dictates of regional influence, we may appropriately house park personnel in structures which derive from the log and stone cabins of the pioneer, from the Spanish, Pueblo, and several manifestations of the Colonial, and from many other traditional structural expressions born of history, local materials, and climate.

The typical problem is simply an efficiently planned five- or six-room rural dwelling that stresses the importance of fitness to environment. Climate, comfort, traditions, and above all the budgets of the park and of the occupant, whether superintendent or naturalist, warden or workman, should be duly weighed.

Where the park personnel group is comparatively large, it is sometimes deemed expedient to resort to small apartment buildings. Although such concentration sacrifices something of park character by bringing an urban solution into a park, it is in accord with the tenet that a single building is better than many minor ones.

In large, isolated, yet heavily attended parks the problem of housing groups of unmarried employes, especially those only seasonally employed, is solved by a barracks or dormitory building. A rangers' club providing comfortable and wholesome living conditions contributes much to the esprit de corps of such a group of employes. In Yosemite National Park [illegible] examples of this institution, made [illegible]

Comfortable, well-maintained living quarters in which the occupants can take personal pride will undoubtedly find reflection in the attitude of each employe toward maintenance of the public area. Patched-up, ramshackle living quarters can influence the standards of general park operation adversely.

Inasmuch as quarters in a final analysis supplement the employe's salary, it seems only fitting that quarters and salary be reasonably scaled to each other. Neither commodious residence in lieu of a fair salary, nor more generous stipend in lieu of decent living quarters is a satisfactory substitute for living quarters and salary in appropriate relationship. A more general understanding of this would remove a frequent cause of dissatisfaction.

Sometimes, for purposes of control, economy, or other reason, living quarters are combined with other park needs in structures, such as administration and concession buildings, entranceways and checking stations. In a small park this is logical, avoiding as it does small independent buildings ruinously crowding the area.

Worthy of most careful study is the locating of buildings that house park personnel. To aid effectively in supervision, such structures must be distributed with respect to the areas of concentrated use; employes' quarters should be convenient to, without obtrusively invading, the intensively used areas. Perhaps the Far East custom of a compound which isolates the foreign colony is adaptable to personnel housing in our larger parks. To say that this would serve to protect the park from the personnel and the personnel from the park is not a flippant observation. Too widespread scattering of quarters to achieve maximum supervision can result in unwarrantable modification of the far reaches of the park. It tends, moreover, to place the isolated staff members at the command of the public 24 hours a day, a situation unfair to them and to the best interests of the park.

An attractive and convenient coordination of the elements that can be said to be typical of custodian's quarters in a park of average size. The ensemble rates far above average. Only improvement wished for—a horizontal bedding of the masonry. When viewed in the flesh, so to say, the lichens on the stone and the mess in the joints serve to stifle even that deprecative comment on the masonry technique.



Custodian's Dwelling, Riverside State Park, Washington

The excellencies of plan cannot make us blind to the unfortunate masonry of the chimneys and the mechanical overperfection of log construction that here robs this material of the very quality that has made it preeminent for park construction. Some more equitable distribution of skill between carpenter and mason would have produced more satisfying results.



Custodian's Dwelling, Silver Creek Falls State Park, Oregon

The arrangement of living quarters for custodian to create a patio is particularly desirable in the southwest and doubly so where the distances are great and the country unwooded. The oasislike patio is productive of a degree of intimacy and sense of security not otherwise achieved. A patio fence is hardly possible in connection with the very small dwelling unless service buildings and walls are joined with it, as here.



Custodian's Dwelling, Carlsbad State Park, California

DRINKING FOUNTAINS AND WATER SUPPLY

IT IS ASSUMED to be unnecessary to dwell more than momentarily on the two absolute essentials in a provision of drinking water in park areas. Primary of these most important considerations is the unalterable requirement that the water supply shall be completely safeguarded against contamination. Hardly second to this is the need for dispensing it at so many points over the park area that it is always easier for the park patron to avail himself of the protected water supply than to seek out springs and other possible sources of drinking water not policed against pollution. Treatment of fountain, well or spring as an architectural or landscape feature can hardly claim consideration until these two major demands have been met. It is a firm conviction that a safeguarded and well distributed water supply may be taken for granted universally in the park planning thought which encourages a venture in consideration of form and character in an architectural and [illegible] of the dispensing media.

[illegible] a spring and the erection of [illegible] to enhance the danger [illegible] of a safe water [illegible] to have free [illegible] fountain [illegible] drinking

able, and a sign must point out its location. If provision is not made for disposing of drip and overflow, the tap is soon the center of a muddy wallow, and only accessible if planks or stepping stones are provided. All of which soon demonstrates that the utterly simple facility suffers from very real disadvantages, and leads logically and necessarily to its being accepted as something of a feature, its functionalism neither so starkly naked as to offend the eye nor so elaborately draped as to fail to declare itself. With the imperative need for suitable disposal of waste water and for bubblers of truly sanitary type, and such desirable refinements as steps to accommodate children, tap for the filling of pails, and in some climates or locations even roof protection against the heat of the sun, the feature becomes multi-functional, and demands careful study in any pursuit of satisfying results.

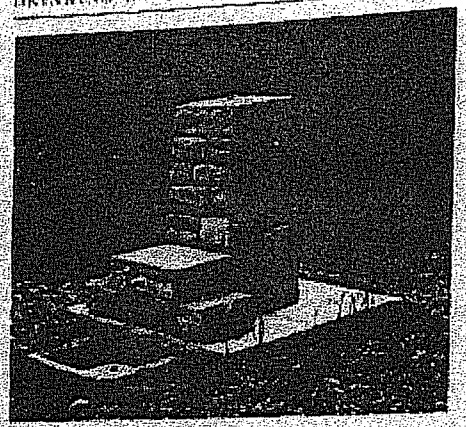
Important in connection with a piped water supply out-of-doors is a suitable arrangement for shutting off and draining the pipes in winter weather. This provision should not be overlooked wherever climate would indicate need for it.

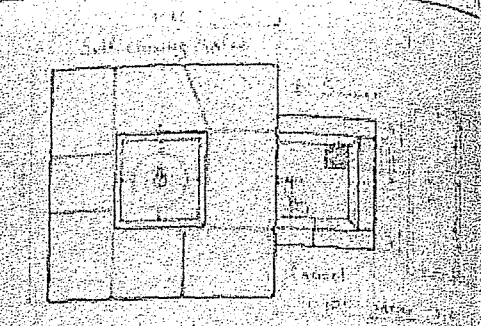
Because the treatment of the drinking fountain or bubbler as an isolated unit is so difficult, every opportunity should be embraced to incorporate this facility within any suitable building situated near [illegible] drinking water is a convenience [illegible] desirable [illegible]

old-fashioned primitive substance and has strangely escaped the free-lifting manipulations of the sculptors. It is not to be wondered at then that the plight of this neglected ugly duckling so challenges the chivalry of designers of park facilities [illegible] that they ride forth in shining armor to see justice done.

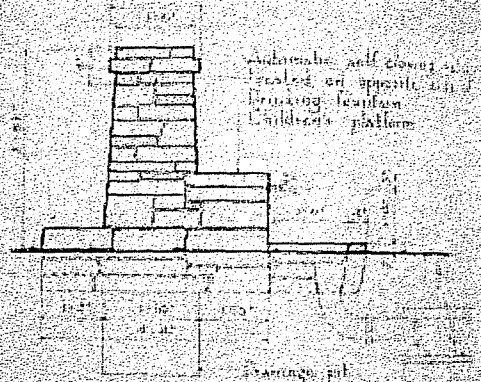
[illegible] take the form of a round or squared [illegible] as much as [illegible] mechanism. Often [illegible] is standard equipment with the [illegible] by means of a trough where it can [illegible] well. Seats of one form or another [illegible] incorporated with the pump shelter.

Another structural item often required as a part of the water supply system [illegible] probably seldom for drinking purposes [illegible] vated storage tank. The [illegible] design of this structure present [illegible] quandary as that of observation [illegible] There is at once an urge to give [illegible] direct [illegible] revealing of purposes and [illegible] to enclose it to a degree concealing [illegible] When the former approach can be [illegible] high accomplishment of the [illegible] [illegible] state [illegible] [illegible] time is the rule [illegible] [illegible] [illegible]

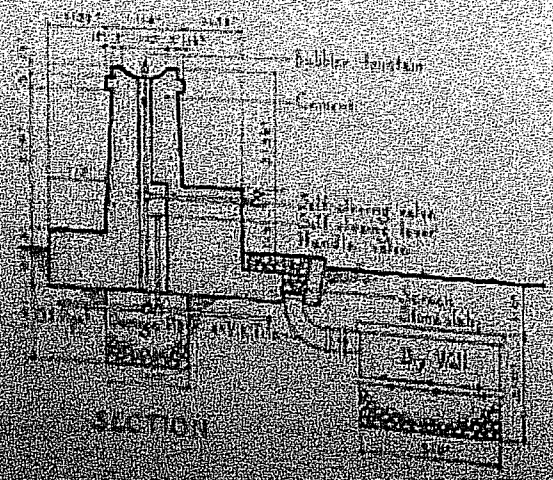




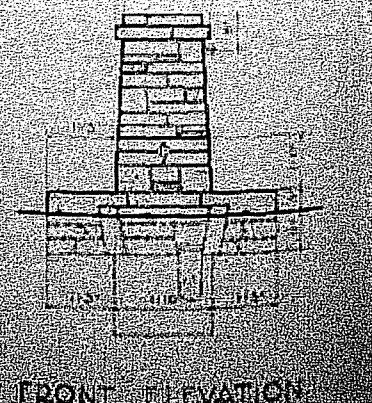
PLAN



SIDE ELEVATION



SECTION



FRONT ELEVATION



Bonham State Park, Texas



Cook County Forest Preserve, Illinois

MASONRY PEDESTAL DRINKING FOUNTAINS

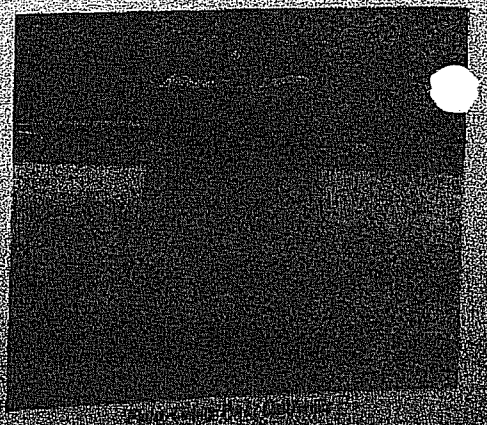
Surrounding this panel are colloquial renderings of the basic masonry pedestal detailed on the facing page. It is interesting to study this array of subjects for differences in characteristics of stone and workmanship, scale of masonry units, and the surprising variety that can prevail within narrowly fixed limits. Thus there are three varieties rather rigid in outline and character, mounted on platforms at or near grade level. Features of the two other subjects are recess to receive pail, buried natural boulder to serve as stepping stone, and pedestal of markedly horizontal coursing suggesting ledge rock.



Sibley State Park, Minnesota



Mt. Tom State Park, Illinois



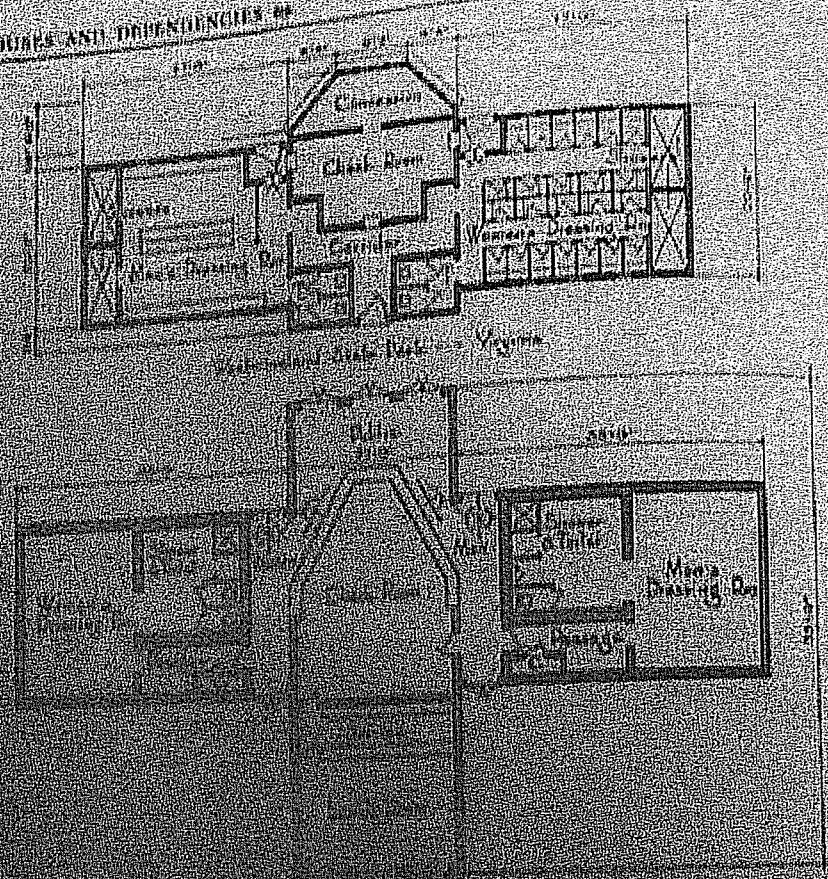
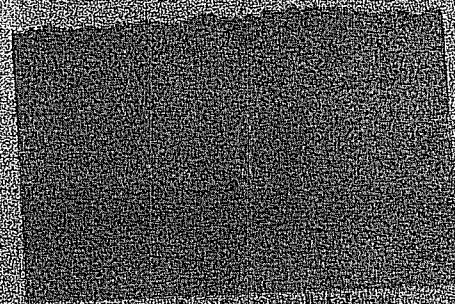


Plate II-11-1



Bathhouse, Brownwood State Park, Virginia.

size and in materials employed, this bathhouse has many excellent features. The plan permits one-man control of both bathhouse and pool area. The sight lines are well-studied. The provision of individual booths in the women's section and open dressing space in the men's section are very reasonable. If it were desirable to adapt the building to use with a swimming pool, the plan offers possibility for installing turnstile controls and disinfecting footbaths with only minor revisions.



Bathhouse, Pine Grove Park, Virginia.

This example, like the bathhouse shown above, is an improvement in well-planned and well-proportioned use of inexpensive material. The general arrangement and control features are excellent. Dressing rooms are sensibly without roofs. Because this bathhouse is in connection with a swimming pool, a disinfecting footbath between bathhouse and pool would be very much in order. The terrace following the pool is an attractive feature. A plan showing the relationship of this bathhouse to the pool is to be found in the section on [illegible] swimming pools.

Appendix 6:

Griffith Park Fire Survey Field Notes
Conducted by Jones & Stokes. July, 2007.

Griffith Park Fire Survey
Field Notes

Date	Feature #	Description	Side	Location	GPS Error
6/29/2007	1	**1950s Rock Drainage.** Joe Klass Water Stop on Valle del Vista		381821E 3776562N	16ft
6/29/2007	2	**Rock and poured concrete drainage channel**	Upper end, west	381498E 3776478N	16ft
6/29/2007	3	**Rock and concrete drainage channel**	east	381378E 3776585N	23ft
6/29/2007	4	**Rock and concrete retaining wall**	west	381260E 3776725N	16ft
6/29/2007	5	**Metal ladder.** It is associated with transmission towers and is possibly used for access for maintenance. It is painted yellow	east	381090E 3777138N	13ft
6/29/2007	6	**Rock-lined channel with concrete**. It is located at turn at #7	east	380836E 3777157N	4m
6/29/2007	7a	**Rock and concrete culvert**. It is 2.5m south of Feature 7b.	west	380629E 3777168N	5m
6/29/2007	7b	**Paved concrete square-shaped structure with 3 walls.** The walls are approximately 3ft tall and 1 ft wide. The opening faces the road. It has a thick, circular metal disk/cap. It is off-center on the concrete floor.	west	380629E 3777168N	5m
6/29/2007	7c	**Concrete block culvert.** It has machine-made concrete with small to medium sized inclusions. This is a large structure.	west	380629E 3777168N	5m
6/29/2007	8a	**Small, poured concrete culvert**	west	380506E 377722N	5m
6/29/2007	8b	**Rock and poured concrete check dam**. It is located above 8a. It has a long, low wall and the center is covered in dirt.	west	380497E 3777215N	6m
6/29/2007	8c	**Rock and poured concrete drainage connected to 8a and 8b.** It is located below a steep incline.	east	unavailable	n/a
6/29/2007	9	**Poured concrete block wall.** The wall is low, long, and is a possible boundary at a picnic stop. It has paved concrete steps for an entryway at the south end and towards the north end - both are buried in dirt and rubble.	west	380423E 3777353N	4m
6/29/2007	10	**Low cobble wall.** It is approximately 11 ft high.	west	380419E 3777468N	4m

6/29/2007	10b	**Rock cobble and paved concrete drain.** It is located above feature 10a. There is an abandoned road fragment located across the main road and down slope from feature 10b.	west	380393E 3777459N	4m
6/29/2007	11	**Concrete with metal drain pipe**	west	380480E 3777569N	6m
6/29/2007	12	**Poured concrete drain**	east	380663E 3777625N	3m
6/29/2007	n/a	*The end of the fire area is just north of Bee Rock*	n/a	380652E 3777721N	4m
7/3/2007	13	**Metal water pipeline**	west	381594E 3776733N	23m
7/3/2007	14	**Poured concrete dam**. It is located below the road surface and is buried in debris and mud.	west	382331E 3776208N	6m
7/3/2007	15	**Rock coble and concrete drain**. The walls are approximately 2 ft high and 1 ft thick. A lazy "s" shape with a triangular opening is located on the south end (see drawing in notes)	not listed	North end: 380415E 3777751N, South end: 380433E 3777733N	5m
7/3/2007	16	**Metal ladder and metal water pipe**. The ladder is painted yellow and is the same as feature 5.	not listed	380524E 3777677N	6m
7/3/2007	17	**Retaining wall buried in a hillside.** It is made of rock cobble and concrete.		North end: 381128E 3776893N, South end: 381136E 3776872N	9m-7m
7/3/2007	18	**Cut concrete block and cement drain.** The floor of the drain is cobble-lined. The walls are approximately 3ft high and 1ft thick. There is metal pipe across the center.	north	381751E 3776325N	4m
7/3/2007	19	**Retaining wall and culvert.** It is made from concrete blocks with small to medium inclusions and rock cobbles, poured concrete, and it has a metal water pipe across the center. The wall is approximately 2 ft high.	south	381874E 3776194N	6m
7/3/2007	20	**Cement block and large rock cobble wall.** It has a drain at ground surface in the center and a concrete and cobble sluice. The center of the wall has a concrete design feature. The wall has small and large rock cobbles and is painted white. It is approximately 7ft high.	north	381664E 376321N	7m
7/3/2007	2?-	**Last concrete wall near road**		381451E 3776336N	4m
7/26/2007	21	**Bottom of Fern Dell Drainage**. It has a large concrete drain opening to a tunnel under the road. It contains cobble stones. A large metal grate constructed over the drain has been modified several times.	west	381725E 3777211N	15m

7/26/2007	22	**Cement Block Wall/ Check Dam.** The feature is located above feature 21.	not listed	381673E 3777165N	10m
7/26/2007	23	**Check dam with a cement wall and concrete blocks.** The blocks have small to medium inclusions. Its two eroded stone walls and "floor" are made of the same material. Feature 23 is located above feature 22.	not listed	381630E 3777103N	9m
7/26/2007	24	**A segment of concrete bridge footer with some green paint**. It is located above feature 23.	not listed	381610E 3777088N	9m
7/26/2007	25	**A cement check dam with concrete blocks and a cement "floor."** It is located above feature number 24.	not listed	38158E 3777202N	10m
7/26/2007	26	**Concrete drainage.** This feature has a squarish blocks, 2 walls, and a "floor". The north end is made of a square of recycled sidewalk and the north end is made of rough, rectangular blocks of concrete with small to medium sized inclusions. It is located north of feature 21.	not listed	North End: 381649E 3777202N; South End: 381689E 3777197N	North: 10m South: 17m
7/26/2007	27	**Long, winding concrete drainage with squarish blocks**. It is narrow and uphill.	west	381595E 3777259N	10m
7/26/2007	28	**A series of check dams**. See field sketch	south		
7/26/2007	28a	**The northernmost check dam of feature 28**. This dam is made of rough concrete and has a V-shaped opening. It was patched with a material that looks like asphalt.	south	381288E 3776989N	10m
7/26/2007	28b	**Check Dam**. This feature is similar to 28a. It has two walls and 4 metal (possibly iron) pipes, 2 in the center of the wall and one on both sides of the wall.	south	381297E 3776988N	9m
7/26/2007	28c	**Check Dam**. It has the same shape as 28a and 28b. It has four pipes in the wall. The larger wall is made of poured concrete with small inclusions, granite blocks that appear to be pieces of buildings, sidewalks, and 2 rounded blocks (resemble headstones). Two side walls, made of recycles building material, follow down to 28d. The south end of the walls are made from machine-cut cement with cement between them.	south	381319E 3776980N	14m
7/26/2007	28d	**Concrete block culvert**. It is painted silver-gray and has a metal grate on the south side.	south	381340E 3773673N	16m
7/26/2007	28e	**Large poured concrete culvert with salvaged concrete and granite blocks**. It has a corrugated metal drain pipe at bottom center and two curving sidewalls.	south	3813150E 37769967N	13

7/26/2007	29	**Series of four check dams**. They are located up a steep hill. The culvert closest to the road is made from machine-cut concrete blocks.	south	381353E 3776922N	12m
7/26/2007		**Drainage with rock wall**	north	381357E 3776937N	8m

Appendix 7:

The Ferns of Fern Dell, C. 1958

THE FERNS OF FERN DELL, CIRCA 1958	
Latin names cited from: Drummond, W.C. "The Fern Dell, Los Angeles." American Fern Journal. Vol. 49, No. 1. (Jan. - Mar., 1959), pp. 2-9.	
Taxonomy	**Common Name or Other Referent**
Adiantum pedatum	Maidenhair Fern
Alsophila australis	Australian Tree Fern
Blechnum brasiliense	no common name (Blechnum= "Hard Fern")
Blechnum gibbum	Silver Lady Fern
Blechnum occidentale	Swamp Fern
Cibotium chamissoi	Hawaiian Tree Fern, hāpu'u
Cibotium menziesii	Hawaiian Tree Fern, hāpu`u `i`i
Cibotium schiedei	Mexican Tree Fern
Ctenitis pentangularis	no common name
Cyrtomium Butterfieldii	no common name
Cyrtomium falcatu	Holly Fern
Cyrtomium falcatum	(Mayi)
Cyrtomium falcatum 'Rochfordianum'	Japanese Holly Fern
Dicksonia antarctica	Soft Tree Fern
Dryopteris arguta	California Shield Fern,
Dryopteris atrata	Wood Fern
Dryopteris setigera	no common name
Llavea cordifolia	no common name
Microlepia platyphylla	Plate Fern
Microlepia strigosa	Lace Fern

Pellaea falcata	Australian Cliff Brake Fern
Pellaea viridis	Green Cliffbrake Fern
Phyllitis scolopendrium	European Hart's Tongue Fern
Polypodium aureum	Rabbitt's Foot Fern
Polypodium californicum	California Polypody
Polypodium glycyrrhiza	Licorice Fern
Polystichum munitum	Western Swordfern
Polystichum setosum	Japanese Lace Fern
Pteridium aquilinum	Western Brackenfern
Pteris tremula	Tender Brake
Pteris vittata	Ladder Brake
Pteris cretica	Cretan Brake
Pteris parkeri	No Common Name
Pteris ouvrardii	Ouvrardii Cretan Brake
Rumohra adiantiformis	Leatherleaf Fern
Thelypteris dentata	Downy Maiden Fern
Tectaria cicutaria	Button Fern
Thelypteris gongylodes	(schkuhr) small
Woowardia fimbriata	Pacific Chain Fern
Woodwardia radicans	European Chain Fern

Appendix 8:

Griffith Park Plant List, October 2007.
Conducted by Dan Cooper, Cooper Ecological & Rick Fisher, LA PW/BOE/ARCH

APPENDIX III
Griffith Park Plant List
October, 2007 version

10/2/07

Compiled by Dan Cooper, Cooper Ecological & Rick Fisher, LA PW/BOE/ARCH

Legend:

- Verified species are in BLACK TYPE (occurrence code: H= herbarium record, An= Anecdotal reports from plant lists, etc., RF= field verified by Rick Fisher, DC= field verified by Dan Cooper), NPS= National Park Service vegetation mapping data
- Species which may occur but not yet verified are in GRAY TYPE. This includes species typical of the Eastern SMM, and those of special interest to watch for.
- *Exotic, non-native plants are shown in ITALIC TYPE.*
- **Rare, Sensitive and Ecologically Significant species are in BOLD TYPE,** CEQA status noted when applicable (Based on information provided by Carl Wishner, David Magney, Bart O'Brien and CNDDB, and CNPS Inventory) F:E = Federally listed as ENDANGERED, S:E = State listed as ENDANGERED. CNPS Ranking:

List 1A: Plants Presumed Extinct in California (not been seen or collected in the wild in California for many years).
List 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere (rare throughout their range with the majority of them endemic to California)
List 2: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere (plants common in other states or countries are not eligible for consideration under the provisions of the Endangered Species Act)
List 3: Plants About Which We Need More Information - A Review List; we lack the necessary information to assign them to one of the other lists or to reject them. Nearly all of the plants List 3 are taxonomically problematic.
List 4: Plants of Limited Distribution - A Watch List; the plants in this category are of limited distribution or infrequent throughout a broader area in California, and their vulnerability or susceptibility to threat appears relatively low at this time. While we cannot call these plants "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly.

Threat Ranks

- 0.1-Seriously threatened in California (high degree/immediacy of threat)
- 0.2-Fairly threatened in California (moderate degree/immediacy of threat)
- 0.3-Not very threatened in California (low degree/immediacy of threats or no current threats known)

Ferns and Fern Allies			Plt Community	Occ code	Loc	Comments
Aspleniaceae						
Asplenium vespertinum	western spleenwort	P	CSS, Ch, OW			CNPS 4.2
Blechnaceae						
Woodwardia fimbriata	chain fern	P	OW, Rp			
Dennstaedtiaceae	Bracken family					
Pteridium aquilinum var. pubescens	**bracken fern**	**P**	**Rp, wet places**	**RF**	**Fern Cyn., Bird Santuary**	
Dryopteridaceae	Woodfern family					
Dryopteris arguta	**coastal wood fern**	**P**	**Ch, OW**	**H**	**frequent under oaks & chaparral, N facing slopes**	
Equisetaceae	Horsetail family					
Equisetum laeviqatum	scouring-rush	P	Rp			
Equisetum telmateia ssp. braunii	great horsetail	P	Rp			
Equisetum hyemale ssp. affine	giant scouring rush	P	Rp	H	LAR @ Los Feliz	
Polypodiaceae	Polypody family					
Polypodium californicum	**California polypody**	**P**	**CSS, Ch, OW**	**H**	**N & E slopes, rocky places**	
Pteridaceae	Fern family					
Adiantum capillus-veneris	**Venus-hair fern**	**P**	**Rp**	**An**	**Ferndell stream banks?**	
Adiantum jordanii	**California maidenhair fern**	**P**	**CSS, Ch, OW**	**H**	**Sennet Canyon, eastern fork: S of Mt. Hollywood Dr, ca 0.5 mi N of Vista del Valle Dr**	

Aspidotis californica	**lace fern**	**P**	**CSS, Ch, OW**	**H**	**Brush Cyn.**
Cheilanthes (all species)	lipfern species	P	CSS, Ch, OW		
Notholaena californica	California cloakfern	P	CSS, Ch, OW		
Pellaea andromedifolia	coffee fern	P	CSS, Ch, OW	RF	Royce's Cyn.
Pellaea mucronata	bird's foot fern	P	MC	H	
Pentagramma triangularis	goldback fern	P	CSS, Ch	H	rocky places, N/E facing slopes
Selaginellaceae	**Spike-Moss Family**				
Selaginella bigelovii	Bigelow's spike-moss	P	CSS, Ch	H	Rocky places throughout
Thelypteridaceae					
Thelypteris puberula var. sonorensis	Sonoran maiden fern	P	Rp		CNPS 2.2
Dicots					
Aceraceae	**Maple Family**				
Acer macrophyllum	big leaf maple	T	Rp, &	RF	Fern Cyn.
Acer negundo	box elder	T	Rp, &	RF	bird scantuary
Aizoaceae	**Iceplant Family**				
Carpobrotus edulis	*hottentot fig*	*P**	*dist. places*	*NPS*	
Amaranthaceae	**Amaranth Family**				
Amaranthus blitoides	prostrate pigweed	A	MC	H	
Anacardiaceae	**Sumac Family**				
Malosma laurina	laurel sumac	S	CSS, Ch	H	
Rhus integrifolia	lemonade berry	S	CSS, Ch	H	
Rhus ovata	sugar bush	S	CSS, Ch	H	
Rhus trilobata	skunkbrush	S	Ch, OW	H	
Schinus molle	*Peruvian pepper*	*T**	*CSS, dist.*	*RF*	
Toxicodendron diversilobum	poison oak	S	CSS, Ch, OW, Rp	H	
Apiaceae	**Carrot Family**				
Anthriscus caucalis	*bur chervil*	*A**	*INVASIVE*	*H*	
Apiastrum angustifolium	wild parsley	A	VG, Ch	H	
Bowlesia incana	bowlesia	A	CSS, OW	H	
Conium maculatum	*poison hemlock*	*A**	*INVASIVE*	*RF*	*Brush Cyn., Upper Ferndell*
Foeniculum vulgare	*wild wennel*	*P**	*INVASIVE*	*RF*	
Hydrocotyle umbellate	marsh-pennywort	P	Rp		
Lomatium dasycarpum	woolly-fruited lomatium	P	Ch, &		
Lomatium utriculatum	common lomatium	P	OW, VG, &		
Oenanthe sarmentosa	water parsley	P	Rp		
Osmorhiza brachypoda	**California sweet-cicely**	**P**	**OW**	**H**	
Sanicula arguta	**snake root**	**P**	**CSS, Ch, VG, &**	**H**	
Sanicula bipinnata	poison sanicle	P	OW, VG		
Sanicula crassicaulis	**Pacific sanicle**	**P**	**Ch, OW, &**	**H**	

Sanicula tuberosa	**tuberous sanicle**	**P**	**Ch**	**H**		
Tauschia arguta	**Southern tauschia**	**P**	**CSS, Ch, &**	**H**	**(RF: Upper Ferndell)**	
Tauschia hartwegii	Hartweg's tauschia	P	Ch, VG			
Apocynaceae	**Dogbane Family**					
Vinca major	*periwinkle*	*P**	*INVASIVE*	*RF*	*Brush Cyn., Bird Sanctuary*	
Araliaceae	**Aralia Family**					
Hedera helix	*English ivy*	*P**	*INVASIVE*	*RF*	*Brush Cyn., lower Cadman at park border*	
Asclepiadaceae	**Milkweed Family**					
Asclepias eriocarpa	Indian milkweed	P	MC			
Asclepias fascicularis	narrow-leaf milkweed	P	MC	RF	Mt. Hollywood fire road, Royce's Cyn.	
Funastrum cynanchoides var. hartwegii	climbing milkweed	P	CSS, Ch			(= Sarcostemma c. var h.)
Asteraceae	**Sunflower Family**					
Agoseris grandiflora	mountain dandelion	P	Ch, &			
Achillea millefolium var. californicum	common yarrow	P	CSS, Ch	H		
Acourtia microcephala	perezia	P	CSS, Ch	H		
Ageratina adenophora	*eupatory*	*P**	*INVASIVE*	*H*		
Ambrosia psilostachya	western ragweed	P	MC	RF		
Ancistrocarphus filagineus	woolly fishhooks	A	CSS, Ch, OW, &			
Artemisia californica	California sagebrush	S	CS, CSS, Ch	H		
Artemisia douglasiana	mugwort	P	MC, W	RF		
Artemisia dracunculus	wild tarragon	P	CSS, W, &	RF		
Aster exilis	annual water-aster	A	Rp			(= A. subulatus ligulatus)
Aster greatae	Greata's aster	P	Rp			CNPS 1B.3
Baccharis douglasii	**Marsh baccharis**	**S**	**Rp**	**H**		
Baccharis malibuensis	Malibu baccharis	S	CSS, Ch, &		unlikely here?	CNPS 1B.1
Baccharis pilularis	coyote brush	S	CS, CSS	RF		
Baccharis plummerae	Plummer's baccharis	S	CSS, Ch			CNPS 4.3
Baccharis salicifolia	mulefat	S	Rp	RF		
Bidens pilosa var. pilosa	*common beggar's tick*	*A**	*Dist. Roadsides*	*H*		
Brickellia californica	California brickellbush	S	CSS, Ch, &	H		
Brickellia nevinii	**Nevin's brickellbush**	**SS**	**CSS, Ch**	**RF**		
Caduus pycnocephalus	*Italian thistle*	*A**	*INVASIVE*	*RF*		
Centaurea melitensis	*tocolote*	*A**	*INVASIVE*	*H*	*(need to map complete distrib. in park)*	
Chaenactis artemisiifolia	white pincushion	A	CSS, Ch	H		
Chaenactis glabriuscula var. glabriuscula	yellow pincushion	A	CSS, Ch, OW, &	H	between Mt. Lee and Mt. Cahuenga	
Chamomilla suaiveolens	*pineapple weed*	*A**	*dist. places*	*H*	*Vermont Canyon*	*(= Matricaria matricarioides)*
Cirsium occidentale var. californicum	pink thistle	B	CSS, Ch, &	An	Ferndell	
Cirsium occidentale var. occidentale	red thistle	B	CS, OW, VG, W	H	Ferndell	
Cirsium vulgare	*bull thistle*	*A/B**	*INVASIVE*	*RF*	*Ferndell*	
Conyza canadensis	horseweed	A	dist. places	RF		
Cotula australis	*Australian brass-buttons*	*A**	*dist. places*	*H*	*Vermont Canyon*	
Deinandra fasciculata	fascicled tarweed	A	VG, CSS	H		(= Hemizonia f.)
Delairea odorata	*German ivy*	*P**	*INVASIVE*	*An*		*(= Senecio mikanoides)*

Eclipta prostrata	false daisy	A/B	Rp		
Encelia californica	bush sunflower	S	CSS, Ch	H	
Ericameria palmeri	Palmer goldenbush	S	CSS		
Ericameria parishii var. parishii	Parish's goldenbush	S	CSS, Ch	H	just n. of Mt. Hollywood, Bee Rock
Erigeron foliosus	fleabane aster	P	Ch, OW, &	H	
Eriophyllum confertiflorum	golden yarrow	SS	CSS, Ch	H	
Filago californica	California filago	A	CSS, Ch, &	H	
Gnaphalium bicolor	two-tone everlasting	P	CSS, Ch	RF	
Gnaphalium californicum	California everlasting	B	Ch, W, &	H	
Gnaphalium canescens ssp. beneolens	fragrant everlasting	P	CSS, Ch	RF	
Gnaphalium canescens ssp. microcephalum	fell-leaf everlasting	P	Ch, &	H	
Gnaphalium luteo-album	*cudweed*	*A**	*dist. places*		
Gnaphalium ramosissimum	pink everlasting	A	CSS, Ch	H	
Gnaphalium stramineum	cotton batting plant	A	CSS, Ch	H	
Grindelia camporum	gum plant	P	CSS, Ch		
Gutierrezia californica	California matchweed	S	CSS, Ch	H	
Hazardia squarrosa var. grindelioides	saw-tooth goldenbush	S	CSS, Ch	H	
Helenium puberulum	sneezeweed	P	VG, Rp		
Heterotheca grandiflora	telegraph weed	A	dist. places	H	
Heterotheca sessiliflora	goldenaster	P	CSS, Ch, VG, &		
Hieracium argutum	southern hawkweed	P	OW		
Hypochaeris glabra	*cat's-ear*	*A**	*dist. places*		
Isocoma menziesii	coast goldenbush	S	CS, CSS, &		
Lactuca serriola	*prickly lettuce*	*A**	*dist. places*		
Lessingia filaginifolia	cudweed aster	SS	CSS, Ch, OW, &	RF	
Madia gracilis	gum weed	A	OW, VG, &		
Malacothrix saxatilis var. tenuifolia	cliff aster	P	CS, CSS, Ch, &	H	
Microseris douglasii sspp.	Douglas' silverpuffs	A	CSS, VG		
Microseris elegans	elegant silverpuffs	A	VG		
Monolopia lanceolata	common monolopia	A	VG, CSS, CH		
Picris echioides	*bristly ox-tongue*	*A**	*dist. places*	*RF*	*Cadman Cyn., lower Royce's Cyn.*
Psilocarphus tenellus	woolly marbles	A	Rp, VG		
Rafinesquia californica	California chicory	A	CSS, Ch, &		
Senecio aphanactis	California groundsel	A	CSS, Ch		
Senecio breweri	Brewer's groundsel	P	Ch, OW		
Senecio californicus	**California butterweed**	**A**	**CSS, Ch**	H	
Senecio flaccidus var. douglasii	bush senecio	S	CSS, Ch, OW, VG	H	Southwest slopes
Silybum marianum	*milk thistle*	*A**	*INVASIVE*	*RF*	
Solidago californica	California goldenrod	P	CSS, Ch, OW, &	H	(DC: Brush Cyn.)
Sonchus oleraceus	*sow thistle*	*A**	*dist. places*	*RF*	*East and west slopes*
Stephanomeria cichoriacea	Fort Tejon milk-aster	P	Ch, OW		
Stephanomeria diegensis	San Diego milk-aster	P	CSS		
Stephanomeria virgata	wand chicory	A	CS, CSS, Ch, W, &	RF	
Venegasia carpesioides	canyon sunflower	SS	CSS, Ch, OW, Rp		
Xanthium strumarium	cocklebur	A	dist. /wet places	RF	Brush Cyn. debris basin

Berberidaceae	**Barberry Family**				
Berberis nevinii	**Nevin's barberry**	**S**	**CSS, Ch**	**H, CNDDB (see mapping data)**	**CNPS 1B.1, F:E, S:E**

APPENDIX III
Griffith Park Plant List
October, 2007 version

10/2/07

Betulaceae	**Birch Family**				
Alnus rhombifolia	white alder	T	Rp	An	
Boraginaceae	**Borage Family**				
Amsinckia menziesii var. maenziesii	small-flowered fiddleneck	A	VG, CSS, Ch	H	
Amsinckia menziesii var. intermedia	common fiddleneck	A	VG, MC	H	
Cryptantha clevelandii	Cleveland's cryptantha	A	CSS, Ch	H	near W boundary of park
Cryptantha intermedia	common cryptantha	A	CSS, Ch,	H	
Cryptantha micromeres	small-flowered cryptantha	A	Ch	H	between Mt. Lee and Mt. Cahuenga
Cryptantha muricata	prickly popcorn flower	A	CSS, Ch	H	
Pectocarya penicillata	winged pectocarya	A	CSS, Ch	H	
Plagiobothrys acanthocarpus	adobe popcorn flower	A	Ch, VG		
Plagiobothrys canescens	valley popcorn flower	A	CSS, VG		
Plagiobothrys nothofulvus	popcorn flower	A	CSS, OW, VG	H	
Plagiobothrys tenellus	Pacific popcorn flower	A	Ch, OW		
Brassicaceae	**Mustard Family**				
Arabis glabra ssp. glabra	tower mustard	A	CSS, Ch, OW		
Arabis sparsiflora var. californica	**California rockcress**	**A**	**CSS, Ch, OW**	**H**	
Brassica nigra	*black mustard*	*A**	*INVASIVE*	*RF*	*lower Royce's Cyn., near cemetary (often mis-ID'd...see Hirschfeldia)*
Brassica rapa	*field mustard*	*A**	*dist. places*	*H*	
Brassica tournefortii	*Mustard*	*A**	*dist. places*		
Capsella bursa-pastoris	*shepherd's purse*	*A**	*dist. places*	*An*	
Caulanthus heterophyllus	slender-pod jewelflower	A	CSS, Ch		
Hirschfeldia incana	*Mediterranean mustard*	*B**	*INVASIVE*	*RF*	
Lepidium didymum	*lesser swinecress*	*A**	*dist. places*	*H*	*(=Coronopus didymus)*
Lepidium nitidum	peppergrass	A	CSS, Ch		
Lobularia maritima	*sweet alyssum*	*P**	*dist. places*	*H*	
Raphanus sativus	*wild radish*	*A**	*W*	*An*	
Rorippa curvisiliqua	Western yellow cress	A	Rp		(RF? need confirm.)
Sisymbrium officinale	*hedge mustard*	*A**	*dist. places*	*RF*	
Sisymbrium orientale	*oriental mustard*	*A**	*dist. places*	*RF*	
Thysanocarpus laciniatus	narrow-leaved fringe pod	A	CSS, Ch, VG	H	
Cactaceae					
Cylindropuntia californica var. parkeri	**valley cholla**	**P**	**CSS, Ch**	**RF**	**(= Opuntia parryi)**
Opuntia littoralis	**coastal prickly pear**	**P**	**CSS, Ch**	**H**	**occasional throughout, s facing areas**
Opuntia littoralis x ficus indica	hybrid cactus	P	CSS, Ch	RF	
Campanulaceae					
Githopsis diffusa ssp. diffusa	San Gabriel bluecup	A	Ch		
Lobelia dunnii var. serrata	Dunn's lobelia	P	CSS, CH wet places		
Nemacladus ramosissimus	smallflower threadplant	A	CSS, Ch		
Capparaceae					
Isomeris arborea	bladderpod	P	CSS	H	

Caprifoliaceae	**Honeysuckle Family**					
Lonicera hispidula var. vacillans	California honeysuckle	S	Ch, Rp			
Lonicera interrupta	chaparral honeysuckle	S	Ch	H	(verify collection?)	
Lonicera subspicata var. denudata	southern honeysuckle	S	Ch	H		
Sambucus mexicana	Mexican elderberry	S/T	CSS, Ch, OW	H		
Symphoricarpos mollis	creeping snowberry	S	Ch, OW	RF	Fern Cyn., Royce's Cyn.	
Caryophyllaceae	**Pink Family**					
Polycarpon depressum	California polycarpon	A	CSS, Ch			
Silene gallica	*common catchfly*	*A**	*dist. places*	*H*		
Silene laciniata subsp. major	indian pink	P	CSS, Ch, OW	H	south, north slopes	
Silene verecunda ssp. platyota	San Francisco campion	A	CSS			
Spergula arvensis ssp. arvensis	*corn spurry*	*A**	*W*			
Spergularia macrotheca sspp.	large-flowered sand spurry	P	CSS			
Spergularia villosa	*sand spurry*	*P**	*CS, CSS*			
Stellaria media	*chickweed*	*A**	*dist. places*	*H*		
Chenopodiaceae	**Goosefoot Family**					
Atriplex lentiformis ssp. lentiformis	quail brush	S	CSS, &	An	GP Dr.	(planted?)
Chenopodium album	*lamb's quarters*	*A**	*W*	*RF*		
Chenopodium berlandieri	Berlandier's goosefoot	A	MC	RF		
Chenopodium californicum	California goosefoot	P	CSS, Ch, OW, VG	RF		
Chenopodium murale	*nettle-leaved goosefoot*	*A**	*W*	*H*		
Salsola tragus	*Russian thistle*	*A**	*INVASIVE*	*RF*		
Cistaceae	**Rock-Rose Family**					
Cistus landanifer	*gum rockrose*	*S**	*dist. places*	*NPS*	*Bee Rock Tr.*	
Helianthemum scoparium	rush rose	SS	CSS, Ch	H		
Convolvulaceae	**Morning Glory Family**					
Calystegia macrostegia subsp. cyclostegia	south coast morning-glory	P	CSS, Ch	H		
Calystegia purpurata purpurata	purple western morning-glory	P	Ch			
Convolvulus arvensis	*field bindweed*	*P**	*dist. places*	*RF*		
Dichondra occidentalis	Western dichondra	A	CSS, Ch, OW			CNPS 4.2
Crassulaceae	**Stonecrop Family**					
Crassula connata	pygmy weed	A	MC	NPS		
Dudleya blochmaniae blochmaniae	Blochman's dudleya	P	VG, CSS		unlikely here?	CNPS 1B.1
Dudleya caespitosa	**coast dudleya**	**P**	**CSS**	**NPS?**		**(mis-ID?)**
Dudleya cymosa sspp.	canyon dudleya	P	CSS, Ch, OW			
Dudleya lanceolata	lanceleaf dudleya	P	CSS, Ch	RF	common, rocky places	
Dudleya multicaulis	**many-stemmed dudleya**	**P**	**CSS, Ch**	**H**		**CNPS 1B.2**
Dudleya pulverulenta	California chalk lettuce	P	CSS, Ch			
Sedum spathulifolium sspp.	Pacific stonecrop	P	Rocky places			
Cucurbitaceae	**Gourd Family**					
Marah macrocarpus var. macrocarpus	wild cucumber	P	CSS, Ch, OW	H		

Cuscutaceae	**Dodder Family**						
Cuscuta californica	California dodder	A	CSS, Ch	H	East, so. And west slopes		
Cuscuta subinclusa	ceanothus dodder	A	CSS, Ch	H	just N of Mt. Hollywood		
Datiscaceae	**Datisca Family**						
Datisca glomerata	Durango root	P	Rp	H	North side		
Ericaceae	**Heath Family**						
Arctostaphylos glandulosa ssp. mollis	**Eastwood manzanita**	**S**	**Ch**	**H**	**N. side of Mt. Hollywood at 1600'**		
Arctostaphylos glauca	bigberry manzanita	S	Ch				
Comarostaphylis diversifolia	summer holly	S	Ch, OW				
Euphorbiaceae	**Spurge Family**						
Chamaesyce maculata	*spotted spurge*	*A**	*dist. places*				
Chamaesyce melanadenia	sandmat spurge	P	Ch	H			
Chamaesyce polycarpa var. polycarpa	small-seeded spurge	P	CSS, Ch	H			
Euphorbia peplus	*petty spurge*	*A**	*dist. places*	*H*			
Euphorbia terracina	*Geraldton carnation weed*	*A**	*dist. places*	*NPS?*			
Eremocarpus setigerus	turkey mullein	A	MC				
Ricinus communis	*castor bean*	*S**	*INVASIVE*	*H*			
Fabaceae	**Pea Family**						
Acacia dealbata	*silver wattle*	*T**	*INVASIVE*	*RF*	*(Cadman Cyn. around GC)*		
Amorpha californica	California false indigo	S	Ch, OW, Rp	H			
Amorpha fruticosa	western false-indigo	S	Ch, OW, Rp				
Astragalus brauntonii	Braunton's milk-vetch	A/P	CSS, Ch			CNPS 1B.1, F:E	
Astragalus trichopodus lonchus	Southern California milkvetch	P	CSS				
Glycyrrhiza lepidota	wild licorice	P	CSS, OW, VG, W				
Lathyrus vestitus var. vestitus	wild sweetpea	P	CSS, Ch	H	East slope	(= Lathyrus laetiflorus)	
Lotus argophyllus	silver lotus	A	CSS, Ch				
Lotus grandiflorus	large-flowered lotus	P	Ch, OW				
Lotus hamatus	San Diego bird's-foot trefoil	P	Ch, &				
Lotus micranthus	small-flowered lotus	A	VG				
Lotus oblongifolius	narrow-leaved lotus	A	MP				
Lotus purshianus var. purshianus	Spanish clover	A	VG, OW				
Lotus salsuginosus	coastal lotus	A	CSS, Ch	H			
Lotus scoparius var. scoparius	deerweed	SS	CSS, Ch	H			
Lotus wrangelianus	calf lotus	A	CSS, Ch, OW				
Lupinus bicolor	dove lotus	A	VG, CSS	H			
Lupinus burkei ssp. burkei	Burke's lupine	P	MP, VG				
Lupinus concinnus	bajada lupine	A	CSS, Ch				
Lupinus formosus var. formosus	western lupine	P	CSS, Ch	H	Vermont Cyn.		
Lupinus hirsutissimus	Stinging lupine	A	CSS, Ch				
Lupinus latifolius	broad-leaf lupine	P	CSS, Ch				
Lupinus longifolius	Pauma bush lupine	S	CSS, Ch, OW	H			
Lupinus nanus	sky lupine	A	CSS, VG				
Lupinus sparsiflorus	Coulter's lupine	A	CSS, Ch	H			
Lupinus succulentus	arroyo lupine	A	MC				

Lupinus truncatus	collar lupine	A	CSS, Ch	H		
Medicago polymorpha	*bur clover*	*A**	*VG, W*	*H*		
Medicago sativa	*alfalfa*	*P**	*W*			
Melilotus indica	*sour clover*	*A**	*dist. places*	*H*	*e. and w. slopes*	
Pickeringia montana	chaparral pea	S	Ch			
Spartium junceum	*Spanish broom*	*S**	*INVASIVE*	*An*	*GP Dr.*	
Trifolium ciliolatum	tree clover	A	VG, CSS			
Trifolium fucatum	sour clover	A	VG			
Trifolium microcephalum	*small-headed field clover*	*A*	*Rp*			
Trifolium obtusiflorum	creek clover	A	VG			
Trifolium wildenovii	tomcat clover	A	CSS, Ch, VG			
Vicia americana var. americana	American vetch	P	MC			
Vicia hassei	Hasse's vetch	A	MC			
Vicia sativa	*spring vetch*	*A**	*dist. places*			
Vicia villosa	*winter vetch*	*A/B**	*dist. places*			
Vicia villosa ssp. varia	*purple vetch*	*A/B**	*dist. places*			
Fagaceae	**Oak Family**					
Quercus agrifolia	coast live oak	T	OW, Rp	H		
Quercus berberidifolia	scrub oak	S	Ch, OW, &	H	East slopes	
Quercus durata var. gabrielensis	San Gabriel Mts. leather oak	T	Ch, OW	H	Bee Rock Tr.	(mis-ID? Or Q.b. hybrid? Herb specimen unavailable for verifica
Quercus lobata	valley oak	T	OW, Rp	RF	Ranger station & G.C.	(planted?)
Quercus wislizenii var. frutescens	bush interior live oak	T	Ch, OW			
Quercus x grandidentata	hybrid scrub oak	T	Ch, OW	H		(looks like Q. berberidifolia x ?)
Garryaceae	**Silk-Tassel Family**					
Garrya veatchii	canyon silktassel	S	Ch, OW			
Gentianaceae	**Gentian Family**					
Centaurium venustum	canchalagua	A	CSS, Ch	H		
Geraniaceae	**Geranium Family**					
California macrophyllum (Erodium	large-leaved filaree	A	VG, OW			CNPS 1B.1
Erodium botrys	*long-beaked filaree*	*A**	*VG, W*	*RF*		
Erodium cicutarium	*red-stem filaree*	*A**	*MC, W*	*H*		
Erodium moschatum	*white-stem filaree*	*A**	*MC, W*	*H*		
Geranium carolinianum	Carolina geranium	A	MC			
Geranium molle	*dove's-foot geranium*	*A/B**	*wet places*			
Grossulariaceae	**Gooseberry Family**					
Ribes aureum var. gracillimum	golden currant	S	CSS, Ch, OW	H	N&E slopes, common	
Ribes californicum	hillside gooseberry	S	Ch, OW			
Ribes malvaceum var. malvaceum	chaparral currant	S	Ch, OW	H		
Ribes malvaceum var. viridifolium	chaparral currant	S	Ch, OW	H	common in chaparral areas	
Ribes speciosum	fuchsia-flowered gooseberry	S	CSS, Ch	H	N&E slopes, common	
Hydrophyllaceae	**Rhacalia Family**					
Emmenanthe penduliflora var. penduliflora	whispering bells	A	CSS, Ch, OW	H		

Eriodictyon crassifolium	thick-leaved yerba santa	S	CSS, Ch	H	1600' top of ridge	
Eucrypta chrysanthemifolia var. chrysanthemifolia	common eucrypta	A	CSS, Ch, OW, &	H	Vermont Cyn., near W boundary of park	
Nemophila menziesii	baby blue eyes	A	CSS, Ch, OW, VG	H		
Nemophila menziesii var. integrifolia	baby blue eyes	A	CSS, Ch, OW, VG	H	between Mt. Lee and Mt. Cahuenga	
Phacelia brachyloba	short-lobed phacelia	A	CSS, Ch			
Phacelia cicutaria	caterpillar phacelia	A	CSS, Ch, OW, VG	H		
Phacelia cicutaria var. hispida	caterpillar phacelia	A	CSS, Ch, OW, VG	H		
Phacelia distans	common phacelia	A	MC	H		
Phacelia egena	rock phacelia	P	Ch, OW			
Phacelia grandiflora	large-flowered phacelia	A	CSS, Ch	H		
Phacelia longipes	long-stalk phacelia	A	Ch	H		
Phacelia minor	wild canterbury bells	A	CSS, Ch	H		
Phacelia parryi	Parry's phacelia	A	CSS, Ch	NPS?		(correct ID?)
Phacelia tanacetifolia	**tansy-leafed phacelia**	**A**	**CSS, Ch, OW**	**H**		
Phacelia viscida	sticky phacelia	A	CSS, Ch	H		
Pholistoma auritum	fiesta flower	A	CSS, Ch, OW	H		
Pholistoma racemosum	San Diego fiesta flower	A	CSS, Ch, OW			
Juglandaceae	**Walnut Family**					
Juglans californica ssp. californica	So. Cal. black walnut	T	OW	H	canyons	**CNPS 4.2**
Lamiaceae	**Mint Family**					
Lepechinia fragrans	fragrant pitcher sage	S	Ch			CNPS 4.2
Marrubium vulgare	*horehound*	*P*	*dist. places*	*H*		
Monardella hypoleuca hypoleuca	white-leaf monardella	SS	CSS, Ch			
Monardella lanceolata	mustang mint	A	CSS			
Salvia apiana	white sage	S	CSS, Ch	H	Vermont tennis ct, w. slope, near W boundary of park	
Salvia columbariae	chia	A	CSS, Ch	H		
Salvia leucophylla	purple sage	S	CSS	An	Ferndell	
Salvia mellifera	black sage	S	CSS, Ch	H		
Salvia spathacea	hummingbird sage	P	Ch, OW			
Satureja douglasii	yerba buena	P	Ch, OW			
Scutellaria tuberosa	Danny's skullcap	P	Ch, OW	H		
Stachys ajugoides var. rigida	rigid hedge-nettle	P	CSS, &	H		
Stachys albens	white hedge-nettle	P	wet places			
Stachys bullata	southern hedge-nettle	P	CSS, Ch, &	H	no., e. and w. slopes	
Trichostema lanatum	woolly blue curls	S	CSS, Ch	H	n. side	
Trichostema lanceolatum	vinegar weed	A	CSS, Ch, VG			
Lauraceae	**Laurel Family**					
Umbellularia californica	California bay-laurel	S/T	OW, Rp	RF	canyons	
Loasaceae	**Stick-Leaf Family**					
Mentzelia lindleyi	Lindley's blazing star	A	CSS, OW	H		
Mentzelia micrantha	small-flowered stickleaf	A	Ch, OW			
Mentzelia laevicaulis	blazing star	A	MC	H	Bronson Caves, E of Brush Canyon	
Lythraceae	**Loosestrife family**					

Lythrum californicum	**California loosestrife**	**P**	**Rp**	**H**	
Malvaceae	**Mallow Family**				
Malacothamnus davidsonii	Davidson's bush mallow	S	CSS, Ch	H	CNPS 1B.2
Malacothamnus fasciculatus	chaparral bush mallow	S	CSS, Ch	H	
Malva parviflora	*round-leaf mallow*	*A**	*dist. places*	*RF*	
Moraceae	**Fig Family**				
Ficus carica	*common fig*	*T**	*Rp*	*RF*	*Cadman Cyn.*
Myricaceae	**Wax Myrtle Family**				
Morella californica (Myrica californica)	Pacific waxmyrtle	S	CSS, Ch, OW		
Myrtaceae	**Myrtle Family**				
Eucalpytus citriodorus	*lemon-scented gum*	*T**	*INVASIVE*	*RF*	*naturalized from planted trees*
Eucalyptus camaldulensis	*red river gum*	*T**	*INVASIVE*	*RF*	*naturalized from planted trees*
Eucalyptus cladocalyx	*sugar gum*	*T**	*INVASIVE*	*RF*	*naturalized from planted trees*
Eucalyptus globulus	*blue gum*	*T**	*INVASIVE*	*RF*	*naturalized from planted trees*
Eucalyptus rudis	*desert gum*	*T**	*INVASIVE*	*RF*	*naturalized from planted trees*
Nyctaginaceae	**Four-O'Clock Family**				
Mirabilis laevis var. crassifolia	wishbone bush	P	CSS, Ch, OW	H	(= Mirabilis californica var. californica)
Mirabilis jalapa	*four o'clock*	*P**	*dist. places*	*RF*	*Cadman Cyn.*
Oleaceae	**Olive Family**				
Fraxinus dipetala	flowering ash	S/T	Ch		
Fraxinus velutina	velvet ash	T	Rp, OW	RF	Ferndell, Brush Cyn.
Olea europea	*European olive*	*T**	*INVASIVE*	*RF*	
Onagraceae	**Evening Primrose Family**				
Camissonia bistorta	Suncup	A	CSS, Ch	H	
Camissonia boothii subsp. decorticans	**shredding evening primrose**	**A**	**CSS, OW, VG**	**H**	
Camissonia californica	California suncup	A	CSS, Ch	H	
Camissonia cheiranthifolia	beach evening-primrose	P	sandy places	H	
Camissonia hirtella	hairy sun-cups	A	CSS, Ch	H	
Camissonia ignota	Jurupa Hills sun-cups	A	CSS, Ch	H	
Camissonia intermedia	intermediate suncup	A	CSS, Ch	H	
Camissonia micrantha	small-flowered evening-primrose	A	CSS, Ch	H	
Clarkia bottae	punch-bowl godetia	A	CSS, Ch, OW	H	
Clarkia cylindrica	speckled clarkia	A	Ch, OW, VG	H	
Clarkia purpurea subsp. quadrivulnera	winecup clarkia	A	CSS, Ch	H	e. and so. Slopes
Clarkia unguiculata	elegant clarkia	A	CSS, Ch, OW	H	
Epilobium brachycarpum	willow herb	A	VG, CSS, Ch		
Epilobium canum ssp. canum	California fuchsia	SS	CSS, Ch	H	
Epilobium canum ssp. latifolium	California fuchsia	SS	CSS, Ch		
Epilobium ciliatum subsp. ciliatum	willow-herb	P	wet places	H	W-edge of park
Oenothera elata	Hooker's evening primrose	B	wet places	RF	Bird Sanctuary

APPENDIX III
Griffith Park Plant List
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Oxalidaceae	**Oxalis Family**					
Oxalis albicans subsp. californica	California woodsorrel	P	CSS, Ch	H		
Oxalis corniculata	*creeping wood-sorrel*	*A**	*W*			
Oxalis pes-caprae	*Bermuda buttercup*	*P**	*INVASIVE*			
Paeoniaceae	**Peony Family**					
Paeonia californica	California peony	P	CSS, Ch, OW	H	s. and w. slopes	
Papaveraceae	**Poppy Family**					
Dendromecon rigida	bush poppy	S	Ch	H		
Dicentra ochroleuca	yellow bleeding heart	P	Ch			
Eschscholzia caespitosa	foothill poppy	A	Ch, OW, VG			
Eschscholzia californica	California poppy	A/P	MC	An/NPS		
Meconella denticulata	**small-flowered meconella**	**A**	**CSS, Ch**	**H**	**just north of Mt. Hollywood**	
Papaver californicum	fire poppy	A	Ch, OW			
Platystemon californicus	cream cups	A	CSS, Ch, OW	H		
Passifloraceae	**Passion Vine Family**					
Passiflora caerulea	*passion vine*	*P**	*INVASIVE*	*RF*		
Plantaginaceae	**Plantain Family**					
Plantago erecta	annual plantain	A	CSS, Ch, VG	H		
Plantago lanceolata	*English plantain*	*P**	*W*	*RF*		
Plantago major	*common plantain*	*P**	*W*	*RF*		
Platanaceae	**Sycamore Family**					
Platanus racemosa	Sycamore	T	Rp	RF	canyons	
Polemoniaceae	**Phlox Family**					
Allophyllum glutinosum	stinky gilia	A	CSS, Ch			
Eriastrum densifolium elongatum	giant eriastrum	P	wet places, CSS			
Eriastrum sapphirinum	sapphire woollystar	A	CSS, Ch, &	H		
Gilia angelensis	chaparral gilia	A	CSS, Ch, &	H	Vermont Cyn., ridge to W of Mt. Lee	
Gilia capitata ssp.abrotanifolia	blue field-gilia	A	CSS, Ch, &	H	Planetarium	
Gilia tricolor	bird's-eye golia	A	OW, VG	H		
Leptosiphon androsaceus	common linanthus	A	CSS, Ch, &			(= Linanthus androsaceus)
Leptosiphon grandiflorus	large-flower linanthus	A	CSS, Ch	H		
Leptosiphon liniflorus	flax-flowered linanthus	A	CSS, Ch	H		(= Linanthus liniflorus)
Leptosiphon pygmaeus ssp. continentalis	pygmy linanthus	A	Ch			(= Linanthus pygmaeus continentalis)
Linanthus californicus subsp. glandulosus	prickly phlox	SS	Ch, OW	H	north and e. slopes	(= Leptodactylon)
Linanthus dianthiflorus	fringed linanthus	A	CSS, Ch, VG	H		
Microsteris gracilis var. gracilis	**slender phlox**	**A**	**MC**	**H**		**(= Phlox gracilis)**
Navarretia atractyloides	holly-leaf navarretia	A	MC	H		
Saltugilia australis	southern gilia	A	CSS, Ch			(= Gilia australis)
Saltugilia splendens	splendid gilia	A	Ch	H		(= Gilia splendens)
Polygalaceae	**Milkwort Family**					
Polygala cornuta var. fishae	Fish's milkwort	SS	Ch, OW wet places			CNPS 4.3

Polygonaceae	**Buckwheat Family**					
Chorizanthe parryi var. fernandina	San Fernando Valley spineflower	A	CSS, Ch		(historic occ. in Burbank area)	CNPS 1B.1
Chorizanthe staticoides	turkish rugging	A	CSS, Ch	H		
Chorizanthe wheeleri	Wheeler's spineflower	A	CSS, Ch			CNPS 4.3
Eriogonum cinereum	ashy-leaf buckwheat	S	CSS, Ch	NPS		(mis-ID?)
Eriogonum cithariforme	Cithara buckwheat	A	Ch			
Eriogonum elongatum var. elongatum	wand buckwheat	P	CSS, Ch	RF	Royce's Cyn.	
Eriogonum fasciculatum var. fasciculatum	Calif. buckwheat	SS	CS, CSS, Ch, &	H		
Eriogonum fasciculatum var. foliolosum	Calif. buckwheat	SS	CS, CSS, Ch, &	H		
Eriogonum gracile (forma ?)	slender buckwheat	A	CSS, Ch			(yellow flowered form with dimorphic tepals is undescribed
Mucronea californica	California spineflower	A	CSS, Ch, OW			CNPS 4.2 (= Chorizanthe cal.)
Polygonum aviculare ssp. depressum	*common knotweed*	*A**	*W*	*NPS?*		*(= Polygonum arenastrum)*
Pterostegia drymarioides	threadstem	A	MC	H		
Rumex acetosella	*sheep dock*	*P**	*VG, W*	*H*		
Rumex crispus	*curly dock*	*P**	*VG, W*			
Portulacaceae	**Purslane Family**					
Calandrinia breweri	**Brewer's red maids**	**A**	**CSS, Ch**	**H**	**Vermont Cyn.**	**CNPS 4.2**
Calandrinia ciliata	red maids	A	OW, VG	H		
Calyptridium monandrum	sand cress	A	CSS, Ch, &	H		
Claytonia perfoliata subsp. mexicana	miner's lettuce	A	CSS, Ch, OW, &	H		
Portulaca oleracea	*purslane*	*A**	*W*			
Primulaceae	**Primrose Family**					
Anagallis arvensis	*scarlet pimpernel*	*A**	*W*			
Dodecatheon clevelandii	**Cleveland's shooting star**	**P**	**CSS, Ch, VG**	**H**	**Brush Cyn.**	
Samolus parviflorus	water pimpernel	P	wet places			
Ranunculaceae	**Buttercup Family**					
Clematis lasiantha	chaparral clematis	S	Ch, OW	H	North slope	
Clematis ligusticifolia	Western virgin's bower	S	Rp			
Delphinium cardinale	scarlet larkspur	P	CSS, Ch, OW	H	Femdell, near W boundary of park	
Delphinium parryi	Parry's larkspur	P	CSS, Ch, OW			
Delphinium patens subsp. hepaticoideum	spreading larkspur	P	Ch, OW,	H		
Ranunculus californicus	California buttercup	P	CSS, OW, VG	H		
Ranunculus cymbalaria var. saximontanus	desert buttercup	P	wet places	H	(hist. near LA River)	
Ranunculus hebecarpus	slender annual buttercup	A	Ch, OW	H		
Thalictrum fendleri var. polycarpum	meadow rue	P	CSS, Ch	DC	Royce's Cyn.	
Resedaceae						
Oligomeris linifolia	oligomeris	A	alkaline places			
Rhamnaceae	**Buckthorn Family**					
Ceanothus leucodermis	chaparral whitethorn	S	CSS, Ch	H	Mt. Hollywood Dr, ca 0.8 mi S of Vista del Valle Dr	
Ceanothus megacarpus	bigpod ceanothus	S	Ch	H		
Ceanothus oliganthus	hairy ceanothus	S	Ch, OW	RF	Royce's Cyn.	
Ceanothus spinosus	greenbark ceanothus	S	CSS, Ch	H		

Rhamnus californica	coffeeberry	S	CSS, Ch, OW	H		
Rhamnus ilicifolia	hollyleaf redberry	S	Ch, & OW	H		
Rhamnus crocea	redberry	S	CSS, Ch	H	North slope	
Rosaceae	**Rose Family**					
Adenostoma fasciculatum	chamise	S	Ch	H		
Cercocarpus betuloides var. betuloides	mountain mahogany	S	Ch	H		
Heteromeles arbutifolia	toyon	S	Ch	H		
Holodiscus discolor	**cream bush**	**S**	**Ch, OW**	**H**	**Location?**	
Horkelia cuneata spp. puberula	**mesa horkelia**	**P**	**CSS, Ch**	**CNDDB**	**north side of Griffith Park**	**CNPS 1B.1**
Potentilla anserina ssp. pacifica	silverweed	P	CSS, Ch			(new name: Argentina egedii ssp. egedii)
Potentilla glandulosa subsp. glandulosa	**sticky cinquefoil**	**P**	**Ch, OW**	**H**	**(RF: lower Royce's Cyn.)**	
Prunus ilicifolia subsp. ilicifolia	holly-leaf cherry	S	Ch, OW	H	N&E slopes	
Rosa californica	California wild rose	S	Rp, OW	H	canyons	
Rubus discolor	*Himalayaberry*	*S*	*INVASIVE*	*H*	*Brush Cyn.*	
Rubus pensilvanicus	*Pennsylvania blackberry*	*S**	*INVASIVE?*	*H*	*Brush Cyn.*	*(texonomic problems?)*
Rubus ursinus	Pacific blackberry	S	MC	H	canyons	
Sanguisorba minor ssp. balearica	*burnet*	*P**	*VG, W*	*H*	*Vermont Canyon, E of Greek Theate (=Sanguisorba minor subsp. muricata)*	
Rubiaceae	**Bedstraw Family**					
Galium angustifolium subsp. angustifolium	shrubby bedstraw	SS	MC	H		
Galium aparine	*cleavers*	*A**	*dist. places*	*H*		
Galium nuttallii subsp. nuttallii	climbing bedstraw	SS	MC	H	between Mt. Lee and Mt. Cahuenga	
Galium cliftonsmithii	Santa Barbara bedstraw	P	Ch, OW			
Salicaceae	**Willow Family**					
Populus balsamifera ssp. trichocarpa	**black cottonwood**	**T**	**Rp**	**RF**	**Brush Cyn., Cadman Cyn.**	
Populus fremontii ssp. fremontii	Fremont cottonwood	T	Rp	DC?		
Salix exigua	sandbar willow	S	Rp	RF	Western Cyn.	
Salix goodingii	**black willow**	**T**	**Rp**	**RF**	**Brush Cyn.**	
Salix laevigata	red willow	S/T	Rp	RF	Brush Cyn.	
Salix lasiandra var. lasiandra	Pacific shining willow	T	Rp			
Salix lasiolepis	arroyo willow	S/T	Rp	RF	Brush Cyn.	
Saxifragaceae	**Saxifrage Family**					
Boykinia occidentalis	coastal brookfoam	P	Rp			
Boykinia rotundifolia	round-leaved boykinia	P	Rp			
Lithophragma affine	common woodland star	P	Ch, OW	H	W of Mt. Lee	
Saxifraga californica	**California saxifrage**	**P**	**CSS, Ch, OW**	**H**		
Scrophulariaceae	**Snapdragon Family**					
Antirrhinum coulterianum	Coulter's snapdragon	A	CSS, Ch			
Antirrhinum kelloggii	climbing snapdragon	A	Ch	H		
Antirrhinum multiflorum	sticky snapdragon	A/P	Ch, &			
Castilleja affinis	coast indian paintbrush	SS	CSS, Ch, &			
Castilleja applegatei martinii	Martin's paintbrush	P	Ch			
Castilleja exserta subsp. exserta	owl's clover	A	CSS, VG, &	H		
Castilleja foliolosa	woolly indian paintbrush	SS	Ch, CSS, &			

Collinsia heterophylla	Chinese houses	A	MC	H		
Collinsia parryi	Parry's collinsia	A	Ch, OW			
Cordylanthus rigidus ssp. setigerus	bristly bird's beak	A	CSS, Ch, OW			
Keckiella cordifolia	heart-leaf penstemon	S	Ch	H		
Linaria canadensis	blue toadflax	A	CSS, Ch			
Mimulus brevipes	yellow monkeyflower	A	CSS, Ch	H		
Mimulus cardinalis	scarlet monkeyflower	P	Rp	An	Brush Cyn.	
Mimulus floribundus	slimy monkeyflower	A	Rp, &			
Mimulus guttatus	creek monkeyflower	A/P	Rp	H		
Mimulus longiflorus (M. aurantiacus)	bush monkeyflower	SS	CSS, Ch	H		
Mimulus pilosus	downy monkeyflower	A	CSS, Ch, OW	H	near W boundary of park	
Orobanche (all spp.)	broomrape	P	Ch			
Pedicularis densiflora	Indian warrior	P	Ch, OW			
Penstemon centranthifolius	scarlet bugler	P	Ch			
Penstemon heterophyllus	foothill penstemon	P	Ch, OW, &	An		
Penstemon spectabilis var. subviscosis	showy penstemon	P	CSS, Ch	H		
Scrophularia californica subsp. californica	California bee plant	P	CSS, Ch, &	H	Brush Cyn.	
Veronica anagallis-aquatica	water speedwell	P	Rp			
Simaroubaceae	**Quassia Family**					
Allanthus altissima	*tree-of-heaven*	*T**	*INVASIVE*	*RF*		
Solanaceae	**Nightshade Family**					
Datura wrightii	sacred datura	A	CSS, Ch	H		
Lycium californicum	California box-thorn	S	CSS, Ch		(out of range?)	CNPS 4.2
Nicotiana glauca	*tree tobacco*	*S**	*INVASIVE*	*H*		
Nicotiana quadrivalvis	**Indian tobacco**	**A**	**CSS, Ch**	**H**		
Solanum americanum	common nightshade	P	dist. places	H		
Solanum douglasii	Douglas' nightshade	SS	CS, CSS, Ch, &	H		
Solanum nigrum	*black nightshade*	*A**	*dist. places*	*An*		
Solanum xanti	purple nightshade	SS	Ch, OW	H		
Tropaeolaceae	**Nasturtium Family**					
Tropaeolum majus	*nasturtium*	*A/P**	*INVASIVE*	*RF*	*Brush Cyn., Cadman Cyn.*	
Ulmaceae	**Elm Family**					
Ulmus parvifolia	*Chinese elm*	*T**	*INVASIVE*	*RF*	*Cadman Cyn.*	
Urticaceae	**Nettle Family**					
Hesperocnide tenella	**annual stinging nettle**	**A**	**CSS, Ch**	**H**	**(location?)**	
Parietaria hespera var. californica	California pellitory	A	Rp	H		
Urtica dioica ssp. holosericea	stinging nettle	P	Rp	RF	Cadman Cyn.	
Urtica urens	*dwarf nettle*	*A**	*dist. places*	*H*		
Valerianaceae	**Valerian**					
Centranthus ruber	*red valerain*	*P**	*INVASIVE*			
Verbenaceae	**Vervain Family**					

Verbena lasiostachys	common vervain	P	MC			
Lantana montevidensis	*trailing lantana*	*S**	*dist. places*	*RF*	*Vermont Cyn.*	
Violaceae	**Violet Family**					
Viola pedunculata	**johnny-jump-up**	**P**	**CSS, VG, &**	**H**		
Viscaceae	**Mistletoe Family**					
Phoradendron villosum	mistletoe	S	MC	An	not id'd as such	
Vitaceae	**Grape Family**					
Vitis girdiana	**wild grape**	**S**	**MC**	**H**	**NE near water tank**	
Zygophyllaceae	**Caltrop Family**					
Tribulus terrestris	*puncture vine*	*A**	*dist. places*	*RF*		
Monocots						
Arecaceae	**Palm Family**					
Phoenix canariensis	*Canary Island date palm*	*T**	*INVASIVE*	*RF*		
Washingtonia robusta	*Mexican fan palm*	*T**	*INVASIVE*	*RF*		
Cyperaceae	**Sedge Family**					
Carex barbarae	valley sedge	P	VG, Rp			
Carex globosa	round-fruited sedge	P	OW, Rp			
Carex praegracilis	clustered field sedge	P	VG, Rp			
Carex senta	rough sedge	P	CSS, Ch, OW, Rp			
Carex spissa	San Diego sedge	P	CSS, Ch, OW			
Carex triquetra	triangular-fruit sedge	P	CSS, Ch	H	Vermont Cyn.	
Cyperus eragrostis	tall flatsedge	P	Rp	RF	Royce's Cyn.	
Cyperus involucratus	*umrella sedge*	*P**	*Rp*	*RF*	*Cadman Cyn.*	
Eleocharis macrostachya	common spikerush	P	Rp			
Eleocharis montevidensis	Montevideo spike rush	P	Rp			
Eleocharis radicans	creeping spikerush	P	Rp			
Scirpus cernuus	annual tule	A	Rp			
Iridaceae	**Iris Family**					
Sisyrinchium bellum	Blue Eyed Grass	P	CSS, OW, VG	H	N&E slopes	
Juncaceae	**Rush Family**					
Juncus macrophyllus	long-leaved rush	P	Rp	RF	Royce's Cyn.	
Juncus patens	common rush	P	Rp			
Juncus phaeocephalus paniculatus	brown-headed rush	P	Rp			
Juncus rugulosus	wrinkled rush	P	Rp			
Juncus sp.	wire grass	P	Rp, OW	RF	Cadman Cyn.	(prob. J. balticus or mexicanus?)
Juncus textilis	Indian rush	P	Rp			
Juncus torreyi	Torrey's rush	P	Rp			

APPENDIX III
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Liliaceae	**Lily Family**					
Agave americana	*century plant*	*P**	*CSS, Ch*	*RF*		
Allium haematochiton	wild onion	P	CSS, Ch, VG	H	Vermont Cyn.	
Allium peninsulare	**peninsular onion**	**P**	**CSS, Ch**	**H**	**e. and so. slopes**	
Bloomeria crocea	goldenstars	P	CSS, Ch, OW, VG	H		
Brodiaea jolonensis	chaparral brodiaea	P	CSS, Ch, VG			(= Brodiaea terrestris ssp. kernensis?)
Calochortus catalinae	**Catalina mariposa lily**	**P**	**Ch, VG**	**DC**	**edge of park, Western Cyn.**	**CNPS 4.2**
Calochortus plummerae	**Plummer's mariposa lily**	**P**	**CSS, Ch, OW**	**H**	**Brush Cyn.**	**CNPS 1B.2**
Calochortus splendens	**splendid mariposa lily**	**P**	**Ch, VG, &**	**An**	**(loc?)**	
Calochortus venustus	butterfly mariposa lily	P	OW, VG, &			
Chlorogalum pomeridianum	soap plant	P	CSS, VG	An	e.,so. and w. slopes	
Dichelostemma capitatum subsp. capitatum	blue dicks	P	CSS, Ch, OW, VG	H		
Fritillaria biflora	**chocolate lily**	**P**	**VG**	**H**	**"Oak Cyn." area**	
Hesperoyucca whipplei	chaparral yucca	P	Ch, CSS, &	H		(= Yucca whipplei var. intermedia)
Lilium humboldtii var. occelatum	**Humboldt lily**	**P**	**Ch, Rp**	**RF**	**Fern, Brush Cyn.**	**CNPS 4.2**
Zigadenus fremontii	**Fremont star lily**	**P**	**CSS, Ch, VG**	**H**		
Lemnaceae						
Lemna gibba	gibbous duckweed	P	Rp			
Lemna trisulca	ivy-leaved duckweed	P	Rp			
Wolfiella lingulata	mud-midget	P	Rp			
Orchidaceae	**Orchid Family**					
Epipactis gigantea	stream orchid	P	Rp			
Piperia unalascensis	rein orchid	P	CSS, Ch, OW			
Poaceae	**Grass Family**					
Agrostis exarata	**spike bentgrass**	**P**	**CSS, Ch**	**RF**	**Royce's Cyn.**	
Agrostis pallens	chaparral bent grass	P	CSS, Ch	H		
Agrostis viridis	*Water Bent Grass*	*A**	*Rp*	*H*		
Andropogon glomeratus scabriglumis	southwestern bushy bluestem	P	CSS, Ch			
Aristida adscensionis	three-awn	P	CSS			
Arundo donax	*arundo*	*P**	*INVASIVE*	*RF*	*spring canyon saddle, upper Western Cyn., Toyon Landfill*	
Avena barbata	*slender oats*	*A**	*INVASIVE*	*RF*		
Avena fatua	*wild oats*	*A**	*INVASIVE*	*H*		
Avena sativa	*cultivated oats*	*A**	*INVASIVE*			
Bromus carinatus	California brome	A/B	CSS, Ch, VG			
Bromus catharticus	*rescue grass*	*A/B**	*dist. places*			
Bromus diandrus	*ripgut brome*	*A**	*INVASIVE*	*H*		
Bromus hordeaceus	*soft chess*	*A**	*INVASIVE*	*RF*		
Bromus laevipes	*woodland brome*	*A**	*INVASIVE*	*H*		
Bromus madritensis ssp. rubens	*red brome*	*A**	*INVASIVE*	*H*		
Cortaderia jubata	*jubata grass*	*P**	*INVASIVE*			
Cortaderia selloana	*pampass grass*	*P**	*INVASIVE*	*An*		
Cynodon dactylon	*bermudagrass*	*P**	*INVASIVE*	*An*		
Digitaria sanguinalis	*crabgrass*	*A**	*dist. places*	*An*	*id'd as another spp.?*	
Echinochloa crus-galli	*barnyard grass*	*A**	*dist. places*	*H*		
Ehrharta calycina	*perennial veldtgrass*	*P**	*INVASIVE*	*RF*	*Bronson Cyn., Royce's Cyn., Vista Del Valle (throughout)*	

Ehrharta erecta	*panic veldtgrass*	*P**	*INVASIVE*	*RF*	
Elymus glaucus	blue wildrye	P	Ch, VG	An	
Elymus multisetus	big squirreltail	P	Ch, VG		
Elymus stebbinsii	wheatgrass	P	Ch		
Eragrostis mexicana ssp. virescens	Orcutt's lovegrass	A	wet places		
Festuca elmeri	Elmer's fescue	P	OW		
Hordeum depressum	alkali barley	A	MC		
Hordeum intercedens	bobtail barley	A	wet places		
Hordeum murinum ssp. glaucum	*foxtail barley*	*A**	*INVASIVE*	*An*	
Hordeum vulgare var. trifurcatum	*barley*	*A**			
Lamarckia aurea	*goldentop*	*A**	*dist. places*	*H*	
Leymus condensatus	giant wildrye	P	CSS, Ch, OW	RF	
Leymus triticoides	creeping wildrye	P	CSS, Ch, OW		
Lolium multiflorum	*Italian ryegrass*	*P**	*W*	*H*	
Lolium perenne	*perennial ryegrass*	*A**	*INVASIVE*	*An*	
Melica californica	California melic	P	OW		
Melica imperfecta	chaparral melic	P	CSS, Ch, OW	RF	
Muhlenbergia asperifolia	scratchgrass	P	wet places		(gross appearance resembles Distichlis spicata)
Muhlenbergia microsperma	littleseed muhly	A	CSS, VG	H	
Nassella cernua	nodding needlegrass	P	CSS,		
Nassella lepida	foothill needlegrass	P	CSS, Ch	RF	
Nassella pulchra	purple needlegrass	P	CSS,		
Paspalum distichum	knotgrass	P	VG, Rp		
Pennisetum clandestinum	*kikuyugrass*	*P**	*INVASIVE*	*RF*	
Pennisetum setaceum	*fountaingrass*	*P**	*INVASIVE*	*RF*	
Phalaris aquatica	*harding grass*	*P**	*VG, Rp*		
Phragmites australis	common reed	P	wet places		
Piptatherum miliaceum	*smilo grass*	*P**	*dist.*	*RF*	
Poa annua	*annual bluegrass*	*A**	*W*		
Polypogon monspeliensis	*rabbit's foot*	*A**	*dist., wet places*	*H*	
Puccinellia simplex	California alkaligrass	A	VG		
Schismus barbatus	*Abu-Mashi*	*A**	*W*	*H*	
Sorghum halepense	*johnsongrass*	*A**	*INVASIVE*	*H*	
Sporobolus airoides	alkali sacaton	P	CSS, VG		
Vulpia myuros var. myuros	*foxtail fescue*	*A**	*MC*	*H*	
Typhaceae	**Cat-tail family**				
Typha domingensis	slender cat-tail	P	Rp		
Typha latifolia	common cat-tail	P	Rp	An	

Appendix 9:

Wildlife Species Checklist for Griffith Park, January, 2008.
Daniel S. Cooper, Cooper Ecological Monitoring, Inc.

DRAFT checklist for Griffith Park
Daniel S. Cooper, Cooper Ecological Monitoring, Inc.
5350 W. 3rd St., #167
Los Angeles, CA 90036
January, 2008

Resident elsewhere in Santa Monica Mtns.; suitable habitat at Griffith Park but no records
Recorded historically from Griffith Park or vicinity but no recent records
Presumed extirpated based on large size/ease of detection and lack of recent/consistent records

DRAFT

	Species	Common name	Status	*Historical (pre-1950) Status*	Current Status	Date last recorded	Documentation	Location (if applicable)	Notes
Mammals									
1	*Didelphis virginiana*	Virginia opossum		*Present*	Present	2007	Mathewson et al. (in press)		
2	*Notiosorex crawfordi*	Desert shrew		*Unk.*	Unk.	N/A			
3	*Sorex ornatus*	Ornate shrew		*Unk.*	Unk.	N/A			
4	*Scapanus latimanus occultus*	Broad-footed mole		*Present*	Presumed present	1927	LACM (multiple specimens)	"Los Angeles; Griffith Park"	
5	*Antrozous pallidus*	Pallid bat	CSC	*Unk.*	Unk.				
6	*Eptesicus fuscus bernardinus*	Big brown bat		*Present*	Unknown	1944	LACM 10717	"Santa Monica Mts; Griffith Park	
7	*Lasiurus cinereus cinereus*	Hoary Bat		*Unknown*	Unknown	1928	LACM 9425	"Hollywood"	
8	*Myotis californicus*	California myotis		*Unk.*	Unk.	N/A			
9	*Myotis yumanensis*	Yuma myotis		*Unk.*	Unk.	N/A			
10	*Pipistrellus hesperus*	Western pipistrelle		*Unk.*	Unk.	N/A			Appears on SMM checklist
11	*Eumops perotis californicus*	Western mastiff bat	CSC	*Unknown*	Unk.	1991	LACM 94011	"Hollywood"	
12	*Tadarida brasiliensis mexicana*	Mexican free-tailed bat		*Unknown*	Presumed present	1990	LACM 91737	"Los Angeles River, 1 km E Hwy	
13	*Procyon lotor psora*	Raccoon		*Present*	Present	2007	Mathewson et al. (in press)		
14	*Bassariscus astutus octavus*	Ringtail		*Unknown*	Unknown	1935	LACM 4297	"Los Angeles; Hollywood Hills"	
15	*Mephitis mephitis holzneri*	Striped skunk		*Present*	Present	2007	Mathewson et al. (in press)		
16	*Spilogale putorius phenax*	Spotted skunk		*Present*	Unknown	1929	LACM 1203	"Los Angeles; Griffith Park"	Two 1941 specimens from "Hollywood Dam"
17	*Mustela frenata latirostra*	Long-tailed Weasel		*Unknown*	Unknown	1941	LACM 8089	"Hollywood Hills"	
18	*Canis latrans ochropus*	Coyote		*Present*	Present	2007	Mathewson et al. (in press)		
19	*Urocyon cinereoargenteus*	Gray fox	RR	*Unknown*	Present	2007	Mathewson et al. (in press)		
20	*Vulpes vulpes fulva**	Red fox*		*Absent*	N/A	1969	(LACM 52201; not established)	"North Hollywood; Universal City"	
21	*Lynx rufus californicus*	Bobcat	RR	*Present*	Present	2007	Mathewson et al. (in press)		
22									
23	*Sciurus griseus anthonyi*	Western gray squirrel		*Present*	Present	2007	DSC, pers. obs.		
24	*Sciurus niger**	Eastern fox squirrel*		*Unknown*	Present	2007	DSC, pers. obs.		
25	*Spermophilus beecheyi*	California ground squirrel		*Present*	Present	2007	DSC, pers. obs.		
26	*Thomomys bottae bottae*	Botta's pocket-gopher		*Present*	Present	2007	DSC, pers. obs.		
27	*Chaetodipus californicus dispar*	California pocket mouse		*Present*	Unknown	1941	LACM 20564	"Griffith Park"	
28	*Microtus californicus*	California vole		*Unk.*	Unknown	N/A			Appears on SMM checklist
29	*Neotoma fuscipes macrotis*	Dusky-footed woodrat		*Present*	Presumed present	1997	LACM (multiple specimens)	Vista del Valle Dr.	
30	*Neotoma lepida intermedia*	San Diego desert woodrat	CSC,	*Present*	Presumed present	1997	LACM (multiple specimens)	Vista del Valle Dr.	
31	*Peromyscus californicus*	California mouse		*Present*	Unknown	1941	LACM (multiple specimens)	"Ferndell, Griffith Park"	
32	*Peromyscus eremicus*	Cactus mouse		*Present*	Unknown	1941	LACM (multiple specimens)	"Griffith Park"	
33	*Peromyscus maniculatus*	Deer mouse		*Unknown*	Unknown	N/A			Appears on SMM checklist
34	*Reithrodontomys megalotis*	Western harvest mouse		*Present*	Presumed present	1941	LACM (multiple specimens)	"Ferndell, Griffith Park"	
35	*Mus musculus**	House mouse*		*Present*	Presumed present	1941	LACM 20582	"Griffith Park"	
36	*Rattus norvegicus**	Norway rat*		*Presumed present*	Presumed present	N/A			Common throughout Los Angeles
37	*Rattus rattus**	Black rat*		*Presumed present*	Presumed present	N/A			Common throughout Los Angeles
38	*Sylvilagus audubonii sanctidiegi*	Desert cottontail		*Unknown*	Present	2007	DSC, pers. obs.		
39	*Sylvilagus bachmani*	Brush rabbit		*Present*	Unknown	1933	LACM 30780	"Los Angeles; Griffith Park"	
40	*Odocoileus hemionus californica*	Mule deer		*Present*	Present	2007	Mathewson et al. (in press)		

Amphibians

1	*Aneides lugubris*	Arboreal Salamander	RR	*Present*	Presumably present	1922	USNM 93612	"Griffith Park"	Two individuals found within last 5 years at Los Angeles Zo
2	*Batrachoseps nigriventris*	Black-bellied slender-salamander		*Present*	Present	2007	DSC, pers. obs.		
3	*Batrachoseps major*	Garden slender-salamander		*Present*	Unknown	1941	LACM 731	"Griffith Park, Los Angeles"	AKA B. pacificus - Pacific SS?
4	*Ensatina eschscholtzii eschscholt*	Monterey Ensatina		*Present*	Unknown	1922	USNM 93609	"Los Angeles, Griffith Park"	Several specimens collected to the west near Coldwater C
5	*Taricha torosa*	Coast Range newt	CSC, RR	*Unknown*	Unknown	1946	MVZ 42425	"Hollywood Hills"	Unknown to De Lisle et al. (1986) east of Coldwater
6	*Bufo boreas*	Western toad		*Present*	Present	2007	Ian Recchio ph. (to DSC)	Los Angeles Zoo	
7	*Pseudacris regilla*	Pacific chorus-frog		*Present*	Present	2007	DSC, pers. obs.		
8	*Rana catesbeiana**	Bullfrog*		*Absent*	Presumed present	1992	LACM 139920	"Los Angeles River, end of Nevell St; ~1 km downstream of Glendale Fwy"	

Reptiles

1	[redacted]								
2	*Elgaria multicarinata*	Southern alligator lizard		*Present*	Present	2007	Matthewson et al. (in press)		
3	*Aniella pulchra*	California legless lizard	CSC, RR	*Present*	Unknown	1965	LACM 131563	"Griffith Park"	
4	*Phrynosoma coronatum*	Coast horned lizard	CSC, RR	*Unknown*	Unknown	1919	MVZ 7863	"1 mi S Lankersheim"	Scattered recent sightings (to DSC)
5	*Sceloporus occidentalis*	Western fence lizard		*Present*	Present	2007	Matthewson et al. (in press)		
6	*Uta stansburiana*	Side-blotched lizard		*Present*	Unknown	1941	LACM 5006	"Los Angeles, Griffith Park"	Recorded as "verified in 1985 by in-hand specimen taken
7	*Eumeces skiltonianus*	Skilton's (western) skink	CSC	*Unknown*	Present	2007	Matthewson et al. (in press)		
8	*Aspidoscelis tigris stejnegeri*	Coastal whiptail	CSC, RR	*Unknown*	Present	2007	Matthewson et al. (in press)		
9	*Coluber constrictor mormon*	Western yellow-bellied		*Unknown*	Unknown	N/A			De Lisle et al. (1986) considered this species extirpated
10	*Crotalus viridis helleri*	Pacific rattlesnake		*Present*	Present	2007	Matthewson et al. (in press)		
11	*Diadophis punctatus modestus*	San Bernardino ringneck	CSC,	*Present*	Presumed present	1959	LACM 2298		
12	*Hypsiglena torquata*	California nightsnake		*Unknown*	Unknown	N/A			Specimens from central Santa Monica Mtns.
13	*Lampropeltis getulus californiae*	California kingsnake		*Present*	Present	2007	Albert Torres, ph. (to DSC)		
14	*Masticophis lateralis*	California whipsnake		*Present*	Present	2007	Matthewson et al. (in press)		
15	*Pituophis melanoleucus annectei*	Pacific gopher snake		*Present*	Present	2007	Matthewson et al. (in press)		
16	*Thamnophis hammondii*	Two-striped gartersnake	CSC, RR	*Present*	Presumed present	1940	USNM 307833	"Los Angeles, Griffith Park"	Also a 1991 record (LACM 139923) from "Los Angeles Riv

* Introduced species; non-native

Appendix 10:

A Preliminary Large Mammal and Herptile Survey of Griffith Park, Los Angeles, California, August 15, 2007.
Paul Mathewson, Stephanie Spehar, and Daniel Cooper.

A PRELIMINARY LARGE MAMMAL AND HERPTILE SURVEY OF GRIFFITH PARK, LOS ANGELES, CALIFORNIA

August 15, 2007

By

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1. INTRODUCTION

Griffith Park, the nation's largest municipally-owned park, is a natural oasis for both the human and wildlife populations of Los Angeles. Despite being surrounded by urban development, Griffith Park has remained in large part a natural environment. The park lies within the California Floristic Province, a biome considered one of 34 biodiversity hotspots for conservation worldwide due to its high levels of diversity, endemism, and the degree to which it is threatened (Myers et al. 2000). Griffith Park itself has become increasingly isolated from other nearby open areas and core wildlife habitat due to human activity and development. Two major roadways (US 101 and Interstate 405) separate the park from the rest of the Santa Monica mountains—which contain large areas of protected land (i.e., the Santa Monica Mountains National Recreation Area and the Santa Monica State Park)—and it is separated from the Verdugo Mountains and the Angeles Crest National Forest by continuous development. In spite of its location within this highly urbanized landscape, there are regular wildlife sightings and reports, indicating permanent habitation within the park by at least some large mammal species. However, to date, no formal studies of wildlife presence and/or distribution have been conducted, prohibiting the park's natural ecosystem from being properly managed.

This study reports on the first survey of Griffith Park's large mammals and herptiles. This study targeted mammalian carnivore species, particularly medium-sized carnivores, or mesocarnivores. These mesocarnivores are much more generalized than their larger counterparts and are less likely to be extirpated from areas of high human density and fragmentation (Park & Harcourt 2002, Crooks 2000). Carnivores that have been reported in the park and were targets of this study include large carnivores—mountain lion (*Puma concolor*) and coyote (*Canis latrans*)—as well as mesocarnivores—bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*). Although it is a marsupial, the Virginia opossum (*Didelphis virginiana*) is included as a target species because its generalist ecology is similar to that of mesocarnivores and can be detected by the same methods employed for carnivores in this study.

Carnivores serve as excellent indicators of the park's overall ecological health since their survival is contingent upon the health of the food chain below them. Given their low densities and large home ranges, they are also considered "umbrella" species, as management and conservation efforts targeted at carnivores encompass many other species in the process (e.g., Wilcox 1984, Fleishman et al. 2001). The purpose of this study is to provide baseline information on the presence of large mammalian and herptile species and their distribution and habitat needs throughout Griffith Park. This preliminary study should be used as a foundation from which further studies are based, and serves as a first step in developing a more complete ecological understanding of the park.

2. METHODS

2.1 Study area

Griffith Park is a 4,210-acre public park located entirely within the City of Los Angeles. It is part of the eastern end of the Santa Monica mountain chain, and elevations within the park range from 400 feet to 1625 feet a.s.l. An area of undeveloped, privately-owned land—hereafter referred to as the Barham property—abuts the northwestern portion of the park. The rest of the park is separated from other open areas by dense urban development: the average housing density to the west towards the rest of the Santa Monica mountains is 999 houses per square mile and 3496 houses per square mile northeast to the Angeles Crest mountains (US Census 2000). Griffith Park itself contains several golf courses and museums, an observatory, a zoo, picnic areas, and ballfields. These are contained in the outer edges of the park, and the interior has remained largely undisturbed except for a network of trails and fire roads. The park's landscape consists of both native vegetation types (mixed chaparral, mixed scrub, oak sycamore riparian, oak walnut, and oak) and introduced or altered vegetation (pine, ornamental/landscaped, disturbed) (Melendrez 2004). A wildfire burned approximately 800 acres of the park's southeastern portion in May 2007.

2.2 Mammal detection

2.2.1 *Carnivores*

We assembled and monitored 42 carnivore detection stations from June 6-24, 2007. These detection stations were placed along sampling lines, which consisted of 3-10 stations set at least 150 meters apart along existing access roads and hiking trails. These sampling lines were set up in seven representative areas of the park: Aberdeen (A), Brush Canyon (BC), Headworks (HW), Hollywood Ridge (HR), Old Zoo (OZ), Royce's Canyon (RC), and Skyline (SL) (Figs. 2a, 2b). Along each sampling line we alternated between two types of detection stations: tracking stations and hair snares (See Appendix A). Tracking stations consisted of a tracking substrate placed in a 1.5 m diameter circle that had been cleared of vegetation. An attractant was placed in the center of the circle to entice animals to enter the station and leave tracks. We initially used sifted sand mixed with mineral oil in a 32:1 ratio as our substrate (Bischof 2001, Harrison 2006) with a punctured cat food can (Boydston 2005, LSA 2003) staked in the center as an attractant. We noticed the sand began drying out after one to two days, rendering tracks difficult to read, and coyotes dug up several cat food cans, obliterating the station. After two days we began using powdered gypsum as the substrate and baited the stations with Gusto, a commercial trapping lure (Minnesota Trapline Products). Reflective aluminum takeout containers and carpet squares scented with trapping lure were hung with fishing line above the tracking stations to further attract target species (McDonald et al. 2000).

Hair snares consisted of a 10cm x 10cm square of commercial carpeting with 12 10mm long staples driven through the back. The carpet squares were scented with approximately 15 ml of either Gusto or a mixture of ground beaver castorum with several

drops of imitation catnip oil and sprinkled with crushed dried catnip (Harrison 2006). We nailed the carpet squares to trees at least 10 cm dbh, and placed carpet squares approximately 16 inches off the ground, ensuring they were at a proper rubbing height for our target species (bobcat, fox, and coyote). The ground below the hair snares was cleared and tracking substrate was spread to help aid in species identification, and reflective tins were hung nearby with fishing line.

All animal sign present in the immediate vicinity of each station was noted during assembly to ensure that subsequent detections during the study were new. Stations were checked each day for the first four days, and every other day for the following eight days (e.g., Conner et al. 1983, Schauster et al. 2002, Gese et al. 2004); all identifiable tracks were measured, noted, and photographed, and new scat and other animal sign in the vicinity of the stations were recorded. After each examination, the station substrate was smoothed, and additional substrate and lure were added as necessary. Heavy machinery work and access restrictions prohibited us from visiting stations in the burned area of the park on the second day of monitoring; those stations were monitored for an additional day. The sampling line along Hollywood Ridge was set up one day late, and was thus monitored for only 11 days; stations in the Headworks area were only monitored for four continuous days (following Gese et al. 2004).

2.2.1.1 Calculating relative abundance

Absolute population numbers cannot be ascertained from tracking stations, as we cannot identify individual tracks and there is no way to distinguish tracks of a repeat visitor to a station from multiple visitors; rather, we used a relative detection index for each target species as a means of analysis. The overall detection index was calculating by dividing the total number of times a species was identified at any detection station by the total sampling effort. The total sampling effort was calculated by summing the number of nights each station was operating (Appendix A). The detection index ranges from 0 (species not found at any station) to 1 (species found at every station every night), and can be used to compare the ease with which different species are detected; from this, relative abundance can be inferred (Crooks 2002). Similar calculations can be made when grouping stations by sampling area to compare relative abundance in different areas of the park.

It was at times difficult to distinguish between the tracks of domestic dogs and coyotes in areas where were both present. We assumed all ambiguous tracks were coyote only if we were also able to ascertain coyote presence at that station through other detection means such as scat, urination, or hair rubs. If we could not confirm coyote presence through other sign, ambiguous tracks were not included in any analyses or tables.

2.2.1.2 Diversity calculation

In order to quantify target species biodiversity more completely than simply looking at species richness (the total number of species found), we used the Shannon Index of diversity. This index takes into account the relative abundance of species within a

sample, as well as how evenly they are distributed within that sample. It is not affected by sample size, so we can compare across unequally sampled areas. The Shannon Index (H) is calculated by taking the proportion of a given species (*i*) out of all species present and multiplying it by the natural log of this proportion. This is done for all species in the sample, and the values are summed and multiplied by -1:

$$H = -\sum(p_i \times \ln(p_i))$$

A greater H value indicates a higher level of species diversity. A species evenness value, which allows us to obtain a measure of how evenly study species are distributed in a given area, can then be calculated. The Shannon Index (H) is divided by the log of the total number of species in the sample (S):

$$E_H = H/\log(S)$$

Evenness (E_H) approaches 0 as a sample becomes dominated by a single species and approaches 1 as a sample has similar proportions of all species.

2.2.2 *Other mammals*

Domestic dog (*Canis familiaris*) tracks found at detection stations were recorded on a presence/absence basis only, as they were not target wildlife species. We also recorded tracks and noted other sign of the non-carnivorous mammals that we could identify sign to at least the genus level at the detection stations, and included the records of the sign in the report as documentation of presence or absence in a given area. These mammals were the mule deer (*Odocoileus hemionus)* and cottontail rabbit (*Sylvilagus* spp.) However, we did not include these species in any calculations of diversity and did not create a detection index. While cottontail rabbit tracks have been reported to be prevalent at detection stations targeting carnivores (Loukmas et al. 2003), there is no reason to believe herbivore species would be attracted to our stations; any tracks discovered would likely be purely coincidental, and may not represent the true density of animals in the area. Due to time and labor cost restraints we were unable to conduct any formal rodent or smaller mammal surveys

2.3 Herptiles

We constructed 3' by 3' coverboards out of ½" to ¾ " thick and 5.5" wide scrap lumber. Six pieces approximately 36" long were fastened together with two crosspieces. Six coverboards were placed in each of the hexagonal arrays (following Reading 1997, Grant 1992, Manley et al. 2005) located in five areas: Skyline, Royce's Canyon, Brush Canyon, Old Zoo and Aberdeen (Figs. 3a, 3b). All coverboards in Brush Canyon and two coverboards in Royce's Canyon were in riparian woodland vegetation, while the Aberdeen array was located entirely on recently burned land. All coverboards in the Old Zoo and Skyline sample areas were set in scrub/chaparral vegetation. No arrays were set in the Headworks or Hollywood Ridge sample areas due to cost constraints. The arrays were checked on the same schedule as the carnivore detection stations for the first 12

days and then checked once a week for the following two weeks. In addition to checking the coverboards, we noted all other herptiles encountered throughout the study.

2.4 GIS mapping

All GIS maps included in this report were made in ArcView 3.0a (ESRI 1995) using digital orthoquad images obtained from the California Spatial Information Library. The vegetation types were based from the maps in the current Griffith Park Master Plan (Melendrez 2004) and drawn from the digital orthoquads without a formal ground-truthing effort. Thus, park boundary lines and vegetation zones should be considered close approximations of reality. Public roads were defined as roads in the park accessible to the general public. Limited access roads were defined as paved roads in the park not accessible to the general public. Selected fire roads, natural features, and buildings were also included in the maps for reference purposes.

3. RESULTS

Our 42 stations were monitored for a combined total of 491 nights of survey effort (Appendix A). During this time we detected six of our seven target species; only mountain lion presence could not be confirmed. We did find likely mountain lion scat in Royce's Canyon, but it was deposited prior to this study. Coyote was the most easily detected and widespread species, with coyote tracks accounting for nearly 80% of all carnivore tracks detected (Table 1). Coyote easily had the highest detection index of all target species, as coyote presence was identified in all seven study areas and at all but three detection stations. While skunk and bobcat were both found in four of the seven sample areas, skunk were detected at nearly twice as many stations as bobcat and had a much higher detection index (Table 2, Figs. 4a, 4b). Opossum and fox had the lowest detection index of all target species as both species were only detected in a single area (Figs. 4a, 4b).

The Skyline and Old Zoo areas had the highest species richness with five carnivore species detected in both of these areas. The Aberdeen area exhibited the lowest species richness, as only two species were detected at stations in this area (Table 3). When carnivore diversity of an area was calculated using Shannon's Diversity Index, the Old Zoo sample area also had the highest level of biodiversity. The Headworks area had the second highest Diversity Index, despite the fact that only three species were detected there; this is likely because this was the only station not dominated by coyotes and detections were thus more evenly distributed among species (Table 3). While the Royce's Canyon and Brush Canyons areas had the same species richness (3), Royce's Canyon had a much higher Diversity Index, as coyote tracks were the only carnivore species detected at all but one detection station in Brush Canyon (Tables 2, 3).

3.1 Effect of Human Use

When we grouped stations by subjective levels of human use (those trails that were open to the general public at the time of the study and along which we regularly saw people

were deemed to have high levels of human use; these included the Skyline, Brush Canyon, and Hollywood Ridge areas), we found that the areas of high human use had a much lower level of carnivore diversity even though an equal number of species were detected in both groups (Table 3).

3.2 Microhabitat preference

Habitat preference and the patterning of different types of vegetation, or microhabitats, within the park may dictate wildlife distribution patterns in the park. As the distribution of microhabitats was correlated with altitude, we used altitude as an index of microhabitat type for this study. Woodland habitats (e.g., oak sycamore riparian, oak) were normally found near canyon bottoms (below 900 ft a.s.l.), and were thus considered low altitude; scrub and chaparral habitats dominated ridgetops and slopes (above 900 ft a.s.l.), and were thus considered high altitude. When we grouped stations by altitude, lower altitude stations recorded much higher levels of carnivore diversity (Table 3), indicating that most carnivores may prefer the variety of microhabitats found at lower sections of the park. Coyote was the only species detected on more than one occasion at high altitude stations.

3.3 Use of Burned Areas

The Aberdeen detection stations were the only stations set entirely in a portion of the park that had burned during the May 2007 fire. Three stations in the Old Zoo sample area were also set in burned area, but were at the edge of the burn (Fig 2a). The Aberdeen sample area had the lowest carnivore detection rate, carnivore species richness, and biodiversity of all areas sampled. With the exception of one raccoon, all carnivore detections in this area were of coyote. However, deer were seen during monitoring activities and deer tracks were noted during several checks of Aberdeen stations. Groups of deer numbering up to seven individuals were seen along the Vista del Valle road northwest of the intersection with the Aberdeen Fire Road. The Old Zoo stations that were set at the edges of the burned area had much higher detection rates, species richness, and biodiversity, as we detected coyote, skunk, and bobcat in the burned sites in the Old Zoo sample area, as well as deer and rabbit on multiple occasions.

3.4 Herptiles

Three reptile species were found during coverboard surveys: the Western fence lizard (*Sceloporus occidentalis*), Western whiptail lizard (*Cnemidophorus tigris*), and California whipsnake (*Masticophis lateralis*). Opportunistic searches under logs and rocks by the authors during the study turned up three additional species: the Southern alligator lizard (*Elgaria multicarinata*), Western skink (*Eumeces skiltonianus*), and Western rattlesnake (*Crotalus viridis*). An unrelated nightwalk taken during the course of the study also found a California kingsnake (*Lampropeltis getula*) near the Old Zoo coverboard array (A. Torres, pers. comm.). Fence lizards were the most commonly encountered reptile, observed at all coverboard arrays and in the vicinity of nearly every carnivore detection station. Whiptail lizards were observed in four of the seven study areas, and whipsnakes were found near two detection stations in the Aberdeen study area. All other reptiles

were observed once; see Figures 3a,b for locations of all reptile sightings other than the Western fence lizard. No amphibians were detected during the course of this study.

4. DISCUSSION

4.1 Carnivores

4.1.1 *Coyote*

Coyote was by far the easiest carnivore to detect, suggesting that it is the most abundant and widespread carnivore in the park. It was detected in all sample areas at similar detection rates, indicating that they use all areas of the park with equal frequency. Other studies have demonstrated that coyote home range size is quite elastic and highly variable depending on food abundance and development (Gehrt 2004), and a study of coyote home range size in and around the Santa Monica Mountains National Recreation Area immediately west of Griffith Park found that home range size varied between 125 ha to 324 ha (Tigas et al. 2002). Given home ranges of similar size, Griffith Park could support up to 10 pairs of breeding coyote, given overlapping territories of the males and females of a pair. It is also likely that additional coyote living in the urban areas surrounding the park regularly visit the park, adding to the park's coyote numbers.

4.1.2 *Fox*

Unlike coyote, the distribution of gray fox in Griffith Park appears to be restricted to a small area within the park. We found evidence of gray fox in only one localized area within the Old Zoo study area; fox tracks and possible scat were recorded in and along the canyon northeast of Bee Rock (Figs. 4a, 4b). This area supports a good amount of tree cover in the riparian areas at the base of the canyon, as well as open scrubland higher up the canyon; fox may be attracted to areas with more tree cover, as they climb and will even nest in trees. A telemetric gray fox ranging study found a mean home range size of approximately 100 ha (Trapp 1978) indicating that Griffith Park is certainly large enough to support more than one breeding pair of fox. However, fox may be limited by habitat considerations, human activity, and competition with coyote throughout much of the park.

4.1.3 *Bobcat*

Bobcat was found in four areas within the park (Figs. 4a, 4b). Two of these areas were areas of high human use (Hollywood Ridge and Skyline), but an area with low human activity, Royce's Canyon, had by far the highest detection index (tracks were noted on four separate occasions), suggesting more frequent use of this area by bobcat. Previous studies of bobcat in southern California have found both spatial and temporal displacement of bobcat in response to high levels of human activity (Tigas et al. 2002, George & Crooks 2006), which could explain why most bobcat observations were in areas of low human use. Tigas et al. (2002) found a mean home range size of 149.8 and 125.2 ha for male and female bobcat, respectively, in unfragmented southern California

habitat, and reported that home range size did not increase with fragmentation. This suggests that Griffith Park is large enough to support up to 10 pairs of breeding bobcat, given similar home range sizes.

4.1.4 *Raccoon, Skunk, and Opossum*

Raccoon and skunk had similar detection indices and were both found at approximately a third of all detection stations (Table 2, Appendix 2). However, the distribution of the stations at which they were detected differed for the two species; skunk were only detected in four sample areas, while raccoon were found in all but one sample area. The one exception for raccoons was a high-altitude ridge (the Hollywood Ridge area); we only detected one raccoon at higher elevation stations. These findings suggest that although they are widely distributed within Griffith Park, raccoon seem to prefer areas with better access to water sources, such as canyon bottoms. A study of raccoon home range size in the Presidio, an urban park in San Francisco, reported a mean home range size of 24.8 ha, with a significant amount of overlap between individual home ranges (Boydson 2004). These home range sizes are much smaller than those reported in other, non-urban studies (e.g., Fritzell 1978, Gehrt 2004), but could be representative of home range sizes of raccoon in Griffith Park, especially given the likelihood of anthropogenic food sources supplementing raccoon diet in the park and reducing resource competition. The data reported by Boydston (2004) suggests that Griffith Park is more than large enough to support a self-sustaining raccoon population.

Like raccoon, skunk were generally found in lower elevation areas, and seemed to prefer habitat near riparian zones. However, it is unclear why skunk were not as widespread as raccoon, particularly in seemingly high-quality habitat areas such as Royce's Canyon. It is unlikely that raccoons are outcompeting skunk in the park; Gehrt (2004) reports that differential foraging habits allow skunk and raccoon coexist with minimal competition despite the two species being omnivorous and similarly sized. Human activities—in particular supplementary feeding (G. Randall, pers. comm..)—may influence the distribution of skunk in Griffith Park. Boydston (2004) found that skunk home ranges in an urban park are much smaller (mean = 21.6 ha) than ranges reported from less urbanized studies, indicating that Griffith Park is large enough to support a self-sustaining skunk population.

Surprisingly, opossum, which are frequently sighted in developed areas in Los Angeles, had the lowest detection index of any target species in Griffith Park. Raccoon have been reported to outcompete opossums (Ladine 1997, Ginger et al. 2003), which could explain the low detection of the species (Figs. 4a, 4b, Table 3). It is also possible that opossum have become so highly urbanized in this area that they prefer developed areas to the park due to ease of foraging. Boydston (2004) reported similar findings in San Francisco's Presidio Park.

4.2 Other mammals

Mule deer, rabbit and a variety of rodent track and sign were detected at the scent

stations, but only mule deer and rabbit tracks could be identified to at least the genus level.

4.2.1 *Mule deer*

Mule deer was the second most frequently detected species at the scent stations despite the fact that they were not a target species and the scent lures were not designed to attract them. Like coyote, deer were widespread, found in all sample areas and at all elevations (Table 1). They do not appear to avoid human activity; in fact, they are commonly seen on the golf courses in the park (authors, personal observation). This is supported by findings from a reserve in Orange County, California, that reported no clear avoidance of human recreation by mule deer (George & Crooks 2006). The impact of human recreation on deer behavior has not been extensively studied, although some studies have focused on the response of deer to hikers (e.g., Taylor & Knight 2003) and have found especially strong responses when dogs were present (Miller et al. 2001). Other studies have reported an increased use of landscaped areas (i.e., lawns, gardens, golf courses) by ungulates that have become habituated to human presence (e.g., Lubow et al. 2002).

4.2.2 *Rabbits*

Desert cottontail (*Sylvilangus audubonii*) was observed and/or *Sylvilagus* spp. sign detected in all but one sample area, suggesting a widespread presence in the park (Table 1). There does not appear to be an avoidance of areas of human use or any habitat preference by rabbits. As a dietary staple of coyote, bobcat, and fox, the presence of healthy rabbit populations in the park is important for resident carnivores.

4.3 Microhabitat preference

Some microhabitats, particularly woodland habitats (oak sycamore riparian, oak, pine), may be preferable to the dominant vegetation (chaparral and scrub), which could explain the higher carnivore diversity found in the lower altitude stations. Woodland habitats indicate the presence of nearby water sources, and proximity to water sources may be especially important for species with small home ranges, especially during periods of seasonal water shortage. Only coyote were detected more than once at the ridgetop stations, which suggests that coyote is the only species that regularly used higher elevation habitat during this study. It is not surprising that skunk and raccoon were rarely found at higher elevations, as their ranges are relatively small and they are thus limited by access to water sources; during this study we observed that nearly all of the reliable water sources were found in the park's lower elevations. This study was conducted at a time of record drought, with only 3 inches of rainfall since July 2006 (Becerra & Blankstein 2007). Wildlife were likely attracted to artificial water sources such as the golf courses, horse drinkers, and springs at lower elevations. Further studies, particularly during the wet season, should be conducted to determine what, if any, seasonal movement shifts are found in Griffith Park's wildlife.

Low altitude stations also tended to fall within canyon bottoms and riparian zones, which usually consist of woodland vegetation and thus contain more trees. These areas may provide more cover to animals than high-altitude ridges, and can provide relief from the heat. The increased cover in these areas may also be attractive to prey species seeking protection, which in turn draws the predators. Therefore, animals that tend to prefer areas with more cover may not use high-altitude ridgetops as often, regardless of the presence or absence of water sources.

4.4 Human Use

Of the three sample areas considered to be areas of high human use (Skyline, Brush Canyon, and Hollywood Ridge), Brush Canyon appeared to be the most heavily used by hikers and horseback riders. It was also the study area that exhibited the lowest biodiversity, outside of the burned Aberdeen sample area. These results from Brush Canyon are surprising, given that the oak/sycamore woodland habitat found in the canyon bottom had much higher detection rates in other sample areas (i.e., Royce's Canyon, Old Zoo).

Numerous studies have documented the impact of human recreation on wildlife (e.g., George & Crooks 2006, Whittaker & Knight 1998, Magle et al. 2005, Fernandez-Juricic et al. 2005) and one study even concluded that outdoor recreation is the primary cause for decline of endangered species in the United States (Taylor & Knight 2003). Mammalian carnivores are particularly susceptible to human disturbance because of their low densities and large home ranges (e.g., Ray et al 2005, George & Crooks 2006), and multiple studies have found that carnivores shift distribution and change behavior in response to human recreation (Aaris-Sorensen 1987, White et al. 1999, Nevin et al. 2005, George & Crooks 2006).

Results from our study suggest that high levels of human activity may limit the distribution of at least some carnivores (e.g., bobcat and fox) within the park. The low carnivore diversity in the Brush Canyon area in particular may reflect an avoidance of an area heavily used by humans. The Skyline trail also has regular hikers and horseback riders, and although human usage numbers have never been quantified (A. Torres, pers. comm.) casual observation during this study indicated that while both areas had comparable equestrian use, Brush Canyon receives many more hikers than Skyline, especially hikers with dogs. A previous study in southern California reported that bobcat and coyote showed no displacement from equestrian use, but were displaced by hikers, especially hikers with dogs (George & Crooks 2006). The negative impact of dogs on wildlife is well-documented (see Sime 1999 for a comprehensive review) and includes barking, chasing, scent-marking, disruption of habitat use (i.e., burrowing mammals and ground nesting birds), and disease transmission (e.g., Yalden & Yalden 1990, Mainini et al. 1993, Sime 1999, Miller et al. 2001). While a leash law does exist (L.A.M.C. 53.02), it appears to be poorly understood or rarely obeyed; for example, a casual count by the authors while checking the scent stations in Brush Canyon and along the Hollywood Ridge on three occasions totaled 37 dogs off leash and 18 dogs on leash.

4.5 Herptiles

Overall, the detection of herptiles for this study using the coverboard technique was very low. This may be due to the time of year in which the study was conducted; coverboards are intended to provide a differential environment for herptiles, which theoretically use the boards to help regulate their body temperature. It may be that temperatures were not hot enough during the study for the boards to be effective or that the extremely dry conditions during the course of the study affected the behavior and movements of herptiles, especially amphibians. We suggest that studies of the herptiles in Griffith Park should also be conducted during other times of year, particularly during the rainy season, in order to obtain a comprehensive sense of the herptile status in the park.

4.5 Suggestions for future study

As this study was conducted only once and over a short period of time, it represents only a snapshot in time within the park. Similar studies of wildlife presence and distribution should be conducted several times a year to obtain a more complete understanding of wildlife distribution and account for any possible seasonal movement and dispersal by wildlife. Conducting more studies will also be useful for monitoring population trends, as detection indices can be compared over time to detect any changes in distribution and relative abundance. Furthermore, it is unclear what, if any, compression effects the May 2007 fire had on the mammalian carnivore distribution we found in this study. Similar studies in the future would also help to understand mammalian response to fire in an isolated open space such as Griffith Park and how they return to burned area.

4.5.1 *Mammals*

The techniques used in this study proved effective in determining relative carnivore densities; it is clear that carnivores such as coyote, bobcat, fox, raccoon, and skunk are present (and in some cases widespread) within the park. However, due to constraints on time and expense, our study was necessarily limited in scope and could not determine population numbers or density. More labor-intensive and costly studies could be undertaken to gain a better understanding of absolute numbers of species and their ranging behavior. The carpet pad hair traps were readily rubbed by coyote and bobcat, suggesting that population estimates obtained using mark-recapture methods with DNA extracted from hair samples are feasible for these species. Live trapping mark-recapture methods could be employed for abundant smaller carnivores such as raccoon and skunk. Furthermore, radio telemetry studies would greatly help understand range requirements and movement of wildlife in the park.

It would also be beneficial to partner with owners of land bordering the park (e.g., Forest Lawn Cemetery, Department of Transportation, golf courses), especially land with connection to other open space, to determine what routes wildlife are using to move in and out of the park. Juveniles of species such as bobcat, coyote, and fox all disperse upon reaching adulthood and identifying and protecting dispersal routes is essential to maintaining the genetic diversity and health of these populations in the park. The

numerous studies on corridor use by wildlife have been conducted in surrounding areas should be reviewed (e.g., Haas 2001, Ng et al. 2004, Penrod et al. 2006) and GIS analyses such as a Landscape Permeability Analysis (e.g. Singleton 2002, Penrod et al. 2006) could be applied to the land between Griffith Park and nearby large open spaces (such as the Angeles Crest National Forest or the Santa Monica National Recreation Area) and would aid in identifying and protecting possible dispersal routes.

4.5.2 *Herptiles*

More labor-intensive methods may prove more effective than coverboards for documenting the presence of rare or more cryptic species. Coverboard arrays may document more species in the wet season, when they can provide a differential environment; however, we recommend that visual encounter surveys and pitfall traps be used to better document the herptiles in the park. Night walks might also prove effective in documenting snake species.

4.6 General recommendations

Communication between the different organizations operating within the park, such as the Park Rangers and the Department of Water and Power (DWP), should be encouraged. DWP employees spend a great deal of time in the park and are the only people allowed in the park during the evening/nighttime hours, when many wildlife species are most active and therefore most likely to be observed. Personal conversation with DWP employees met during the surveys indicates that some are quite vigilant and knowledgeable about wildlife in the park and could be an asset in documenting species presence and distribution.

Griffith Park provides a unique opportunity for outdoor recreation within the city Los Angeles, and is thus an invaluable resource for local residents. With this in mind, we recommend that studies on human usage in different areas of the park be conducted. With a better understanding of the location and distribution of high levels of human recreation, as well as what type of recreation is occurring and where (i.e., horseback riding, hiking, hiking with dogs, etc.) we can better study, understand, and mitigate the effects of human activity in the park on resident wildlife.

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Table 1. Large mammal species detections at all stations.

Station	Coyote	Fox	Bobcat	Raccoon	Skunk	Opossum	Deer[1]	Rabbit[1]	Domestic Dog[2]
Skyline 1	7	—	—	1	1	—	—	1	X
2	1	—	1	1	—	1	—	—	X
3	8	—	—	1	—	—	—	—	X
4	—	—	—	—	—	—	1	—	—
5	5	—	—	—	—	—	—	—	
6	8	—	—	—	—	1	—	—	X
7	6	—	—	—	—	—	—	—	—
8	3	—	—	1	1	—	1	—	—
9	1	—	—	—	—	—	—	—	—
10	6	—	—	1	2	—	3	1	X
Brush 1	—	—	—	—	—	—	—	—	—
2	4	—	—	—	—	—	—	—	X
3	5	—	—	—	—	—	—	—	X
4	8	—	—	—	—	—	—	2	—
5	4	—	—	—	—	—	—	1	—
6	3	—	—	—	—	—	—	—	X
7	7	—	—	—	—	—	—	—	X
8	7	—	—	1	1	—	1	2	—
Royce 1	4	—	1	1	—	—	—	—	—
2	4	—	—	2	—	—	1	—	—
3	3	—	2	—	—	—	1	—	—
4	—	—	—	—	—	—	2	—	—
Old Zoo 1	7	—	—	—	2	—	1	1	—
2	1	—	—	—	—	—	2	—	—
3	3	—	1	—	1	—	1	2	—
4	4	1	1	1	2	—	—	—	—
5	7	—	—	—	2	—	3	3	—
6	8	1	1	—	2	—	—	1	—
7	5	—	—	1	—	—	—	—	—
8	4	—	—	2	1	—	2	—	—
9	8	2	—	1	—	—	2	—	X
10	2	—	—	—	1	—	—	—	—
Aberdeen 1	5	—	—	—	—	—	4	—	X
2	4	—	—	1	—	—	—	—	—
3	5	—	—	—	—	—	—	2	X
4	5	—	—	—	—	—	—	—	X
Hollywood 1	6	—	—	—	—	—	3	1	X
2	2	—	—	—	—	—	1	—	—
3	5	—	1	—	—	—	—	—	X
Headworks 1	1	—	—	—	1	—	—	1	X
2	1	—	—	3	—	—	—	3	—
3	1	—	—	—	—	—	1	1	—
Total	**178**	**4**	**8**	**18**	**17**	**2**	**30**	**22**	**N/A**

1 Nontarget wildlife species. These are likely coincidental detections and are not used in analyses.

2 *Canis familiaris* tracks detected at scent stations. Only presence/absence recorded; an "X" indicates presence.

Table 2. Detection indices for mammalian carnivore species in different sample areas.

	Coyote	Fox	Bobcat	Raccoon	Skunk	Opossum
Skyline	0.375	—	0.008	0.042	0.033	0.017
Brush	0.396	—	—	0.010	0.010	—
Royce	0.229	—	0.063	0.063	—	—
Old Zoo	0.377	0.031	0.023	0.038	0.085	—
Aberdeen	0.365	—	—	0.019	—	—
Hollywood	0.394	—	0.030	—	—	—
Headworks	0.250	—	—	0.250	0.083	—
Total	**0.363**	**0.008**	**0.016**	**0.037**	**0.035**	**0.004**

Table 3. Carnivore richness, diversity, and evenness in different sample areas in Griffith Park.

Area (#stations)	Species Richness	Shannon Index (H)	Evenness (E_H)
Skyline (10)	5	0.78	0.16
Brush (8)	3	0.23	0.05
Royce (4)	3	0.89	0.18
Old Zoo (10)	5	1.03	0.21
Aberdeen (4)	2	0.20	0.04
Hollywood (3)	2	0.26	0.05
Headworks (3)	3	1.00	0.20
Total (42)	**6**	**0.82**	**0.14**
Human Use (21)	5	0.57	0.11
No Human Use (21)	5	0.98	0.20
Ridgetops (14)	4	0.42	0.10
Lower Altitude (28)	6	0.97	0.16

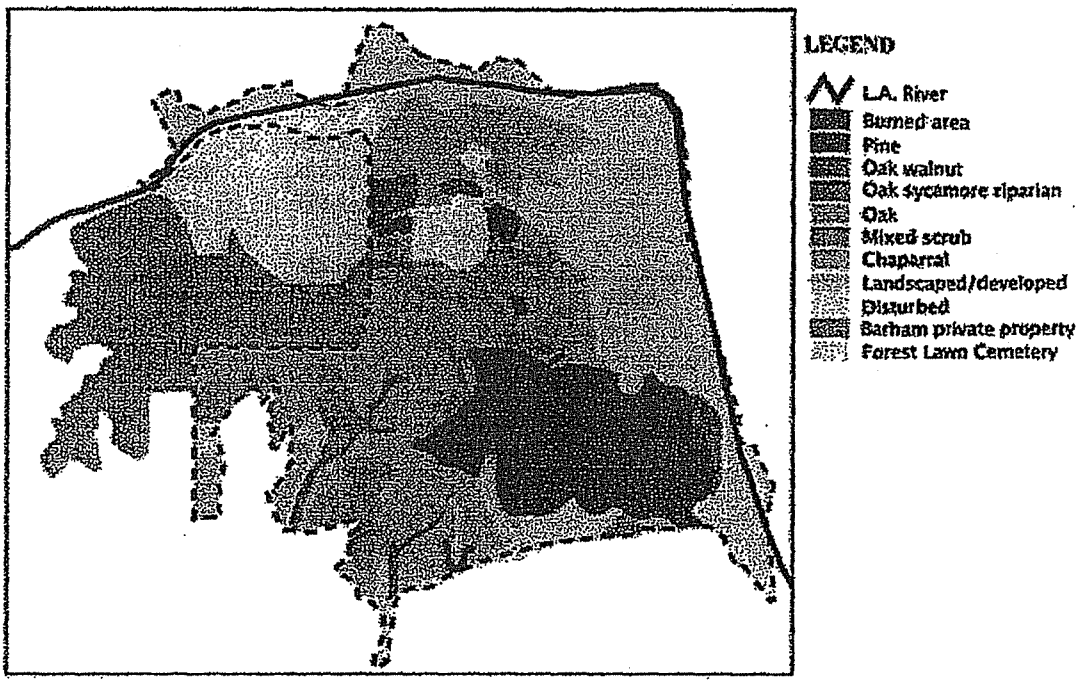


Figure 1. Griffith Park vegetation map. The burned area was a result of a fire immediately preceding this study in May 2007. Please see note in text about preparation of GIS images.

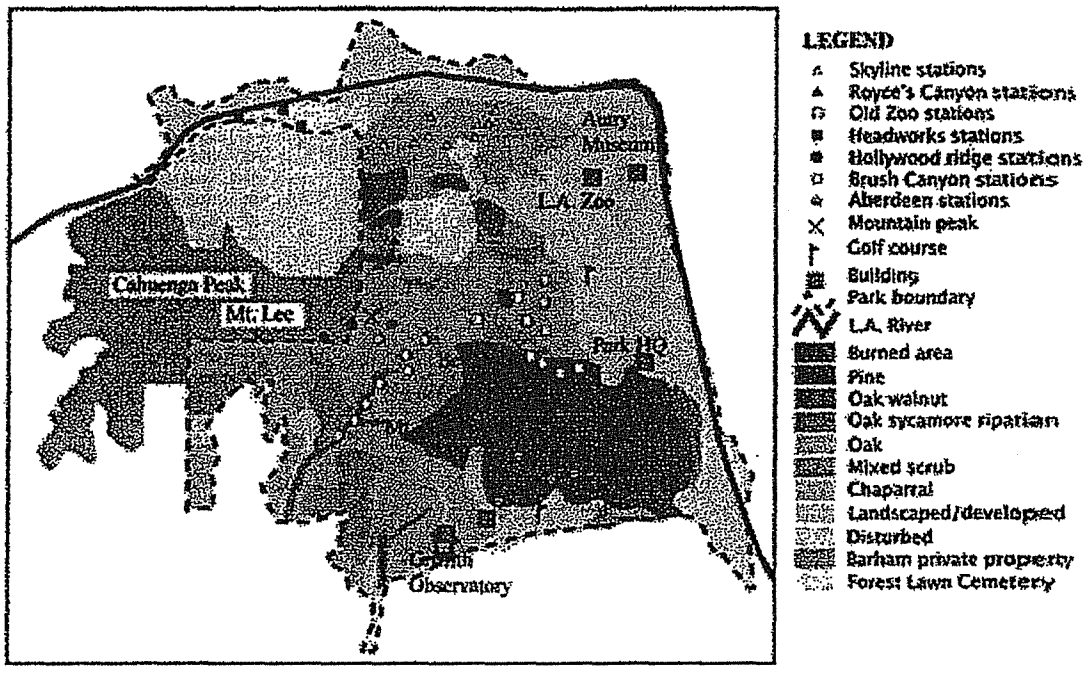


Figure 2a. Location of carnivore detection stations in different vegetation types in Griffith Park. Please see note in section 2.4 about GIS map construction.

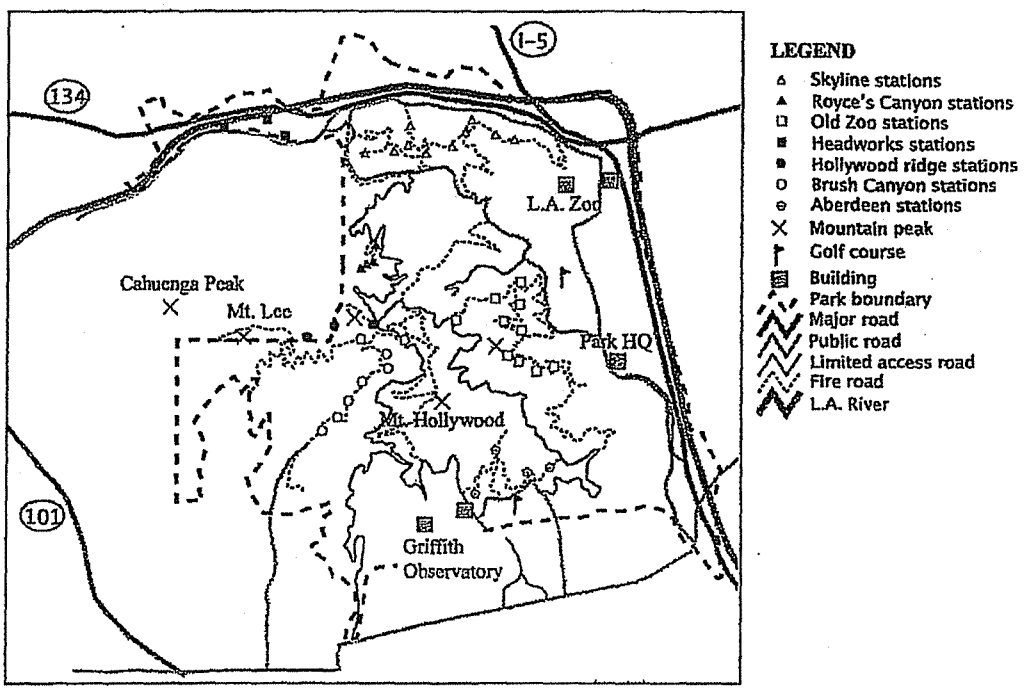


Figure 2b. Location of carnivore detection stations along selected existing roads and trails in Griffith Park.

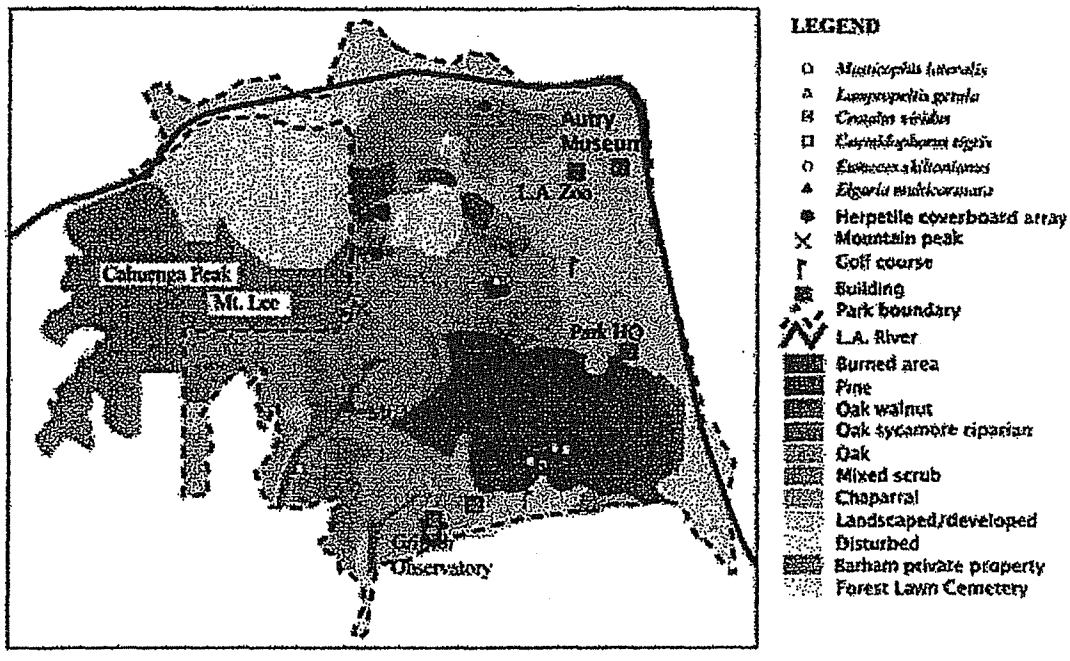


Figure 3a. Locations of herptile coverboard arrays in different vegetation types in Griffith Park. Please see section 2.4 for a note about GIS map development. Also shown are herptile species other than the Western Fence Lizard (*Sceloporus occidentalis*) encountered during the surveys. *S. occidentalis* was observed at nearly every detection station and coverboard array, and was seen frequently in other areas of the park.

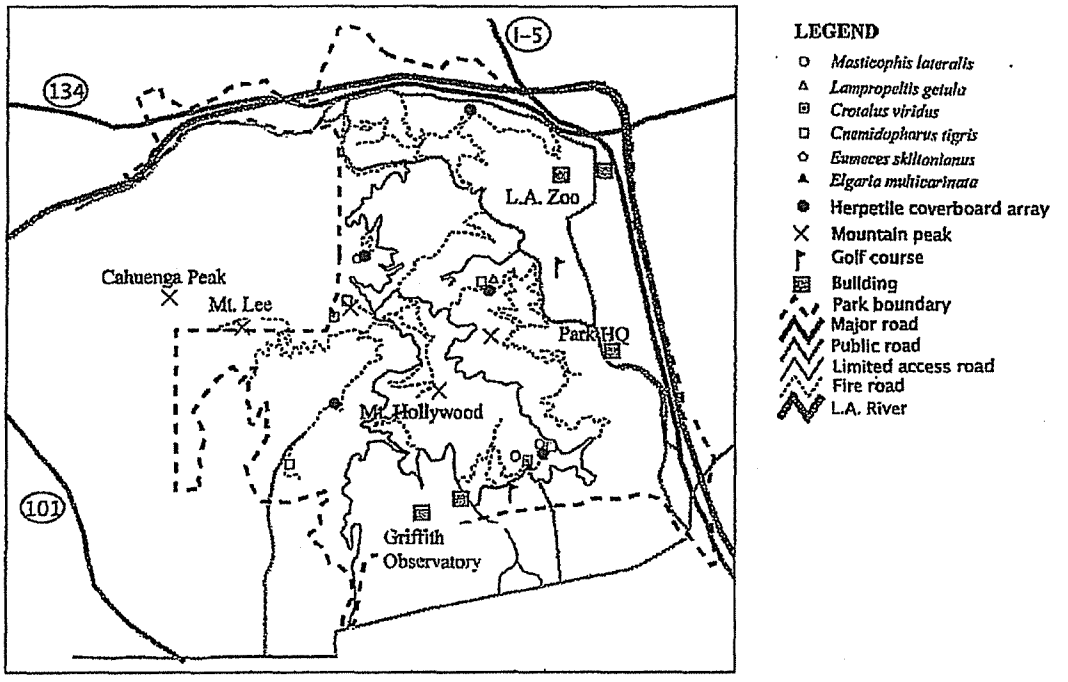


Figure 3b. Locations of herptile coverboard arrays along selected roads and trails in Griffith Park. Please see section 2.4 for a note about GIS map development. Also shown are herptile species other than the Western Fence Lizard (*Sceloporus occidentalis*) encountered during the surveys. *S. occidentalis* was observed at nearly every detection station and coverboard array, and was seen frequently in other areas of the park.

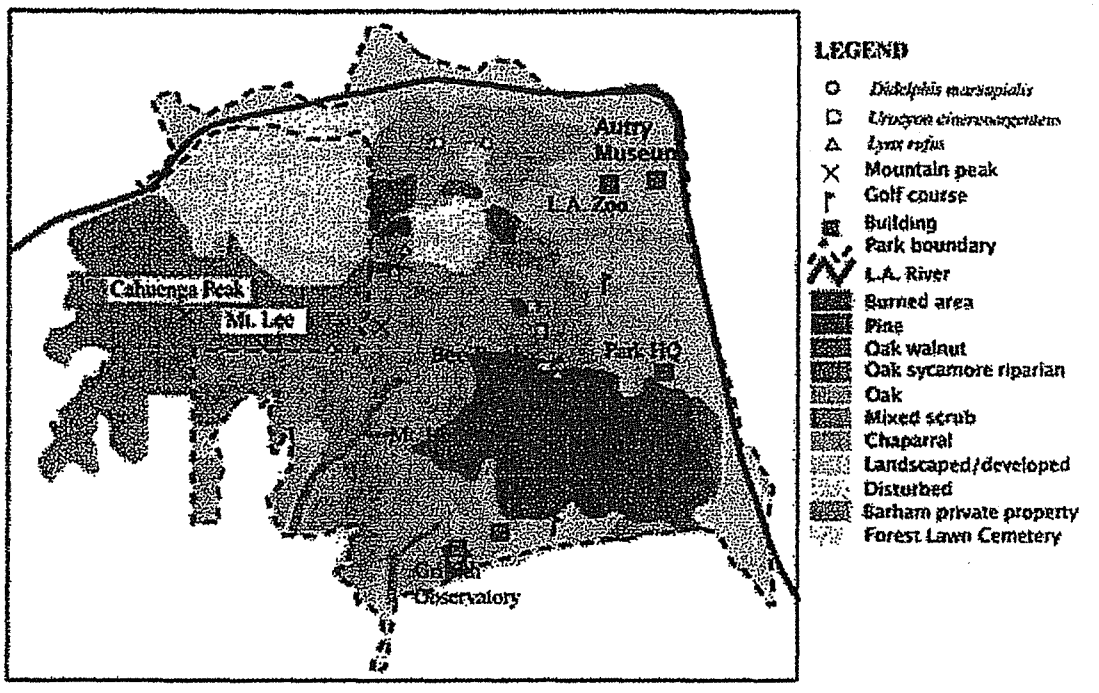


Figure 4a. Locations of the less commonly detected carnivore species — opossum (*D. maruspialis*), gray fox (*U. cinereoargenteus*), and bobcat (*L. rufus*) — at detection stations in different vegetation types in Griffith Park. Please see section 2.4 for a note about GIS map development.

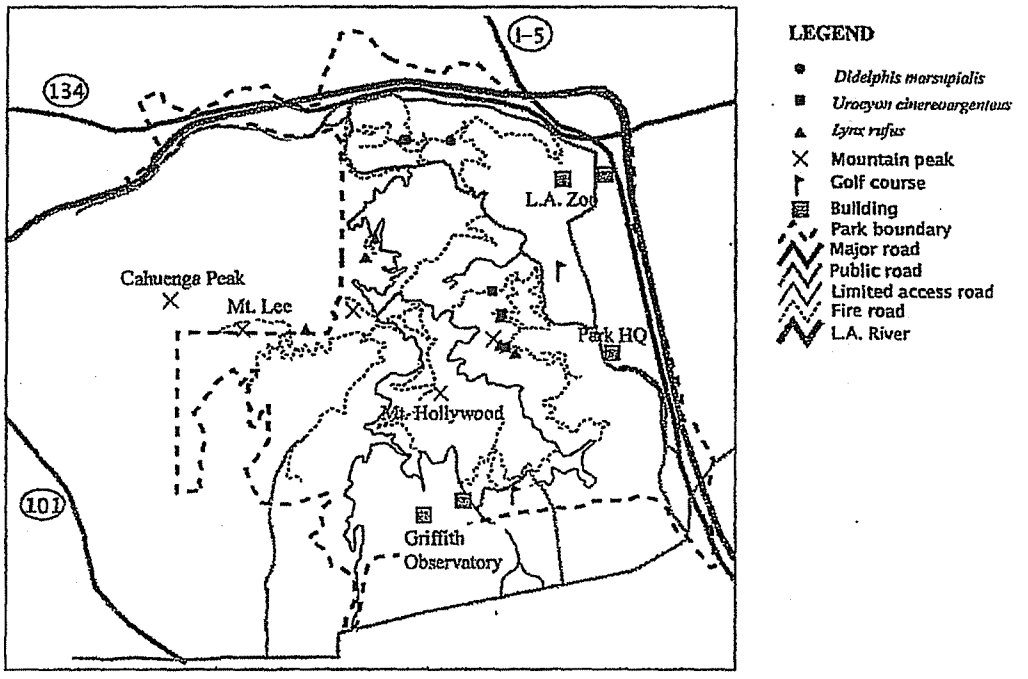
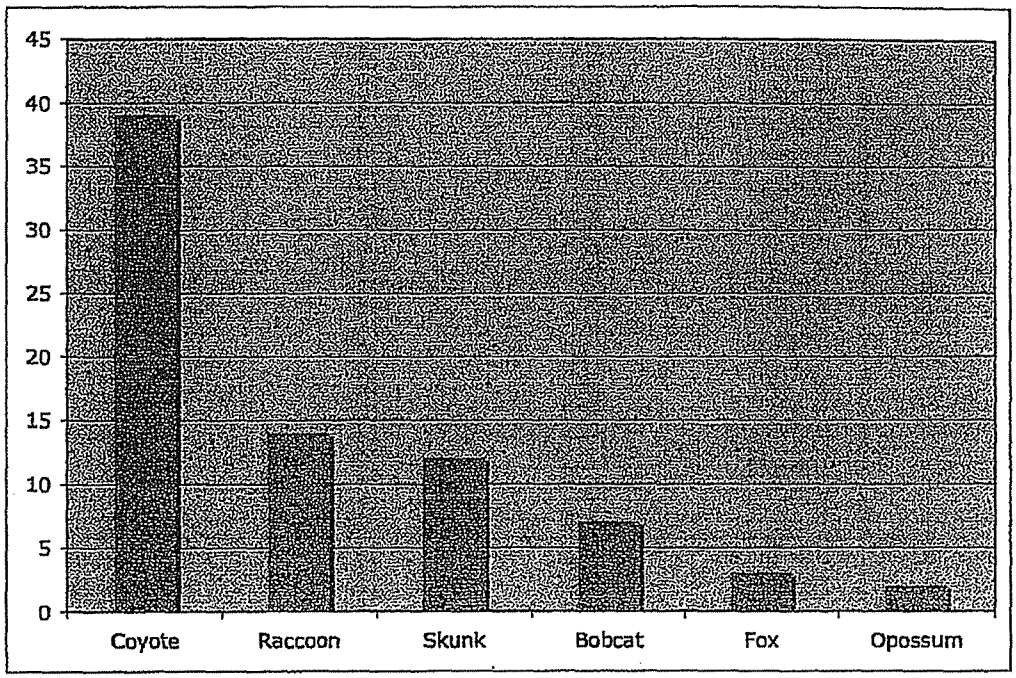


Figure 4b. Locations of less commonly detected carnivore species — opossum (*D. maruspialis*), gray fox (*U. cinereoargenteus*), and bobcat (*L. rufus*)—at detection stations along selected roads and trails in Griffith Park. Please see section 2.4 for a note about GIS map development.

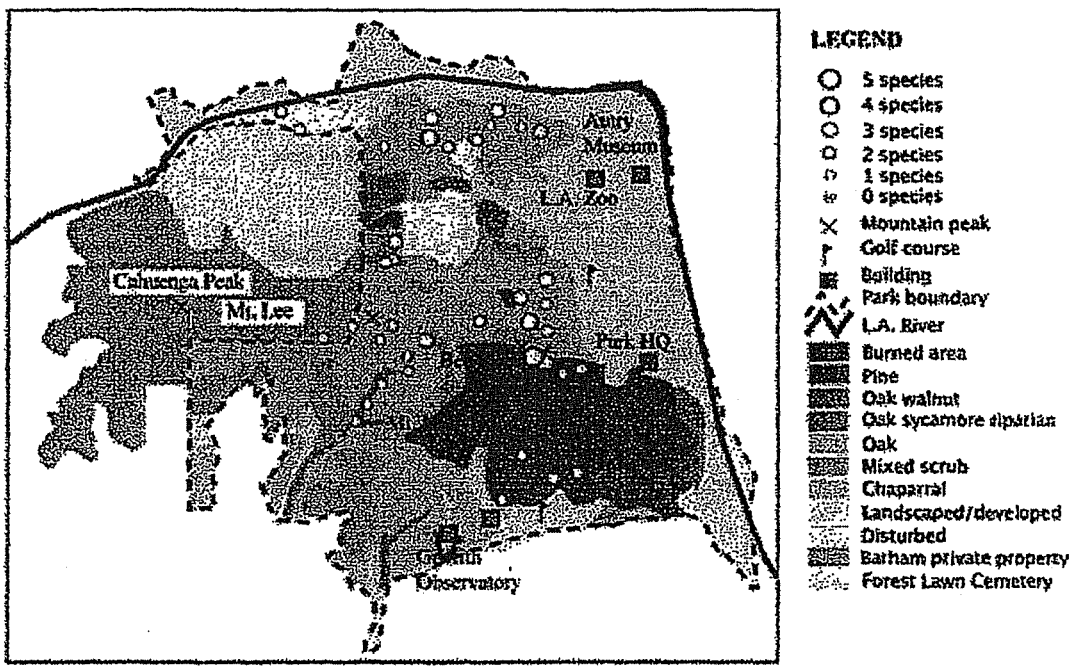
Appendix A. Individual detection station details and days operated.

Station	Type	Altitude (ft)	Survey Effort (days)	Vegetation Type
Skyline 1	Tracking	550	12	Chaparral
2	Tracking	670	12	Chaparral
3	Hair Snare	872	12	Chaparral
4	Tracking	886	12	Chaparral
5	Hair Snare	789	12	Chaparral
6	Tracking	859	12	Chaparral
7	Hair Snare	781	12	Chaparral
8	Tracking	666	12	Chaparral
9	Hair Snare	697	12	Chaparral
10	Tracking	723	12	Chaparral
Brush 1	Hair Snare	692	12	Oak-Sycamore riparian
2	Tracking	754	12	Oak-Sycamore riparian
3	Hair Snare	872	12	Chaparral
4	Tracking	956	12	Oak-Sycamore riparian
5	Hair Snare	1083	12	Chaparral
6	Tracking	1122	12	Chaparral
7	Hair Snare	1256	12	Chaparral
8	Tracking	1372	12	Mixed Scrub
Royce 1	Hair Snare	917	12	Oak-Sycamore riparian
2	Tracking	848	12	Oak-Sycamore riparian
3	Hair Snare	872	12	Oak-Sycamore riparian
4	Tracking	882	12	Chaparral
Old Zoo 1	Tracking	673	13	Burn
2	Hair Snare	717	13	Burn
3	Tracking	679	13	Burn
4	Hair Snare	675	13	Oak-Sycamore riparian
5	Tracking	601	13	Chaparral
6	Hair Snare	667	13	Chaparral
7	Tracking	741	13	Chaparral
8	Hair Snare	725	13	Chaparral
9	Tracking	899	13	Chaparral
10	Hair Snare	1094	13	Oak forest
Aberdeen 1	Tracking	1022	13	Burn
2	Hair Snare	936	13	Burn
3	Tracking	1014	13	Burn
4	Hair Snare	961	13	Burn
Hollywood 1	Tracking	1311	11	Chaparral
2	Hair Snare	1311	11	Chaparral
3	Tracking	1500	11	Chaparral
Headworks 1	Tracking	433	4	Disturbed
2	Tracking	473	4	Disturbed
3	Tracking	454	4	Disturbed

Appendix B. The number of stations at which carnivore species were detected, out of a total of 42 stations.



Appendix C. Number of carnivore species found at different detection stations in different vegetation types in Griffith Park. Please see section 2.4 for a note on GIS map development.



Appendix D. List of all herptile and mammal species identified in Griffith Park by sight or sign during the study.

Scientific name[1]	Common name[1]
MAMMALIA	
ARTIODACTYLA	
Cervidae	
Odocoileus hemionus	Mule deer
CARNIVORA	
Canidae	
Canis latrans	Coyote
Urocyon cinereoargenteus	Gray fox
Felidae	
Lynx rufus	Bobcat
Mustelidae	
Mephitis mephitis	Striped skunk
Procyonidae	
Procyon lotor	Raccoon
LAGOMORPHA	
Leporidae	
Sylvilagus audubonii	Desert cottontail
MARSUPIALIA	
Didelphidae	
Didelphis virginianus	Virginia opossum
RODENTIA	
Cricetidae	
Neotoma spp.	Woodrat species
Sciuridae	
Sciurus griseus	Western gray squirrel
Sciurus niger	Fox squirrel
Spermophilus beecheyi	California ground squirrel
REPTILIA	
Anguidae	
Elgaria multicarinata	Southern alligator lizard
Colubridae	
Masticophis lateralis	California whipsnake
Lampropeltis getula	Common kingsnake
Phrynosomatidae	
Sceloporus occidentalis	Western fence lizard
Scincidae	
Eumeces skiltonianus	Western skink
Teiidae	
Cnemidophorus tigris	Western whiptail lizard

Viperdae

Crotalus viridis	Western rattlesnake

1 Mammalian scientific and common names from the IUCN Redlist. Available at <http://www.iucnredlist.org>. Reptilian scientific and common names from: Stebbins, R.C. 2003. Peterson Field Guides: Western Reptiles and Amphibians, Third Edition. Houghton Mifflin Company: New York.

Appendix 11:

Annotated Checklist of Birds of Griffith Park
April 2007
Daniel S. Cooper, Cooper Ecological Monitoring, Inc.

Annotated Checklist of Birds of Griffith Park

April 2007
Last updated August 15, 2007

Daniel S. Cooper (DSC)
Cooper Ecological Monitoring, Inc.
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[ ] = Los Angeles River portion only
* = breeding confirmed (c. 50 species)
*? = breeding suspected (17 species)

Three-letter acronyms (e.g. BUR, HOL) are local atlas blocks based on USGS topographic maps used by the Los Angeles County Breeding Bird Survey.

Regularly-occurring (151)

[Canada Goose *Branta canadensis*] Non-breeding (?) resident along vegetated portions of the Los Angeles River.

[Wood Duck *Aix sponsa*] Winter resident along vegetated portions of the Los Angeles River.

[Gadwall *Anas strepera*] Winter resident along vegetated portions of the Los Angeles River.

[American Wigeon *Anas americana*] Winter resident along vegetated portions of the Los Angeles River.

[*Mallard *Anas platyrhynchos*] Breeding resident, mainly along vegetated portions of the Los Angeles River. Ducklings noted vic. Los Feliz Blvd. on 10 May 2007 (DSC).

[Blue-winged Teal *Anas discors*] Winter resident along vegetated portions of the Los Angeles River.

[*Cinnamon Teal *Anas cyanoptera*] Breeding resident in small numbers along vegetated portions of the Los Angeles River. Nesting records include fledglings on 07 July 1995 and on 19 July 1999 (both LACBBA); copulating pair just north of Los Feliz Blvd. on 11 May 2007.

[Northern Shoveler *Anas clypeata*] Winter resident along vegetated portions of the Los Angeles River.

[Northern Pintail *Anas acuta*] Winter resident along vegetated portions of the Los Angeles River.

[Green-winged Teal *Anas crecca*] Winter resident along vegetated portions of the Los Angeles River.

[Ring-necked Duck *Aythya collaris*] Winter resident along vegetated portions of the Los Angeles River.

[Lesser Scaup *Aythya affinis*] Winter resident along vegetated portions of the Los Angeles River.

[Bufflehead *Bucephala albeola*] Winter resident along vegetated portions of the Los Angeles River.

[Common Goldeneye *Bucephala clangula*] Winter resident along vegetated portions of the Los Angeles River.

[Hooded Merganser *Lophodytes cucullatus*] Winter resident along vegetated portions of the Los Angeles River.

[Ruddy Duck *Oxyura jamaicensis*] Winter resident along vegetated portions of the Los Angeles River.

[*?Pied-billed Grebe *Podilymbus podiceps*] Non-breeding (?) resident along vegetated portions of the Los Angeles River.

[Eared Grebe *Podiceps nigricollis*] Winter resident (Oct. - Mar.) along vegetated portions of the Los Angeles River.

[Double-crested Cormorant *Phalacrocorax penicillatus*] Non-breeding resident along vegetated portions of the Los Angeles River.

[Great Blue Heron *Ardea herodias*] Non-breeding resident along vegetated portions of the Los Angeles River.

[Great Egret *Ardea alba*] Non-breeding resident along vegetated portions of the Los Angeles River.

[Snowy Egret *Egretta thula*] Non-breeding resident along vegetated portions of the Los Angeles River.

[*?Green Heron *Butorides virescens*] Non-breeding (?) resident along vegetated portions of the Los Angeles River. One flushed out of a large willow along the river just north of Los Feliz Blvd. on 27 May 2007 (DSC).

[Black-crowned Night-Heron *Nycticorax nycticorax*] Non-breeding resident along vegetated portions of the Los Angeles River.

*?Turkey Vulture *Cathartes aura* Resident, possibly breeding on remote slopes; most numerous in early spring and late fall. Pairs noted through spring and summer (e.g., two south of Travel Town on 10 May 2007, DSC).

[Osprey *Pandion haliaetus*] Non-breeding visitor, Los Angeles River.

Sharp-shinned Hawk *Accipiter striatus* Winter resident (Oct. - Mar.); 1-2/day expected.

*Cooper's Hawk *Accipiter cooperii* Breeding resident. Nesting records incl. an active nest in the "Bird Sanctuary" on 25 Apr. 2007 (DSC), and a nest with young on 04 June 1999 in HOL 2 Block of LACBBA (Los Feliz/Silver Lake). Vocal, displaying pair vic. Old Zoo site in spring, 2007 (DSC).

*Red-shouldered Hawk *Buteo lineatus* Localized breeding resident, mainly in sycamores. Nesting records incl. an occupied nest on 31 May 1995 in HOL 2 Block of LACBBA. Breeding pair at Bette Davis Park in spring 2007 (M. San Miguel); vocal pair vic. ranger headquarters, Mar. 2007 (DSC).

*Red-tailed Hawk *Buteo jamaicensis* Breeding resident. Nesting records incl. occupied nests on 04 May 1995 (HOL 2) and on 12 Apr. 1996 (BUR 5; LACBBA.

*?American Kestrel *Falco sparverius* Probably a winter resident and transient, though a pair at Toyon Landfill 27 Apr. 2007 (MB) suggests possible nesting there. Listed by Garrett (1970; undated) as an "uncommon permanent resident", but apparently no longer breeds.

Merlin *Falcon columbarius* Winter resident; 0-1/day expected.

[Peregrine Falcon *Falco peregrinus*] Non-breeding resident along Los Angeles River (0-1/day expected).

*California Quail *Callipepla californica* Breeding resident throughout park; absent from Los Angeles River. Nesting records include young on 12 June 1996 in BUR 5 Block of LACBBA (northwestern corner

of park) and on 22 Sept. 1995 in southern portion of park. Deserves special attention, as populations are prone to local extirpations (e.g. Debs Park, Elysian Park?).

[Virginia Rail *Rallus limicola*] Transient and winter resident in patches of reeds, Los Angeles River.

[Sora *Porzana carolina*] Transient and winter resident in patches of reeds, Los Angeles River.

[*American Coot *Fulica americana*] Breeding resident along vegetated portions of Los Angeles River. Nesting records include occupied nest on 12 May 1996 in BUR 6 Block (north of Los Feliz Blvd.).

[Black-bellied Plover *Pluvialis squatarola*] Transient along cement section of Los Angeles River (e.g., vic. 134 Fwy.).

*Killdeer *Charadrius vociferus* Breeding resident, mainly along Los Angeles River; localized non-breeding visitor elsewhere, especially on large lawns and barren areas. Nesting records incl. fledglings/young on 12 and 30 May 1996 in separate Blocks of LACBBA.

[*Black-necked Stilt *Himantopus mexicanus*] Abundant breeding resident along Los Angeles River, mainly upstream of 134 Fwy. (c. 50 birds in spring 2007).

[Greater Yellowlegs *Tringa melanoleuca*] Transient (mainly fall) and winter resident along Los Angeles River.

[Spotted Sandpiper *Actitis macularia*] Breeding resident, Los Angeles River. Nesting records include a nest on 19 July 1999 in BUR 6 Block of LACBBA.

[Western Sandpiper *Calidris mauri*] Transient and scarce winter resident along Los Angeles River, occasionally common (several hundred), esp. vic. 134 Fwy.

[Least Sandpiper *Calidris minutilla*] Transient and winter resident along Los Angeles River, occasionally common (several hundred), esp. vic. 134 Fwy.

[Wilson's Snipe *Gallinago gallinago*] Transient and winter resident along vegetated portions of Los Angeles River.

California Gull *Larus californicus* Transient and winter visitor, mainly on lawns or overhead.

Ring-billed Gull *Larus delawarensis* Transient and winter visitor, mainly on lawns or overhead.

*?Rock Dove *Columba livia* Status uncertain within park; very common breeding resident in surrounding urban areas.

*?Band-tailed Pigeon *Columba fasciata* Presumably breeding resident locally, apparently confined to planted conifers on perimeter of park (and adjacent residential area), at least since late 1950s (LACM files). Copulating pair observed on 19 Apr. 1996 in BUR 6 Block of LACBBA (northeastern corner of park).

*Mourning Dove *Zenaida macroura* Breeding resident, particularly in developed areas.

Yellow-chevroned Parakeet *Brotogeris chiriri* Non-breeding resident throughout park; often heard flying high over the park.

*?Great Horned Owl *Bubo virginianus* Breeding resident; nest with young on 02 June 1995; territorial pairs observed/heard on 05 Feb. 1996 and 02 July 1996 (LACBBA).

Vaux's Swift *Chaetura vauxi* Transient, spring and fall; formerly (?) winter resident along Los Angeles River.

*White-throated Swift *Aeronautes saxatalis* Breeding resident. Nesting records include occupied nest on 19 July 1999 in BUR 6; probably breeds in all suitable rock outcrops and under freeway/river bridges throughout.

*Black-chinned Hummingbird *Archilochus alexandri* Common breeding visitor in picnic areas, along drainages and in residential edge, Apr. - Aug. Nesting records include nest-building (BUR 5) on 12 Apr. 1996.

*Anna's Hummingbird *Calypte anna* Common breeding resident. Nesting records include occupied nests on 23 Feb., 02 Mar. and 12 Mar. 1996 in all three atlas blocks.

Costa's Hummingbird *Calypte costae* Apparently an uncommon transient (spring), but breeding may occur irregularly in chaparral and coastal sage scrub, particularly in the northwestern corner of park.

Rufous Hummingbird *Selasphorus rufus* Spring and fall transient, probably in variable numbers depending on flower availability.

*?Allen's Hummingbird *Selasphorus sasin* Status uncertain; numerous displaying pairs throughout the park in 2007 (DSC), but no confirmed nesting records, historical or recent.

Calliope Hummingbird *Stellula calliope* Occasional and irregular transient around flowers, mainly in spring.

[Belted Kingfisher *Ceryle alcyon*] Non-breeding resident along vegetated portions of Los Angeles River.

*Acorn Woodpecker *Melanerpes formicivorus* Local breeding resident in groves of Coast Live Oak, especially where interspersed with tall Western Sycamores. Nesting records include a nest with young on 12 May 1996 (BUR 6) and birds feeding young on 07 June 1995 (HOL 2).

Red-breasted Sapsucker *Sphyrapicus ruber* Scarce winter resident, typically in ornamental trees.

*Nuttall's Woodpecker *Picoides nuttallii* Common breeding resident throughout park (the most common and widespread woodpecker). Nesting evidence include occupied nests on 30 Apr. 1995, 12 May 1996, and pair(s) on 12 June 1996 (all three atlas blocks).

*Downy Woodpecker *Picoides pubescens* Scarce breeding resident along Los Angeles River (family group at Bette Davis Park on 15 Apr. 2007, M. San Miguel; copulating pair upstream of Los Feliz Blvd. 17 Feb. 1999, KLG); non-breeding visitor elsewhere in park.

Northern Flicker *Colaptes auratus* Transient and winter resident; formerly (to mid-1990s?) a breeding resident. Nesting evidence include fledged young on 12 July 1995 (HOL 2), with singles or pairs encountered in two other blocks on 14/19 June 1996.

Olive-sided Flycatcher *Contopus cooperi* Transient in small numbers, spring and fall; one old wintering record (c. 1980).

Western Wood-pewee *Contopus sordidulus* Transient in spring and fall. Apparently a "common" former summer resident and presumed breeder in Brush Canyon (*fide* K.L Garrett). Unrecorded in park during 1995-1999 Breeding Bird Atlas, but a singing bird high in sycamores at Brush Cyn. 06-08 June 2007 (DSC) suggests possible breeding.

Willow Flycatcher *Empidonax traillii* Transient in late spring and early fall.

Hammond's Flycatcher *Empidonax hammondii* Transient, mainly in spring.

Dusky Flycatcher *Empidonax oberholseri* Transient, mainly in spring.

*Pacific-slope Flycatcher *Empidonax difficilis* Breeding visitor to shady canyons, Apr. - Aug. Nesting evidence includes a nest with young on 19 June 1996 (BUR 6), fledglings on 02 July 1996 (BUR 5) and birds feeding young on 01 July 1996 (HOL 2). Several pairs noted in Western, Vermont and Fern Cyn. area spring 2007.

*Black Phoebe *Sayornis nigricans* Common breeding resident. Nesting records (LACBBA) from all atlas blocks.

Say's Phoebe *Sayornis saya* Winter resident to open, especially unvegetated areas. Recent summer records from Forest Lawn, where it has bred (21 June 2002, LACM files; breeding confirmed in 2003, *fide* R. Barth).

*Ash-throated Flycatcher *Myiarchus cinerascens* Breeding visitor throughout park and along Los Angeles River (e.g., Bette Davis Park), Apr. - Aug. Nesting records include nest-building on 30 Apr. 1995 and territorial pairs on 19 June and 14 July 1996 (all three atlas blocks).

*?Cassin's Kingbird *Tyrannus vociferans* Probable breeding resident along northern and eastern edge of park; pairs at Forest Lawn on 16 May 2007 and along the Los Angeles River north of Los Feliz Blvd. on 27 May 2007 (DSC); numerous through summer vic. Merry-Go-Round (all DSC).

*Western Kingbird *Tyrannus verticalis* Transient and local breeding visitor (Mar. - Aug.), presumably in tall sycamore groves. Nesting records include a pair with fledglings on 29 July 1996 (BUR 6).

Cassin's Vireo *Vireo cassinii* Transient, mainly spring.

*Hutton's Vireo *Vireo huttoni* Breeding resident in oak and sycamore woodland; pairs/singing birds in most canyons, and most numerous at Fern Dell/Western Canyon. Adult feeding fledglings in Brush Canyon 06 June 2007 (DSC).

Warbling Vireo *Vireo gilvus* Transient, spring and fall.

*Western Scrub-Jay *Aphelocoma californica* Common breeding resident throughout park.

*American Crow *Corvus brachyrhynchos* Common breeding resident, mainly near urban edge, picnic areas.

*Common Raven *Corvus corax* Common breeding resident throughout park.

[Tree Swallow *Tachycineta bicolor*] Transient and uncommon winter visitor mainly along Los Angeles River.

Violet-green Swallow *Tachycineta thalassina* Transient (overhead), mainly in spring.

*Northern Rough-winged Swallow *Stelgidopteryx serripennis* Breeding visitor, Mar. - Aug. Nests widely, mainly in man-made cavities (bridges, drains).

[Bank Swallow *Riparia riparia*] Scarce transient along Los Angeles River, 1-2/year expected in large swallow flocks.

*Cliff Swallow *Petrochelidon pyrrhonota* Breeding visitor, Mar. - Jul. Nests widely, mainly on man-made structures (sheer walls).

[*Barn Swallow *Hirundo rustica* Breeding visitor, Mar. - Aug. Nests widely in man-made situations (bridges, drains), invariably near water.]

Mountain Chickadee *Poecile gambeli* Winter resident in (planted) conifers throughout park. Probably summers in small numbers some years (e.g. 1 at Los Feliz Golf Course on 17 July 2007, DSC).

*Oak Titmouse *Parus inornatus* Breeding resident, mainly oaks and sycamores, including along Los Angeles River (e.g., Bette Davis Park). Nesting records include birds feeding young on 20 June 1996 (BUR 6), fledglings on 02 July 1996 (BUR 5), and a nest with young on 06 May 1995 (HOL 2).

*Bushtit *Psaltriparus minimus* Common breeding resident throughout.

Red-breasted Nuthatch *Sitta canadensis* Irregular winter resident.

White-breasted Nuthatch *Sitta carolinensis* Irregular fall transient and winter resident.

*Bewick's Wren *Thryomanes bewickii* Common breeding resident in all habitats throughout park.

*House Wren *Troglodytes troglodytes* Breeding resident around sycamores and other large trees with cavities.

[Marsh Wren *Cistothorus palustris*] Fall transient (and winter resident?) in reed beds along Los Angeles River.

Ruby-crowned Kinglet *Regulus calendula* Common winter resident throughout, particularly near trees.

Blue-gray Gnatcatcher *Polioptila caerulea* Transient and likely winter visitor to open, native scrub habitats.

*Western Bluebird *Sialia mexicana* Locally common breeding resident, almost exclusively at large sycamores with cavities, most of which are now at picnic areas.

Swainson's Thrush *Catharus ustulatus* Late spring (May/June) and fall transient.

Hermit Thrush *Catharus guttatus* Common winter resident.

*American Robin *Turdus migratorius* Breeding resident, mainly around lawns and buildings. Nesting recorded in all three atlas blocks.

*Wrentit *Chamaea fasciata* Common breeding resident. Territorial pairs recorded from all three atlas blocks.

*Northern Mockingbird *Mimus polyglottos* Common breeding resident, mainly at periphery of park.

*California Thrasher *Toxostoma redivivum* Breeding resident. Nesting records include birds feeding young on 12 June 1996 (BUR 5).

*European Starling *Sturnus vulgaris* Common breeding resident, particularly near picnic areas and structures.

American Pipit *Anthus rubescens* Winter resident on large lawns and barren areas.

Cedar Waxwing *Bombycilla cedrorum* Transient and winter resident, present nearly yearround.

*Phainopepla *Phainopepla nitens* Breeding resident; nesting records include breeding at Bette Davis Park in spring 2007 (M. San Miguel) and nest-building on 25 Apr. and 10 May 1995 (BUR 5 and HOL 2, resp.). Also fairly common along Los Angeles River, at Mexican Elderberry.

*?Orange-crowned Warbler *Vermivora celata* Common transient and post-breeding visitor throughout. May breed in dense woodland along canyon bottoms (e.g., singing birds May/June 2007 in Royce, Spring, and Brush cyns.; all DSC).

Nashville Warbler *Vermivora ruficapilla* Transient, spring and fall.

*?Yellow Warbler *Dendroica petechia* (Presumably) a breeding visitor along Los Angeles River; otherwise a fairly common transient in spring and early fall.

Yellow-rumped Warbler *Denroica coronata* Abundant winter visitor (Oct. - Apr.)

Black-throated Gray Warbler *Dendroica nigrescens* Transient and scarce winter visitor.

Townsend's Warbler *Dendroica townsendi* Transient and winter resident

Hermit Warbler *Dendroica occidentalis* Uncommon transient, mainly spring.

MacGillivray's Warbler *Oporornis tolmiei* Uncommon transient.

[*Common Yellowthroat *Geothlypis trichas*] Breeding resident in reeds along Los Angeles River; up to eight birds vic. Bette Davis Park, spring 2007 (M. San Miguel).

Wilson's Warbler *Wilsonia pusilla* Transient, spring and fall; rare in winter near water.

Yellow-breasted Chat *Icteria virens* Rare transient. Presumably a former breeding visitor along the Los Angeles River, and future nesting should be watched for.

Western Tanager *Piranga ludoviciana* Transient, late spring and fall.

*Spotted Towhee *Pipilo maculatus* Breeding resident, widespread in scrub.

*California Towhee *Pipilo crissalis* Common breeding resident.

*Rufous-crowned Sparrow *Aimophila ruficeps* (Presumably) breeding resident in open scrub habitat on steep slopes. Agitated pair noted above Deronda Rd. in mid-June 2007 (DSC).

Chipping Sparrow *Spizella passerina* Winter resident and transient, mainly around lawns.

*?Lark Sparrow *Chondestes grammacus* Local breeding resident in scrubby grassland on north slope of park, incl. back area of Forest Lawn (where it bred in 2002, *fide* R. Barth; 3 pairs present here 16 May 2007, DSC), and through spring at Toyon Landfill (MB, DSC), with a copulating pair here on 27 Apr. 2007 (MB). Otherwise a transient and winter visitor to picnic areas along east side of park.

Fox Sparrow *Passerella iliaca* Winter resident, mainly in native scrub.

*Song Sparrow *Melospiza melodia* Breeding resident in riparian and moist areas, adn locally in residential areas (vic. Hollywood Reservoir). Nesting records inlude fledglings on 12 Mar. 1997 (BUR 5) and on 20 June 1996 (BUR 6); mated pairs on 10 Apr. 1995 in HOL 2.

Lincoln's Sparrow *Melospiza lincolnii* Transient and winter resident.

Golden-crowned Sparrow *Zonotrichia atricapilla* Abundant winter resident, particularly in native scrub.

White-crowned Sparrow *Zonotrichia leucophrys* Common winter resident.

Dark-eyed Junco *Junco hyemalis* Mainly a winter resident, but small resident breeding population in Western and Vermont canyons and near Merry-Go-Round (lower Fern Cyn.) and possibly in Vermont Canyon. Nesting records incl. 2 juveniles and several singing males at Merry-Go-Round on 22 June 2007 (DSC).

*Black-headed Grosbeak *Pheucticus melanocephalus* Breeding visitor, nesitng mid-summer. One pair bred at Bette Davis Park in spring 2007 (M. San Miguel); fledglings on 12 July 1995 (HOL 2) and on 14 July 1996 (BUR 5).

*?Blue Grosbeak *Guiraca caerulea* Possible breeding resident or summer visitor; singing birds noted at Toyon Landfill on 27 Apr. 2007 (MB) and on 12 May 2007 in a revegatated area near Lake Hollywood (DSC).

*?Lazuli Bunting *Passerina amoena* Transient in spring and fall; possibly breeds, at least irregularly after wet winters.

[*Red-winged Blackbird *Agelaius phoeniceus*] Breeding resident, mainly along vegetated portions of Los Angeles River. Nesting records include nest-building on 12 May 1996 (BUR 6) and fledglings on 23 June 1996 (HOL 2).

Western Meadowlark *Sturnella neglecta* Winter visitor locally to grassland (e.g. Toyon Landfill).

*Brewer's Blackbird *Euphagus cyanocephalus* Breeding resident in developed portions of park.

*Brown-headed Cowbird *Molothrus ater* Breeding resident, probably most common in spring/summer.

*Hooded Oriole *Icterus cucullatus* Breeding visitor, mainly in developed areas (esp. palms) along perimeter of park (and in adjacent residential areas). Nesting records include occupied nest on 23 Apr. 1995 (BUR 6).

*Bullock's Oriole *Icterus bullockii* Common breeding visitor in riparian areas, partial to sycamores; a few winter records.

*?Purple Finch *Carpodacus purpureus* Possible breeding resident (local) around planted conifers, at least in Western and Vermont cyns.; can be widespread during some winters.

*House Finch *Carpodacus mexicanus* Common breeding resident.

Pine Siskin *Carduelis pinus* Irregular winter visitor, absent some years; partial to planted conifers.

*Lesser Goldfinch *Carduelis psaltria* Breeding resident.

*?American Goldfinch *Carduelis tristis* Local (probable) breeding resident in small numbers along vegetated portions of the Los Angeles River (DSC, M. San Miguel); widespread in winter, feeding at catkin-bearing trees throughout park.

Lawrence's Goldfinch *Carduelis lawrencei* Uncommon and irregular visitor.

*House Sparrow *Passer domesticus* Common breeding resident around developed areas.

[*?Orange Bishop *Euplectes fanciscanus* Resident (?) along vegetated portions of Los Angeles River; possibly breeds.]

[*?Nutmeg Mannikin *Lonchura punctulata* Resident (?) along vegetated portions of Los Angeles River; possibly breeds (pair at Los Feliz Blvd. 16 May 2007, DSC).]

Extirpated (6)

Greater Roadrunner *Geococcyx californianus* Listed as rare permanent resident in Brush Canyon by Garrett (1970; undated), but no firm records.

Common Poorwill *Phalaenoptilus nuttallii* Listed as common in spring and summer vic. Brush Canyon by Garrett (1970; undated). Single winter record from "Hollywood Hills" in Dec. 1954 (LACM files).

Spotted Dove *Streptopelia chinensis* Virtually extirpated; formerly resident (pre-2000), mainly in urban areas adjacent to park. A non-native species introduced from Asia.

Loggerhead Shrike *Lanius ludivicianus* Rare in winter and (presumably) fall along Los Angeles River and at Forest Lawn; less than annual. Formerly much more common, at least in winter (Garrett 1970; undated).

Rock Wren *Salpinctes obsoletus* Considered a rare permanent resident in the park by Garrett (1970); no recent records?

Canyon Wren *Catherpes mexicanus* Considered a rare permanent resident by Garrett (undated), but only a winter visitor to Brush Canyon (Garrett 1970); no recent records?

Rarities (43)

Horned Grebe Vagrant; one fall record, Hollywood Reservoir (Garrett, undated).
Common Merganser Irregular in winter at Hollywood Reservoir (Garrett, undated).
Red-breasted Merganser Irregular in winter at Hollywood Reservoir (Garrett, undated).
White-tailed Kite Possibly a rare migrant; one spring record, Brush Canyon (Garrett, undated).
Swainson's Hawk Probably rare migrant; several spring (late Feb. - April) and Fall (Oct.) records (LACM files).
Ferruginous Hawk Vagrant; one record, 26 Dc. 1950 (LACM files).
Golden Eagle Vagrant; one record, May 1968 over Brush Canyon (Garrett 1970).
Sandhill Crane Vagrant; one old record from Headworks site, 28 Nov. 1979 (J. Brandt, LACM files).
Red-necked Phalarope Vagrant; one record, in fall from Hollywood Reservoir (Garrett, undated).
Glaucous-winged Gull Status uncertain; winter visitor overhead (Garrett, undated)
Bonaparte's Gull Two winter records cited by Garrett (undated).
Caspian Tern One fall record from Hollywood Res. mentioned by Garrett (undated).
White-winged Dove Vagrant; one spring record near Brush Cyn. (Garrett, undated).
Hairy Woodpecker Vagrant; scattered records from 1970s, but none since.
Red-naped Sapsucker Possibly regular in fall and winter, but just one record, 16 Oct. 2006 (LACM files).
Black Swift Probably a rare transient; two migration records; 23 Oct. 1968 (50!) and 3 on 27 May 1981 (LACM files).
Chimney Swift Several older summer records (c. 1980) from Los Angeles River in Burbank (LACM files).
Greater Pewee Vagrant; three winter records.
Steller's Jay Vagrant; Garrett (undated) listed it as "rare" in winter near Brush Canyon; one record from Forest Lawn, 31 Oct. 1971 (LACM files). Odd record of a family group on 09 July 1920 (LACM files) indicates breeding.
Brown Creeper Rare and irregular in late fall/winter (LACM files, LACoBirds)
Golden-crowned Kinglet Possibly regular in winter, but just two records, incl. one near Los Feliz Blvd., 08 Dec. 2006 (LACoBirds).
Varied Thrush Rare and irregular winter visitor (Garrett, undated; LACoBirds).
Townsend's Solitaire Vagrant; two records, one in Brush Canyon Mar. 1969 (Garrett 1970) and 16 Jan. 1982 (LACM files).
Brown Thrasher Vagrant; one fall record (Aug./Sept. 1969) to Brush Canyon (Garrett 1970) and two late winter records (1939, 1999) from "Hollywood Hills" (LACM files).
Plumbeous Vireo Rare winter resident (1/year expected), mainly in sycamore groves.

Virginia's Warbler Vagrant; one Sept. record from Bette Davis Park (LACM files).
Tennessee Warbler Vagrant; one record of a wintering bird near Los Angeles Zoo, 1980-81 (LACM files).
Golden-winged Warbler Vagrant; one record of a wintering bird along Los Angeles River early 1996 (LACM files).
Northern Parula Vagrant, one at Fern Dell (Garrett, undated), another 16 Apr. 2007 near Old Zoo site (D. Williams, LACoBirds).
Prairie Warbler Vagrant; one wintering bird in 1997 at Bette Davis Park (LACM files).
Blackpoll Warbler Rare fall transient; several records from Bette Davis Park (LACM files).
Chestnut-sided Warbler Rare visitor; a few records of wintering birds and transients (LACoBirds).
Black-and-white Warbler Rare visitor; a few records of wintering birds and transients (LACM files, LACoBirds).
American Redstart Vagrant; two Sept. records (LACM files).
Painted Redstart Vagrant; one Nov. record from Bette Davis Park (LACM files).
Summer Tanager Rare transient, possibly regular (LACM files, Garrett 1970, LACBBA).
Green-tailed Towhee One fall record from Brush Canyon, Sept. 1967.
Sage Sparrow Vagrant; two fall records in 1970 listed by Garrett (1970).
Brewer's Sparrow Rare migrant; listed as "uncommon" in fall at Brush Canyon (Garrett 1970; undated); one record from Mt. Sinai Cemetery (14 Nov. 1979, LACM files).
Vesper Sparrow Vagrant (or extirpated?); one record, 25 birds on 26 Dec. 1950 (LACM files).
White-throated Sparrow Probably a rare winter visitor; one recent winter (April 2007) record vic. Old Zoo site (O. Johnson, LACoBirds)
Yellow-headed Blackbird One record, single bird at Bette Davis Park on 15 Apr. 2007 (M. San Miguel).
Baltimore Oriole Vagrant, May/June 1968 in Brush Canyon (Garrett 1970).
Great-tailed Grackle Probably a scarce transient, but just one record, four over Bette Davis Park on 03 Oct. 1995 (LACM files).
Red Crossbill Rare and irregular winter visitor; generally absent.

Forest Lawn/Hollywood Reservoir only (LACM records)

Cacking Goose, Black Scoter, Red-throated Loon, Common Loon, Lesser Yellowlegs, Eastern Phoebe, Vermilion Flycatcher, Purple Martin, Grasshopper Sparrow, Rose-breasted Grosbeak

Sources:

Garrett, K.L. Undated. Birds of the western Griffith Park Area. Unpublished annotated checklist. Compiled c. 1970

Garrett, K.L. 1970. Birds of Brush Canyon. Unpublished annotated checklist. Oct. 14, 1970.

Los Angeles County Breeding Bird Atlas data, courtesy K.L. Garrett, Museum of Natural History, Los Angeles Co.

"LACoBirds", a Yahoo Group (archived at: http://groups.yahoo.com/group/LACoBirds/).

__[Barn Swallow S:F*]

TITS, WRENS, etc.
__Mountain Chickadee W:R
__Oak Titmouse P:F*
__Bushtit P:C*
__Red-breasted Nuthatch W:R
__White-breasted Nuthatch T:R
__Bewick's Wren P:C*
__House Wren P:U*
__[Marsh Wren T:R]
__Ruby-crowned Kinglet W:C
__Blue-gray Gnatcatcher T:R

THRUSHES
__Western Bluebird P:U*
__Swainson's Thrush T:R
__Hermit Thrush W:C
__American Robin P:F*

WRENTIT
__Wrentit P:C*

THRASHERS
__Northern Mockingbird P:F*
__California Thrasher P:F*

STARLING
__*European Starling P:C**

PIPIT
__American Pipit W:R

WAXWINGS
__Cedar Waxwing W:F
__Phainopepla P:U*

WOOD-WARBLERS
__Orange-crowned Warbler P:U*?
__Nashville Warbler T:U
__[Yellow Warbler S:U*?]
__Yellow-rumped Warbler W:C
__Black-throated Gray Warbler T:F
__Hermit Warbler T:R
__MacGillivray's Warbler T:R
__[Common Yellowthroat P:U*]
__Wilson's Warbler T:F

TANAGER and CHAT
__Yellow-breasted Chat T:R
__Western Tanager T:U

SPARROWS, BUNTINGS, etc.
__Spotted Towhee P:C*
__California Towhee P:C*
__Rufous-crowned Sparrow P:R*
__Chipping Sparrow W:U
__Lark Sparrow P:R*?
__Fox Sparrow W:F
__Song Sparrow P:F*
__Lincoln's Sparrow W:U
__Golden-crowned Sparrow W:C
__White-crowned Sparrow W:C
__Dark-eyed Junco P:U*
__Black-headed Grosbeak S:F*
__Blue Grosbeak S:R*?
__Lazuli Bunting T:U (S:R*?)

BLACKBIRDS
__[Red-winged Blackbird P:U*]
__Western Meadowlark W:R
__Brewer's Blackbird P:U*
__Brown-headed Cowbird S:F*
__Hooded Oriole S:U*
__Bullock's Oriole S:F*
__Purple Finch P:R*?
__House Finch P:C*
__Pine Siskin W:R
__Lesser Goldfinch P:C*
__American Goldfinch P:R*?
__Lawrence's Goldfinch T:R
__*House Sparrow P:F**
__*[Orange Bishop P:R*?]*
__*[Nutmeg Mannikin P:R*?]*

The author would like to thank the Franklin Hills Improvement Association for funding the development of this list. We hope this effort will inspire other observers to add to and refine this list, which will encourage future conservation of biodiversity in the park.

Birds of Griffith Park

Compiled by Daniel S. Cooper
June 2007

Griffith Park is a 4000-acre expanse of open space at the eastern end of the Santa Monica Mountains. Extending south and west from the Los Angeles River, its 1,600' ridges separate the San Fernando Valley from Hollywood and the rest of the Los Angeles. Such landmarks as the Los Angeles Zoo, the Griffith Observatory and the Greek Theater are contained within the park, and the Hollywood Sign is just outside the park's western border.

Dominated by mixed chaparral, the park supports a variety of native southern California habitats, including sycamore groves, oak and walnut woodlands, and coastal sage scrub. Portions of the Los Angeles River provide important wetland and riparian habitat for a wide diversity of waterbirds. Lushly-landscaped gardens and picnic areas on the periphery of the park provide abundant food and water year round, making Griffith Park an especially rich habitat for migratory and resident birds.

Representing over a quarter of all parkland in the city of Los Angeles, about 3000 acres of the original rancho that would become the park was bequeathed to the city by Col. Griffith J. Griffith in 1896. Since then, the park has grown in size and offerings, but remains faithful to Griffith's original vision, a "*place of recreation and rest for the masses, a resort for the rank and file.*"

Around 150 bird species occur in the park each year (nearly half of which may nest locally) and 50+ others are rare/irregular visitors, pushing the total to more than 200 species.

Regularly-occurring species below
Introduced species in italics

* = breeding confirmed
*? = breeding suspected
[ ] = Mainly along L.A. River

W=Winter
S=Summer
T=Transient (spring/fall)
P=Permanent resident

C=Common
F=Fairly common
U=Uncommon
R=Rare and/or irregular

GREBES
__[Pied-billed Grebe P:U*?]
__[Eared Grebe W:U]

CORMORANT
__[Double-crested Cormorant P:F]

WADERS
__[Great Blue Heron P:F]
__[Great Egret P:U]
__[Snowy Egret P:U]
__[Green Heron P:U*?]
__[Black-crowned Night Heron P:U]

VULTURE
__Turkey Vulture P:F*?

WATERFOWL
__[Canada Goose P:U]
__[Wood Duck W:U]
__[Gadwall W:C]
__[Mallard P:C*]
__[Blue-winged Teal W:F]
__[Cinnamon Teal P:F*]
__[Northern Shoveler W:F]
__[Northern Pintail W:U]
__[Green-winged Teal W:F]
__[Ring-necked Duck W:U]
__[Lesser Scaup W:F]
__[Bufflehead W:C]
__[Common Goldeneye W:R]
__[Hooded Merganser W:U]
__[Ruddy Duck W:C]

RAPTORS
__[Osprey P:U]
__Sharp-shinned Hawk W:F
__Cooper's Hawk P:C*
__Red-shouldered Hawk P:U*
__Red-tailed Hawk P:C*
__American Kestrel T:U
__Merlin W:R
__[Peregrine Falcon W:R]

QUAIL
__California Quail P:C*

RAILS, SHOREBIRDS
__[Virginia Rail T:R]
__[Sora W:R]
__[American Coot P:C*]
__[Black-bellied Plover T:U]
__Killdeer P:F*
__[Black-necked Stilt P:C*]
__[Greater Yellowlegs W:F]
__[Spotted Sandpiper P:U*]
__[Western Sandpiper T:U]
__[Least Sandpiper T:U]
__[Wilson's Snipe W:R]

GULLS
__[California Gull W:U]
__[Ring-billed Gull W:U]

PIGEONS/DOVES
__*Rock Dove P:F*?*
__Band-tailed Pigeon P:F*?
__Mourning Dove P:C*?

PARROTS
__*Yellow-chevroned Parakeet P:U*

OWLS
__Great Horned Owl P:U*

SWIFTS
__Vaux's Swift T:C
__White-throated Swift P:C*

HUMMINGBIRDS
__Black-ch. Hummingbird S:C*
__Anna's Hummingbird P:C*
__Costa's Hummingbird T:R
__Rufous Hummingbird T:U
__Allen's Hummingbird P:C*?
__Calliope Hummingbird T:R

KINGFISHER
__[Belted Kingfisher W:F]

WOODPECKERS
__Acorn Woodpecker P:F*
__Red-breasted Sapsucker W:R
__Nuttall's Woodpecker P:C*
__Downy Woodpecker P:R*?
__Northern Flicker W:F (was P:F*)

FLYCATCHERS
__Olive-sided Flycatcher T:R
__Western Wood-Pewee T:U*?
__Willow Flycatcher T:U
__Hammond's Flycatcher T:R
__Dusky Flycatcher T:R
__Pacific-slope Flycatcher S:U*
__Black Phoebe P:C*
__Say's Phoebe W:U
__Ash-throated Flycatcher S:F*
__Cassin's Kingbird P:U*?
__Western Kingbird S:U*

VIREOS
__Cassin's Vireo T:R
__Hutton's Vireo P:U*
__Warbling Vireo T:F

JAYS, etc.
__Western Scrub-Jay P:C*
__American Crow P:C*
__Common Raven P:C*

SWALLOWS
__[Tree Swallow W:U]
__[Violet-green Swallow T:U]
__No. Rough-winged Swallow S:F*
__[Bank Swallow T:R]
__Cliff Swallow S:C*

Appendix 12:

Preliminary Insect (Butterfly) Survey at Griffith Park, Los Angeles, California.
October 30, 2003
Kathy Keane, Keane Biological Consulting

Kathy Keane
Keane Biological Consulting
5546 Parkcrest Street
Long Beach, CA 90808

October 30, 2003

Subject: Preliminary Insect (Butterfly) Survey at Griffith Park, Los Angeles, California.

Dear Kathy:

Introduction

At the request of Keane Biological Consulting (KBC), Guy P. Bruyea (GPB) conducted a reconnaissance-level survey for the butterfly and insect inhabitants of Griffith Park in northwestern Los Angeles County, California. This report presents findings of our survey conducted to assess butterfly and other insect diversity within Griffith Park, and briefly describes the vegetation, topography, and present land use throughout the survey area in an effort to assess the overall quality of the habitat currently present. Additionally, this report describes the butterfly species observed or detected, and identifies butterfly species with potential for occurrence that were not detected during the present survey. All observations were made by GPB during two visits to Griffith Park in June and July 2003.

Site Description

Griffith Park is generally located at the east end of the Santa Monica Mountains northwest of the City of Los Angeles within Los Angeles County, California. The ± 4100-acre Griffith Park is situated within extensive commercial and residential developments associated with the City of Los Angeles and surrounding areas, and is the largest municipal park and urban wilderness area within the United States. Specifically, Griffith Park is bounded as follows: to the east by the Golden State Freeway (Interstate Highway 5) and the City of Glendale and extensive commercial and residential development beyond; to the north by the Ventura Freeway (SR 134), the City of Burbank and extensive commercial and residential development beyond; to the south by Los Feliz Boulevard, Hollywood Reservoir, Hollywood Freeway (Highway 101), the Cities of Hollywood and Los Angeles and extensive commercial and residential development beyond; and to the west by Universal City, Highway 101, extensive commercial and residential development, and the western portion of the Santa Monica Mountains beyond. Griffith Park is situated within the Rancho Los Feliz land grant and Sections 26, 27, 34, 35, Townships 1N and 1S, Range 14W within the U.S.G.S. Hollywood and Burbank 7.5' series quadrangle maps.

Land use varies within Griffith Park, and includes anthropogenic disturbances such as areas associated with hiking and equestrian trails, paved and unimproved roads, and various commercial developments including the Los Angeles Zoo, Greek Theatre, Griffith Observatory, Los Angeles Equestrian Center, several museums, and public golf courses.

Topographically, Griffith Park contains gently to steeply sloping ridgelines and flat areas with a combined maximum vertical relief of roughly 1241 feet between the highest and lowest elevation points. Elevations at Griffith Park range from approximately 384 to 1625 feet above mean sea level (AMSL), with Mt. Hollywood at its peak elevation. Surrounding topographic features include gently to steeply sloping hillsides with canyons and ridgelines interspersed with relatively flat areas in the valleys surrounding Griffith Park.

Sensitive Butterfly Species Background Information

Although the scope of the present study includes the identification of all potential insect inhabitants of Griffith Park, the present study focused on butterfly diversity within the Park due to survey time constraints and other factors. Butterflies are among the more familiar and easily identified insects to the amateur entomologist or nature enthusiast, and can be a good indicator of habitat quality in a particular area. Many butterfly species are easily monitored and respond quickly to changes in habitat, and their absence (in places where they were formerly present) can be an important indicator of habitat degradation. In that vein, butterfly occupants of Griffith Park are discussed in detail herein.

Many butterflies are becoming increasingly scarce in southern California, especially in coastal and valley areas were natural habitats have been converted for human uses or have been adversely impacted by various anthropogenic disturbances. Additionally, in the relatively less disturbed foothill and mountain areas the spread of invasive non-native weedy vegetation, grazing, fire suppression, and off-road vehicle activity is threatening many native plants, including butterfly larval host plants.

There are approximately 135 recorded butterfly species from Los Angeles County, of which approximately 120 are considered resident. Some species have adapted well to ornamental landscapes, but many formerly common species have now become increasingly rare over the past few decades due to urban expansion and other factors. Several butterflies presently (and/or historically) found in Los Angeles County (and/or areas of adjacent southern Kern County) are now protected or are considered species of special concern (Table 1 and Sensitive Species Accounts). At least three butterflies that once occurred in Los Angeles County are now presumably extinct. These include, 1) the unsilvered fritillary (*Speyeria adiaste atossa*), which was last observed near Mt. Pinos in 1959, 2) a very localized race of the Sonoran blue (*Philotes sonorensis extinctus*) that once occurred in the upper San Gabriel wash above Azusa (to 1968), and 3) the Palos Verdes blue (*Glaucopsyche lygdamus palosverdesensis*, herein referred to as PVB), which was last observed on the Palos Verdes peninsula in 1983.

Three butterflies known from Los Angeles County are now on the federal list of endangered wildlife. These include the El Segundo blue (*Euphilotes battoides allyni*, herein referred to as ESB[1]), the Quino checkerspot butterfly (*Euphydryas editha quino*, herein referred to as QCB), and the PVB.

Several other butterflies are considered uncommon in Los Angeles County, some having federal or state status (i.e., species of special concern), and others that warrant careful monitoring due to declining populations or extremely limited ranges within Los Angeles County. These include (but are not limited to) the San Emigdio blue (*Plebulina emigdionis*), the Santa Monica Mountains hairstreak (*Satyrium auretorum fumosum*), the wandering skipper (*Panoquina errans*), and the Tehachapi Mountain silverspot (*Speyeria egleis tehachapina*).

Butterfly species that appear to be declining (or may be extirpated) in Los Angeles County, but remain common in other areas of their respective ranges include the purplish copper (*Lycaena helloides*), giant copper (*Lycaena xanthoides*), Columella hairstreak (*Strymon columella istapa*), southern sylvan hairstreak (*Satyrium sylvinus*), western tailed blue (*Everes amyntula*), coastal arrowhead blue (*Glaucopsyche piasus sagittigera*), California ringlet (*Coenonympha tullia californica*), and sylvan satyr (*Cercyonis sthenele sylvestris*).

Table 1.
Los Angeles County Sensitive (and/or Narrow-endemic) Butterflies

Common Name	Scientific Name	Status	Range
Quino Checkerspot	*Euphydryas editha quino*	FE	N
El Segundo Blue	*Euphilotes battoides allyni*	FE	N
Palos Verdes Blue	*Glaucopsyche lygdamus palosverdesensis*	FE	N
Comstock's Blue	*Euphilotes battoides comstocki*	CR	N
San Emigdio Blue	*Plebulina emigdionis*	FSC	N
Bright Blue Copper	*Lycaena heteronea clara*	CR	N
Cloudy Copper	*Lycaena arota nubila*	CR	Y
San Gabriel Mountain Sonoran Blue	*Philotes sonorensis extinctus*	X	N
Veined Blue	*Icaricia neurona*	CR	N

Green (=Skinner's) Blue	*Icaricia lupini chlorina*	CR	N
Santa Monica Mountains Hairstreak	*Satyrium auretorum fumosum*	FSC	Y?
Emmel's Elfin	*Callophrys mossii hidakupa*	FSC	N
Wandering Skipper	*Panoquina errans*	FSC	N
Alkali Skipper	*Pseudocopaeodes eunus*	FSC	N
Tehachapi Mountains Silverspot	*Speyeria egleis tehachapina*	FSC	N
Unsilvered Fritillary	*Speyeria adiaste atossa*	X	N
Monarch Butterfly	*Danaus plexippus*	[1]	Y

*Indicates whether Griffith Park is within known historical and/or extant range of indicated taxon (Y=yes, N=no)
FE=Federally endangered, FSC=Federal Species of Concern, X=Presumed extinct (no status), CR=California Rare (narrow endemic)
[1]Overwintering (or nesting) sites should be protected, butterfly probably not at risk currently

Over the past century, many formerly common butterfly species have been extirpated from Griffith Park and surrounding areas due to habitat fragmentation and other disturbances. Sensitive butterflies considered to have potential for occurrence within Los Angeles County, based on known ranges, the presence of associated vegetation communities, elevations on site, host plant availability within the general vicinity, and other requirements, are discussed in more detail below.

Sensitive Butterfly Species Accounts

Quino Checkerspot Butterfly (*Euphydryas editha quino*)

The United States Fish and Wildlife Service (Service) added this rare butterfly to the federal list of endangered wildlife in early 1997. The Quino Checkerspot Butterfly (QCB) is a geographic race (subspecies) of *Euphydryas editha*, whose combined ranges extend from northern Baja California to Canada along the Pacific coast, and east to Colorado (Bauer, 1975). The QCB is presently known to exist only as several, probably isolated, colonies in southwestern Riverside County, southern San Diego County and northern Baja California, Mexico.

This butterfly is associated with sparsely vegetated or bare areas usually characterized by clay or cryptobiotic soil deposits that develop a hard crust within southern California sage scrub vegetation communities. Low-growing herbaceous annuals including the QCB's primary larval host plant, dot-seed plantain, *Plantago erecta* (Plantaginaceae), typically inhabit these areas. Other potential QCB host plants (considered secondary) may occupy these areas and include owl's clover (*Castilleja exserta*) and white snapdragon (*Antirrhinum coulterianum*), both in the plant family Schrophulariaceae.

No relatively recent records for QCB exist from Los Angeles County. Populations of QCB are historically known from two locations in the Santa Monica Mountains, 1) Tapia Camp (1947), and 2) Point Dume (1954). Both of these colonies appear to have been extirpated, as adults have not been observed at or in the vicinity of either location in approximately 35 years. Most extant populations of QCB are known from southwestern Riverside County in the vicinity of Temecula and Murrieta, and southern San Diego County in the vicinity of Otay Mountain. No historical or recent records of QCB exist for Griffith Park (Sprute et al). In addition, in a list of the flora of Griffith Park provided by KBC, *Plantago erecta* has not been documented as occurring within Griffith Park.

GPB did not conduct a focused survey for the QCB during the present survey. GPB currently holds a valid section 10(a)(1)(A) QCB recovery permit for QCB issued under the Endangered Species Act of 1973, as amended (Permit Number TE-837439-4).

Tehachapi Mountain Silverspot Butterfly (*Speyeria egleis tehachapina*)

The Tehachapi Mountain silverspot (herein TMS) is a geographic race (subspecies) of *Speyeria egleis* and may be one of the rarest butterflies in North America. There are currently nine or more described subspecies of *S. egleis*, each of which is recognized based on geographically definable characteristics such as foodplant association and other ecological factors, larval morphology, wing coloration and size of the adult butterflies. The combined ranges of all subspecies extend from central California to Canada along the Pacific coast, and east to Montana and Colorado (Howe, 1975). The TMS is the southern-most subspecies of *egleis*. Two other subspecies of *egleis* occur in California: *egleis egleis* (upper

Another sympatric *Speyeria* species confused with TMS is Henne's fritillary (*Speyeria coronis hennei*). This butterfly is usually observed on hilltops and in pine forests inhabited by various violet species from the Mount Pinos area north to the Tehachapi and Piute Mountain Ranges. Henne's fritillary is typically larger than TMS (approximately 50-65 millimeters in wingspan), and exhibits much brighter orange and black markings on the ventral surface of the wings. Additionally, *hennei* has distinctively large and bright silver spots on the ventral hindwing surface, which the TMS lacks. Adults are active from late June to early August.

The UFB, a third *Speyeria* species known from the region where TMS occurs is now considered extinct and is discussed below. Based on known records, distributional patterns, and information as it relates to other extant *egleis* and *adiaste* populations in California, it is likely that UFB and TMS were probably not sympatric.

Griffith Park is not within the historical or currently known range for TMS and the above-referenced related and sympatric butterfly species (*S. coronis hennei* and *S. callippe macaria*). However, another related taxon, Comstock's fritillary (*Speyeria callippe comstocki*), was historically known from Griffith Park. Records indicate that *comstocki* was once abundant within Griffith Park up to the 1920's, but may have been extirpated by the 1940's (Sprute et al). This butterfly may be present in undisturbed habitats inhabited with violets at the eastern end of the Santa Monica Mountains, and in other areas of southern California south to San Diego County.

Unsilvered Fritillary Butterfly (*Speyeria adiaste atossa*)
The unsilvered fritillary butterfly (herein UFB) is a presumed extinct geographic race (subspecies) of *Speyeria adiaste*, a species confined to the Coast Ranges of central and southern California. The UFB was the southern-most subspecies of *adiaste*. Two other extant subspecies of *adiaste* occur in California: *adiaste adiaste* (higher remote areas of the Santa Cruz Mountains) and *adiaste clemencei* (Monterey and San Luis Obispo Counties above 3,500 feet).

The UFB was considered to be the largest and most beautifully marked of the *adiaste* group. This brush-footed butterfly was medium to large-sized (approximately 45-55 millimeters in wingspan), with bright orange and greatly reduced black markings on the dorsal wing surface. Silver markings on the ventral hindwing surface are absent in this species.

Historically, UFB was known from the Tehachapi Mountains, Tejon Mountains and Mount Pinos region of Los Angeles and Kern Counties. It was at one time a very abundant butterfly as noted by Los Angeles County Museum of Natural History entomologist John Adams Comstock, who in the 1920's observed UFB by the 'hundreds' along the Old Ridge Route at Sandberg and Liebre Gulch (this location is approximately ten miles south of the survey area). The last known observations of UFB occurred in 1959 just south of the town of Tehachapi and near Mount Pinos (Emmel & Emmel, 1973).

Many theories exist on why this butterfly has disappeared. Possible explanations include grazing, the introduction of invasive non-native grasses into the area, and a prolonged drought that began in the late 1950's (Howe, 1975, Scott, 1986). Wildfire suppression practices undoubtedly contributed to the spread of non-native vegetation in the area, which out-compete native low-growing annuals, including potential UFB host plants (John Emmel, pers. comm.). The combination of these and possibly other anthropogenic disturbances may have had devastating effects on native wildflowers in the area, including the UFB's host plant, a violet.

Griffith Park is not within the historical or currently known range of UFB.

Palos Verdes Blue Butterfly (*Glaucopsyche lygdamus palosverdesensis*)
Perkins and Emmel described the PVB as a new subspecies of *Glaucopsyche lygdamus* in 1979. This butterfly was discovered on the Palos Verdes Peninsula where it flies in a single generation during February and March. Until recently, it was believed that this subspecies existed only on the often foggy, seaward-facing slopes and canyons of the Peninsula in close association with its only known

Beaufort scale). Digital photographs were taken to record the condition of the site during the present survey and are available on CD-ROM on request. Plant, butterfly, and other insect species were identified in the field by GPB or later identified using various texts. All observed plant and animal species and any additional biological information relevant to this study were recorded on GPB's general site assessment form.

Diurnal surveys were conducted at Griffith Park, surveying at least a portion of each of the habitat types during each visit. During the field survey, GPB observed butterflies and other insects found flying, on various substrates such as on plants, on the ground, in leaf litter, or in aquatic situations.

Much of the present study was conducted within the southwestern portion of Griffith Park on the Mt. Hollywood Trail between the Fern Dell Ranger Substation (Mococahuenga Canyon) and Dante's View at the summit. This trail includes Western Canyon and numerous smaller side trails, and winds its way up to Mt. Hollywood at the highest point within Griffith Park at 1625 AMSL. Other areas briefly visited included portions of Vermont Canyon northwest of the Greek Theatre, the Upper and Lower West Observatory Trails, and areas immediately adjacent to the Griffith Observatory.

Insect Identification

No voucher specimens were collected during the present limited study. Large-scale insect inventories usually include the collection of insects for later identification in the laboratory. Voucher specimens of insect species not easily identified in the field can be collected and frozen for later preparation and study. Preparation of insect specimens consists of careful pinning with appropriately sized insect pins and positioning of wings and other appendages as necessary depending on the taxonomic group, or storing in vials of 70% ethyl alcohol. Specimens are then carefully labeled with locality, date, collector, habitat type, and host plant association if applicable. A separate taxonomic determination label can then be affixed as specialists identify specimens. Specimens collected by GPB are usually housed at the University of California, Riverside, Entomology Museum.

Nocturnal insect sampling through the use of light stations was beyond the scope of the present reconnaissance-level study. However, future general insect inventories of Griffith Park should include nighttime surveys. Nocturnal insect species can be attracted and subsequently sampled and/or inventoried using a 175-watt mercury vapor light powered by a portable generator. Night collecting usually begins at dusk and continues for several hours until insect activity decreases noticeably as the temperature drops. During the spring and summer months night collecting may be productive during the entire night as nighttime temperatures increase and insect activity increases.

Survey Limitations

The present study was conducted during two site visits in June and July 2003. Due to the large size of Griffith Park, the present survey being seasonally restricted, and atypically cool conditions present in May and June 2003, not all butterflies that may have been present at Griffith Park were necessarily observable (or identified) during this survey. For an exhaustive insect assessment, surveys are best performed throughout the year to achieve thorough insect inventories. The insect survey was performed during daylight hours only, so nocturnal insect species with a probability of occurrence were not directly observed. In addition, this survey did not involve collecting or other various passive trapping methods (such as malaise or pitfall traps). GPB's general knowledge of insect resources for this area was utilized in an effort to determine the probability of occurrence for some sensitive insect species.

Literature Review

Documentation pertinent to the insect resources for the subject property was reviewed and included (but are not limited to) Emmel and Emmel (1973), Hogue (1974), Orsak (1976), Brown *et al* (1992), Emmel (1998), and Arnett (2000). Additional resources may be found at the end of this report.

Results

Insect Habitats of Griffith Park

June-July 2003

Common Name / Scientific Name
Western Tiger Swallowtail (*Papilio rutulus*)
Anise Swallowtail (*Papilio zelicaon*)
Checkered White (*Pontia protodice*)
Cabbage White (*Pieris rapae*)
Painted Lady (*Vanessa cardui*)
Red Admiral (*Vanessa atalanta*)
West Coast Lady (*Vanessa annabella*)
Buckeye Butterfly (*Junonia coenia*)
Gulf Fritillary (*Agraulis vanillae incarnata*)
Fiery Skipper (*Hylephila phyleus*)
Large White Skipper (*Heliopetes ericetorum*)
Bernardino Blue (*Euphilotes bernardino*)
Pygmy Blue (*Brephidium exilis*)
Marine Blue (*Leptotes marina*)
Common Hairstreak (*Strymon melinus*)
Behr's Metalmark (*Apodemia mormo virgulti*)
16 Species Total

The most frequently observed butterfly during the present survey was the gulf fritillary (*Agraulis vanillae incarnata*). This medium-sized (55 to 75 millimeter in wingspread) bright orange butterfly specifically uses ornamental passion vines (genus *Passiflora*) as a larval host plant, and *Passiflora caerulea* has been documented as occurring within Griffith Park during previous botanical studies. This tropical butterfly utilizes no native plant species as a larval host plant, but now thrives in southern California urban areas where passion vines are widely used in ornamental landscapes. This species is native to Mexico and Central America but has expanded its range to include the southern United States to California, Arizona, Texas and Florida, and periodically penetrates as far north as San Francisco. The gulf fritillary can be observed throughout the warmer months of the year in Los Angeles County from May to October.

Most other butterflies observed during the present study were not observed in large numbers, except for the widespread painted lady butterfly (*Vanessa cardui*), which was observed commonly during the present study. This species frequently migrates northward into our area from Mexico in the spring months, and can sometimes be seen by the thousands during that time.

Due to the timing of the present study (late spring and summer), many spring-flying butterfly species with potential to occur within Griffith Park were not observed. These may include (but are not necessarily limited to) the southern blue (*Glaucopysche lygdamus australis*), echo blue (*Celestrina argiolus echo*), sara orange-tip (*Anthocharis sara sara*), chalcedon checkerspot (*Euphydryas chalcedona chalcedona*), perplexing hairstreak (*Callophrys affinis perplexa*), and western elfin (*Incisalia augustinus irioides*).

A list of butterfly species that could potentially occur within Griffith Park (based on known historical and current ranges, lepidopterist research, and other factors) is provided as part of this report (Appendix A).

Other Insect Observations

Surprisingly, relatively few insect species were observed during the present study. This may be due to several factors, including an atypically cool late spring in 2003, which may have delayed or disrupted insect emergence patterns. In other parts of southern California, lack of sufficient rainfall from 2000 to 2002 had an adverse effect on some insect species, and it may take several years for some species to recover to pre-drought population densities. Disturbances to native vegetation at Griffith Park and/or

The *Euphilotes battoides* complex includes five seasonal biotypes or semispecies, each using different larval host plants (Emmel, 1998). The ESB is a member of this group, and is strongly associated with the flower heads of its host plant, coastal or dune buckwheat (*Eriogonum parviflorum*). ESB's relationship with other members of the *battoides* complex remains somewhat unclear. It is allopatric from other late-flying members of this group found in the Mojave Desert (Emmel, 1998).

The Service listed ESB as federally endangered in 1976. It is currently restricted to small patches of remaining coastal dune systems of southwestern Los Angeles County. The ESB is presently known from only three locations: 1) the dunes west of the Los Angeles International Airport (LAX); 2) the dunes west of the Chevron Oil refinery; and, 3) Malaga Cove north of the Palos Verdes peninsula. This butterfly is sympatric with the widespread and similarly patterned bernardino blue (*Euphilotes bernardino*) north of the Palos Verdes peninsula, but the bernardino blue uses *Eriogonum cinereum* as its larval host plant at this location.

The ESB is a small butterfly measuring approximately 17 to 22 millimeters. The upper surface of the male is blue with a narrow black outer margin. Females are brown with an orange submarginal band on the hindwing upperside. Adults are active in a single brood from mid-July to early September.

It is estimated that as much as 99 percent of its former habitat has been severely impacted by human disturbances. Dune management programs at LAX, Chevron Oil refinery, and other pertinent areas dedicated to the removal of exotic vegetation and the reintroduction of native plants (including ESB larval host plants) may save this rare butterfly from extinction.

Griffith Park is not within the historical or currently known range of ESB.

Comstock's Blue (*Euphilotes battoides comstocki*)
Like the ESB, Comstock's blue is a member of the *battoides* group, which utilizes *Eriogonum umbellatum* as a larval host plant. Shields described Comstock's blue in 1975 from a population found near Tehachapi in Kern County, California. Arnold (1999) reports that this subspecies has also been documented from the Piute Mountains and along the Old Ridge Route in Los Angeles County.

Comstock's blue co-occurs and is synchronic with the very similarly marked and widespread Bernardino blue (*Euphilotes bernardino*) in southern Kern County, which is strongly associated with its larval host plant, *Eriogonum fasciculatum*. Both butterflies can be found in the summer months from mid-June to late July. Distinguishing the two butterflies in the field when not found in association with their larval host plants can be difficult, although *E. battoides comstocki* is generally larger and the females have slightly more orange on the dorsal hind wing surface than *E. bernardino*.

Griffith Park is not within the historical or currently known range of Comstock's blue. During the present survey, *E. bernardino* was observed in association with flowering *E. fasciculatum*.

Veined Blue (*Icaricia neurona*)
This small, orange-veined blue butterfly is uncommon but widely distributed from the southern Sierra Nevada to the Tehachapi Mountains and Mount Pinos region, and east along the San Gabriel and San Bernardino mountains (Emmel and Emmel, 1973). This butterfly is usually found flying close to the ground in association with its prostrate larval host plant, *Eriogonum wrightii*, at elevations ranging from 4000 to 8000 feet. Adults are present from about mid-May to mid-August and may be double-brooded at some locations.

Griffith Park is well below the elevational requirements of the veined blue, and its larval host plant has not been documented as occurring within the Park.

Green (=Skinner's) Blue (*Icaricia lupini chlorina*)
In southern California, *Icaricia lupini* is widely distributed from San Luis Obispo to San Diego County, and occurs throughout chaparral habitats up to 6000 feet elevation. Skinner's Blue occurs in

This butterfly was once abundant on the north slope of Griffith Park and other areas to the west in the Santa Monica Mountains, but is now presumed extirpated from the eastern (Laurel Canyon to points east) portion of the Santa Monica Mountains (Sprute et al).

Santa Monica Mountains Hairstreak (*Satyrium auretorum fumosum*)
This butterfly is known from chaparral communities in the western Santa Monica Mountains near Malibu Lake, and flies in close association with its larval host plant, coast live oak (*Quercus agrifolia*). In the 1940's this butterfly was observed along Mulholland Highway near Sherman Oaks, and it may also occur on northern slopes within Griffith Park (Sprute et al). This species can be somewhat difficult to detect, as it appears to occur in low population densities and is highly localized. This flight period for the single brood is mid-June to late July (Emmel & Emmel, 1973).

Emmel's (San Gabriel) Elfin (*Incisalia mossii hidakupa*)
This recently described isolated race of *Incisalia mossii* occurs on steep, north-facing slopes within southern mixed evergreen forests where its larval host plant, *Sedum spathulifolium*, occurs. Populations are known from the San Gabriel and San Bernardino Mountains between 3000 and 5500 feet in elevation, and can be locally abundant from late March to early May, depending on elevation.

Griffith Park is not within the historical or currently known range of the San Gabriel elfin.

Wandering Skipper Butterfly (*Panoquina errans*)
This small (about 14mm in wingspread) dark olive-brown butterfly was formerly listed as a federal C2 Candidate species by the Service and is now considered a species of concern. This species occurs in localized colonies along the coast of southern California from the Santa Barbara area southward along both coasts of Baja California, Mexico. It is associated only with its larval host plant, saltgrass (*Distichlis spicata*), which grows primarily in sandy or salt marsh habitats along beaches, bluffs and estuaries. In southern California, this species is active as an adult during several generations from March to November, with peak activity during the late summer months. In the extreme southern part of its range (i.e. Cape region of Baja California Sur, Mexico) wandering skipper adults are present year-round.

This species is sympatric with several other skipper butterflies (family Hesperidae), including (but not limited to) the fiery skipper (*Hylephila phyleus*), field skipper (*Atalopedes campestris*), sandhill skipper (*Polites sabuleti*), umber skipper (*Paratrytone melane*), and eufala skipper (*Lerodea eufala*). Most of the aforementioned taxa differ from the wandering skipper by having dark orange or light brown ground coloration. The umber skipper and eufala skipper are similar to the wandering skipper in being uniformly brown in coloration, but both of these species lack the 'streaked' yellowish scale pattern on the ventral surface of the hind wing (Orsak, 1977).

Coastal salt marsh habitats have declined as much as 90% in southern California due to urban and commercial expansion. As a result, this highly localized species has become very restricted and has suffered considerable declines in abundance and significant reductions in distributions (Brown *et al*, 1992). Because of its distribution along the Baja California coast in Mexico, and its presence within protected coastal areas of southern California, this butterfly is not in eminent danger of being extirpated. However, populations should be monitored throughout its range as coastal habitats continue to be converted for human uses.

Griffith Park is not within the historical or currently known range of the wandering skipper butterfly.

Alkali Skipper (*Pseudocopaeodes eunus*)
The alkali skipper is a small (approximately 20-22mm) butterfly with a bright brownish-orange upperside and conspicuously dark vein ends. The underside is similarly colored with veins that may or may not be dark in coloration. Unlike most other skippers within its range the alkali skipper lacks black markings on the upper surface of the wings, making it one of the more easily identified skippers in the field. This skipper ranges from southern Nevada to eastern and southern California south into Baja California Norte, Mexico.

Certification and Signature Page

Griffith Park Butterfly Survey
Los Angeles County, California
November 10, 2003

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

_____ Date _____

Guy P. Bruyea
Bruyea Biological Consulting
43146 Sampson Court
Hemet, California 92544

Appendix A (Continued)

Family / Scientific Name	Common Name
Order Lepidoptera	Butterflies and Moths
Pieridae	**Whites and Sulfurs**
Anthocharis sara sara	Sara Orange-tip
Anthocharis cethura	Felder's Orange-tip †
Anthocharis lanceolata australis	Southern Marble †
Colias eurydice	California Dogface †
Colias eurytheme	Alfalfa Sulfur
Colias alexandra harfordii	Harford's Sulfur
Eurema nicippe	Nicippe Yellow **
Nathalis iole	Dwarf Yellow **
Phoebis sennae	Cloudless Sulfur **
Pieris rapae	Cabbage White *
Pontia protodice	Checkered White *
Lycaenidae	**Blue, Hairstreaks, Coppers**
Atlides halesus	Great Purple Hairstreak
Brephidium exilis	Pygmy Blue *
Callophrys perplexa	Bramble Hairstreak
Celestrina argiolus echo	Echo Blue
Euphilotes bernardino	Bernardino Blue *
Everes amyntula	Western-tailed Blue †
Glaucopsyche lygdamus australis	Southern Blue
Hemiargus ceraunus gyas	Edward's Blue
Icaricia acmon	Acmon Blue
Incisalia augustinus iroides	Western Elfin
Leptotes marina	Marine Blue *
Lycaena helloides	Purplish Copper †
Lycaena arota nubila	Cloudy Copper †
Lycaena xanthoides	Great Copper †
Philotes sonorensis	Sonoran Blue **
Satyrium auretorum fumosum	Santa Monica Mts.Hairstreak †
Satyrium saepium saepium	Buckthorn Hairstreak
Satyrium sylvinus	Sylvan Hairstreak **
Satyrium tetra	Grey Hairstreak
Strymon melinus	Common Hairstreak *
Riodinidae	**Metalmarks**
Apodemia mormo virgulti	Behr's Metalmark *
Calephelis nemesis	Dusky Metalmark

Appendix A (Continued)

Family / Scientific Name	Common Name
Order Lepidoptera	Butterflies and Moths
Hesperiidae	**Skippers**
Atalopedes campestris	Field Skipper
Erynnis brizo lacustra	Lacustra Duskywing **
Erynnis funeralis	Funereal Duskywing

Erynnis properties properties	Western Oak Duskywing
Erynnis tristes	Mournful Duskywing
Heliopetes ericetorum	Large White Skipper *
Hesperia comma leussleri	Leussler's Skipper †
Hylephila phyleus	Fiery Skipper *
Lerodea eufala	Eufala Skipper
Ochlodes agricola agricola	Rural Skipper
Ochlodes slyvanoides sylvanoides	Woodland Skipper
Paratrytone melane	Umber Skipper
Polites sabuleti	Sandhill Skipper
Pyrgus communis albescens	Western Checkered Skipper

Sawyer, John O. and Todd Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society, Sacramento, California. 471pp.

Scott, J. A. 1986. *The Butterflies of North America, a Natural History and Field Guide*. Stanford University Press, Stanford, California. 583pp.

Sprute, Jana and Rudi Mattoni. Past and Present Occurrences of Butterflies of Griffith Park. Unpublished (no date). Provided by Keane Biological Consulting.

U.S. Fish and Wildlife Service. Federal Register, Vol. 62, No. 11. January 16, 1997. Determination of Endangered Status for the Laguna Mountains Skipper and Quino Checkerspot Butterfly. Final Rule.

Appendix 13:

Griffith Park Historic Areas and Resources GIS Map, 24"x36"
ICF Jones & Stokes, April 2008

TRAIL STEPS

DESIRABLE AS STEPS ARE at many points in many trails, by no means are they ever to be created for their own sake. It is perhaps not generally sensed that if as much study were given to trail planning as to modern road planning, lesser grades and consequently fewer trail steps would result. In any case, only an unavoidably sharp grade not readily negotiable as such, with no reasonable alternative of an easier grade, will justify resorting to steps at all.

That the first purpose in providing steps along steep trails is to facilitate walking is undeniable. Less obvious perhaps, but not less important, is another consideration. This is the safeguarding of the aspect of naturalness in every detail of the construction of trail steps.

Trail steps, to justify their presence in natural areas, must facilitate walking to just such extent as will not corrupt this natural quality. Conversely, trail steps must strive to emulate Nature only to a degree that will not render them extremely hazardous to use. Either approach should result in approximately the same satisfying compromise. The [illegible] of walking along trails in natural areas can hardly be alien to all the considerations of [illegible] and relationship be[illegible] of steps in [illegible] to more reasonable [illegible] to accept for [illegible]

less intensive use, and with these we are here principally concerned, steps will not demand of the natural setting unreasonable and discordant compromise in adaptation to human use.

In park reservations where there are rock outcroppings, and especially where these are of ledge rock, the very background goes far to contribute naturalness to man-made trail steps. Yet even with the most sympathetic collaboration of Nature, the execution of steps requires considerable skill for wholly satisfying results. The characteristics of the stratifications of ledge rock can often be utilized or reproduced in the creation of steps to such results that they are almost without trace of the artificial. Where rock outcroppings do not exist to provide liaison with the landscape, the naturalizing of rock steps requires a sculptor's skill and sense of form if an anomalous creation as to be avoided. Even here the effort should be to give the constructed steps the appearance of natural ledges. To create such aspect it is most important that the width of treads vary. Rocks forming risers are rather apt to [illegible] the steps should vary in horizontal alignment as well as in height, and should be tied and blended into the setting by being occasionally and irregularly extended some distance into the [illegible] to either side. No mortar should be evident. [illegible] greater naturalness will result [illegible] tion. [illegible] of width and height of risers [illegible] appropriate to the [illegible] treads should be as wide as [illegible]

negotiable by forming risers of timbers and providing treads by filling in with gravel or earth. There are various techniques in the fashioning of the timbers and in methods of anchorage, which achieve different degrees of practical and artistic attainment, as some illustrations suggest. Trail steps of this construction cannot be termed naturalistic with accuracy, but it should be possible to reclaim them harmoniously with environment and not hazardous in use. As with all use of logs in park construction, the timber risers should be stripped of bark, not only because this will in time naturally occur, but because in the certain process of loosening, bark will constantly be a source both of hazard and of litter. Sometimes timber risers are roughly squared or carefully hand-hewn. Such, while not "going native" to the extent of timbers left in the round, probably boast a higher safety rating in the sprain and fracture statistics. Timber risers should be staked in place to insure against loosening and shift in position. Exposed stakes should be driven well below the tread surfaces so there is no projection in which a heel might catch. Better still are methods that admit of anchorage by hidden stakes.

There are numerous examples of unusual methods or solutions in provision of trail steps. Often the abruptness of grade makes necessary a veritable stairway steeper than the easy rise and tread we know to be ideal. On occasion a ladder must be built when the grade is precipitous. In a land of giant trees, one that has fallen across a gorge or ravine will provide a picturesque foot bridge which, when out of level beyond a certain degree, can be notched to form steps and equipped with rustic handrail.

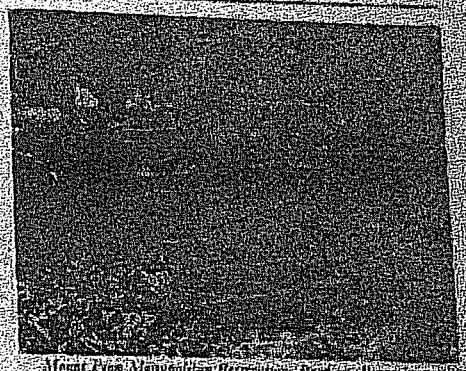
A handrail is often a necessary safeguard in connection with trail steps narrowly confined between a rising cliff on the one hand and a precipitous drop on the other. It is vital that a handrail be thoroughly substantial in character and in fact as inviting as it does the reliance of adventurous recreation seekers. Better no handrail in any location than one that cannot be trusted both in use and abuse. Far too many structurally adequate and safe handrails are an offense by reason of flimsy appearance.



Glacier State Park, Montana



Glacier State Park, Montana



Mount Rose Metropolitan Recreational Reservation, Pennsylvania

TRAIL STEPS OF LOGS

Here grouped for comparative study are shown logs in provision of steps in trails. The practical and aesthetic values of logs in the round and of squared timbers, and the several methods employed in contriving them to this purpose, are here on parade. The combination of log risers and stone paved treads at lower right is unusual. The litter that results when bark is not removed from the logs used in building trail steps is noticeable in the illustration at lower left. The construction method in this example is none the less interesting.



Letchworth State Park, New York



Spring Mill State Park, Indiana





Stone Steps, Palisades Interstate Park, New York



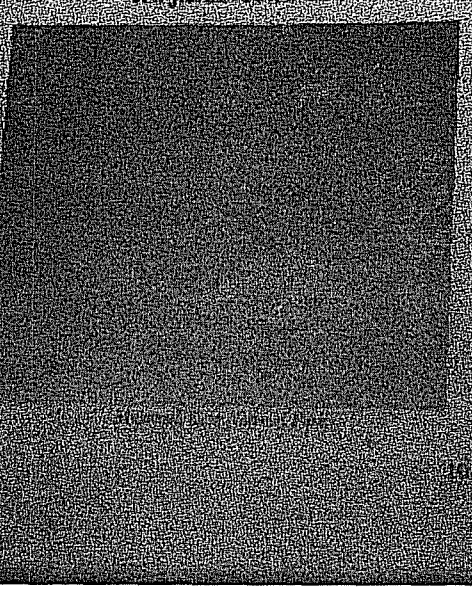
Trail Steps, Harriman State Park, New York



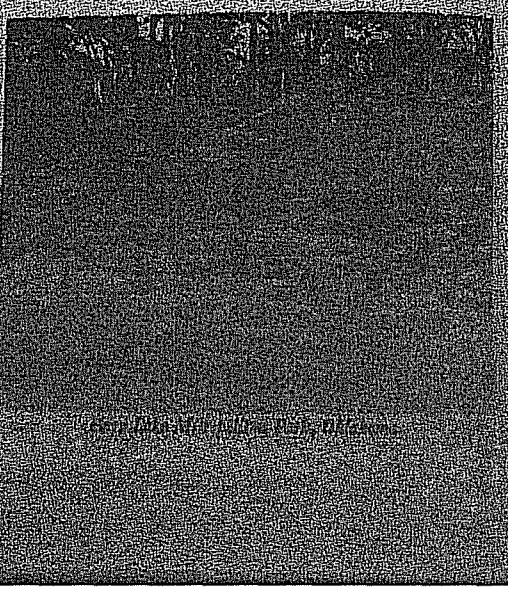
Trail Steps, Palisades Interstate Park, New York

TRAIL STEPS OF STONE

The illustrations surrounding this caption show steps employed with temperate informality for grade negotiation of foot trails. All suggest that the objective was hardly concealment of their man-made origin but rather unselfassive gesture toward natural surroundings. Present in some examples is appropriate blending to the characteristics of the adjacent terrain. In others, notably toward the upper left, is there hint of the informal garden, rarely and only justified in parks if the immediate surroundings have undergone very considerable modification of original character. In



Trail Steps, Palisades Interstate Park, New York



Trail Steps, Palisades Interstate Park, New York



Mammoth Cave National Park



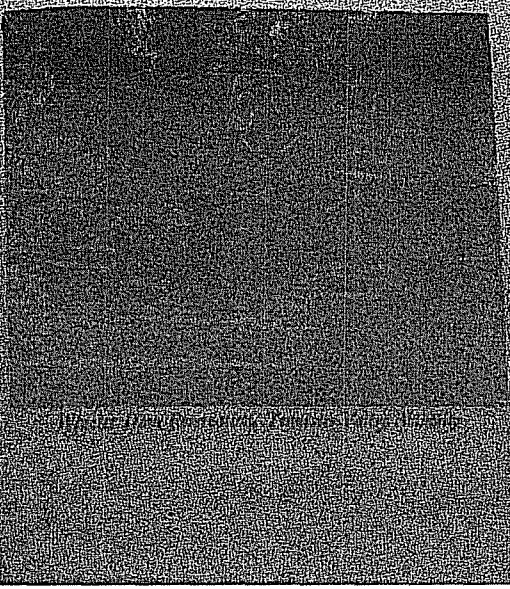
Grand State Park, Wisconsin

the illustrations shown at upper right and immediately below there is uncompromising and disturbing rigidity of line which breeds a conclusion that here the full potentialities of site were not realized.

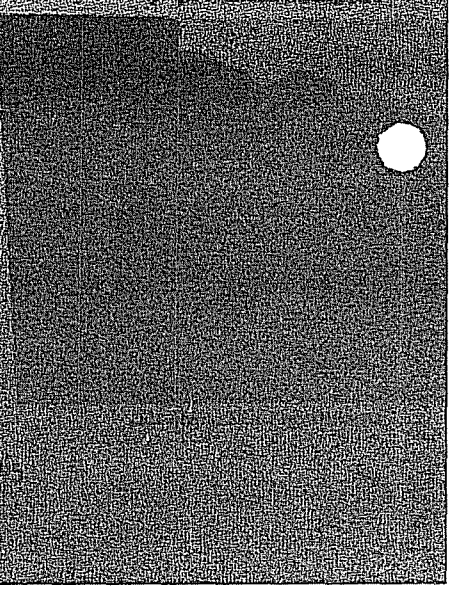
Honesty requires the admission that the steps in the illustration at lower right are not actually trail steps, nor is all the surrounding rock work a natural formation. The steps lead to an overlook atop a cairnlike water storage tank, shown elsewhere in this volume. The accomplishment as to the steps is deserving of the "close-up" that is here given them.



Trail Steps, Palisades Interstate Park, New York



Trail Steps, Palisades Interstate Park, New York



Trail Steps, Palisades Interstate Park, New York

CROSSINGS AND CULVERTS

CLOSE COUPLING of these facilities is ... a conception that the function of the ... is to permit a trail or roadway to pass over ... obstacle, while the function of the cross... permit the drainage to pass over a trail or ... Paradoxically, their very difference thus ... relates them.

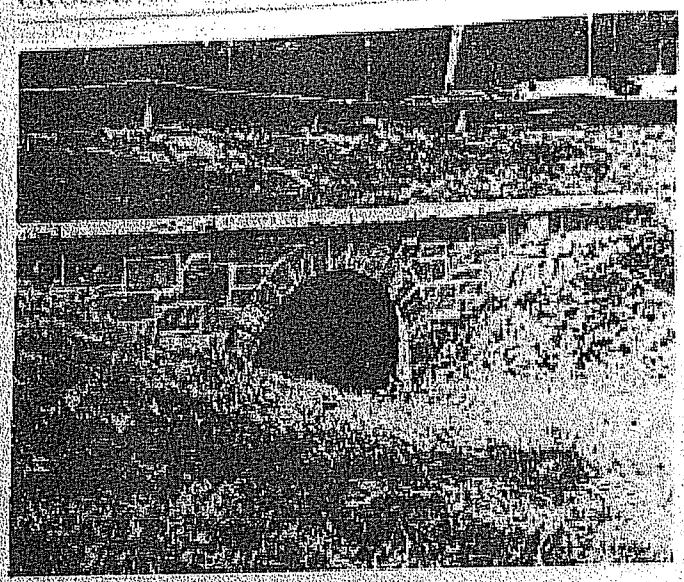
... approach to a park technique the prim... the right of way, stepping stones for peds... and the ford have place as picturesque sur... For horse trails and secondary motor roads ... where traffic is leisurely and light, the ford ... sonable and economical provision for cross... valley stream. This is subject to further ... as if tolerance of its quaintness is not to ... to annoyance on the part of the public. ... river crossing will not meet with favor if ... only impassable due to flood. Equally ... be a soft stream bed, treacherous holes, ... hazards to safe negotiation. The ap... must not incline too sharply, and may ... as the ford is approached, be obscured ... Lack of these requisites to public ac... the ford is apt to provoke chorus of dis... and lead to demand for its replacement ... bridge. In the economical routing of ... attempt to effect ... ...

... out interruption, and head walls may be omitted above grade. Planting will limit the width of traveled way with more naturalism and finesse than can possibly be achieved by obtrusive head walls. The latter close to the traveled roadway, are at once alien and artificial and a traffic hazard.

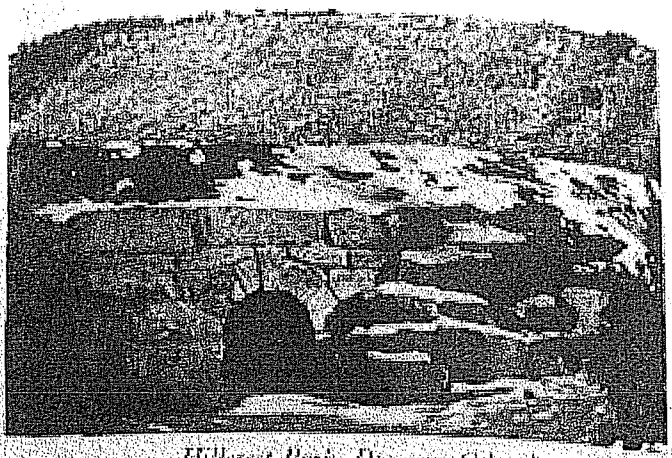
If this procedure for subordinating culverts to surroundings is impractical or uneconomical by reason of terrain, head wall barriers then become a very necessary safeguard. Worthy of study is the character given the required barrier. Its artificiality can be held to a minimum. Like many another facility in natural parks, it should be first and always informal in treatment and blended to its surroundings. Materials and workmanship should be such that facing and culvert itself, once constructed, make no demands whatever upon maintenance appropriations.

The culvert proper is sometimes of local stone when this is abundant and workable, but if it must be of concrete or of galvanized iron, reasonable concealment of the fact is to be striven for. The head wall, by extending well into the culvert opening, should avoid disclosing that it is a mere veneer. Natural rock is certainly the preferred material for the head wall, laid either dry or in mortar. The former method to be lasting must employ stones of suitably large size. If stone is not available, concrete or wood may be resorted to for the retaining wall. In a park sense, neither is a very satisfactory ... for the ... wall.

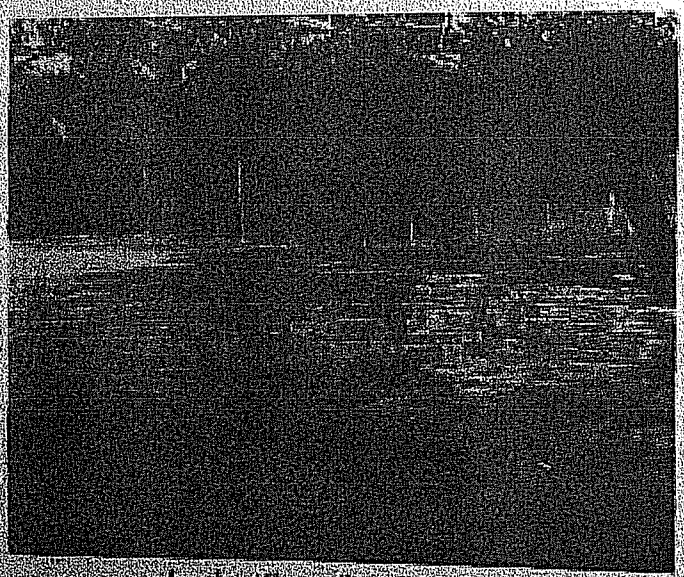
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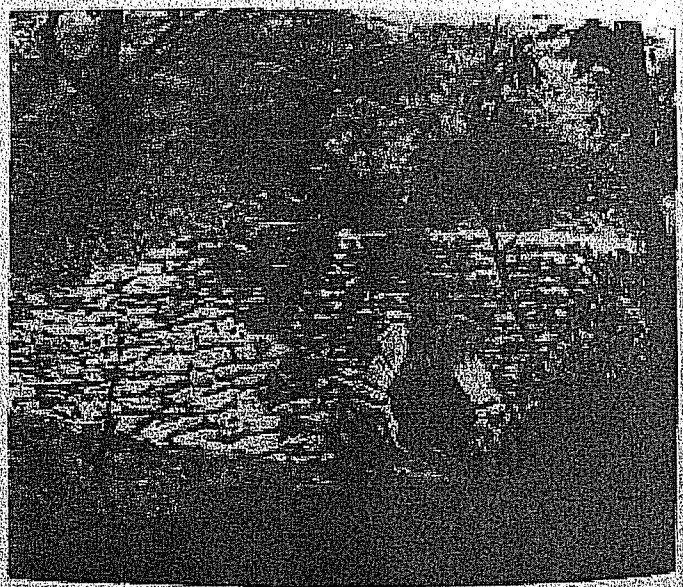
Mount Vernon Memorial Highway



Hillcrest Park, Durango, Colorado



Longhorn Cavern State Park, Texas



Wyandotte County Park, Kansas





BRIDGES

»» BRIDGES IN PARKS include foot trail, bridle trail, and vehicle bridges. There should be proved necessity for every bridge before it is undertaken to build it. This refers chiefly to foot trail and bridle trail bridges. Many such trails, certainly those crossing a dry ravine or gully at remote distances from intensive use areas, can make the dip rather than be kept to a constant grade by a bridge. The location of the trail with respect to intensive use areas and the extent of the drainage obstacle are determining factors in the justification of bridges.

This presentation seeks merely to focus on the characteristics that bring to park bridges of varying widths, spans, heights and types of construction the most promise of compatibility with natural environment. There is elsewhere abundant information, including diagrams, rules, and formulae, for the design of structurally enduring bridges. Much more limited is the presentation of source material concerning itself with bridges which, by reason of appropriateness to natural environment, richly deserve to endure. There are far too many bridges which, after having broken every commandment for beauty and fitness, seem to have sought to wash away all sins through the awful means of permanence. Such penitent bridges [illegible] have no place in our parks. The quality of repentance cannot be considered a virtue unless any other virtue, big or little, is present. It [illegible] only a vicious attribute.

[illegible] appearance, the bridge calls most immediately for the appearance of strength and stability. [illegible] necessary, it is not enough [illegible] adequate within [illegible] must [illegible] over the [illegible]

efficiency, but to satisfy the claims of comparative scale. Overemphasis of the structural elements of the bridge is usually necessary in order to maintain a good scale relationship with the natural elements of the more or less rugged landscape widely prevailing in park areas.

THE ATTAINMENT of "the little more" that is so desired by those who would have an eye-appeal scale brought to the slide rule is all too rare in park bridges. Rather is there a too prevalent flimsiness, ocular rather than structural. Considerably fewer bridges fail to satisfy by seeming too ponderous for their function.

Of perhaps equal importance is the choice of materials for the bridge. Only those which are native to the area and predominate near the bridge site will constitute a convincingly appropriate and harmonious medium of structural interpretation. While this applies, of course, to all structures in parks, it is particularly important to stone bridges, which in their most happily successful expression seem almost to spring from the stream or river bank when truly related in color, texture, and scale to adjacent rock outcrops.

After wise choice of a native material used in a sufficiency pleasing to the eye, the next demand to be made upon bridges would be for variety within reason, avoiding the commonplace at one extreme, and the fantastic at the other. The ranges of use, span, and height, and the broad fields of materials, arch and truss forms, local preferences (to name a few variety-making possibilities) promise endless combinations and cross-combinations making for much individuality among bridges.

[illegible] bridges of stone or timber appear more [illegible] than [illegible]

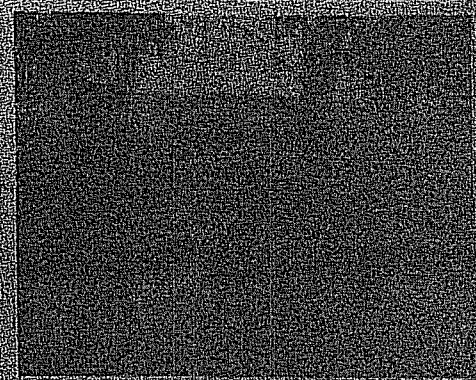
ornament as bridges of exposed steel construction. The great "slickness" of masonry as timber technique, however, is certain to depreciate the merits of these materials for park bridges. Rugged and informal simplicity in use is the indisputable specification for their proper employment.

In no park structure more than in bridges is real such importance to select a type of stone masonry construction that will reflect the natural formations in the immediate area and steer clear of the characteristic mannerisms in masonry. Shapeless stone laid up in the manner of concrete are abhorrent in the extreme, having no precedent in Nature, or in the traditions of sound masonry. In bridges particularly is there merit in pronounced horizontal coursing, readily of vertical joints, variety in size of stones—all the principles productive of sound construction and pleasing appearance in any type of masonry. Often the question of no effect that recalls any natural false stone formations in the vanity of the individual responsible for the masonry of the bridge. Sound technique for the masonry of the bridge. The cubes of the rock, the scale of the rock mass and masonry generally, the size of the piers, the height of the structure above the crown of the arch are all factors vital to the success of the finished bridge.

condemned for complicating the design and obstructing the view. In spite of most careful detailing to prevent water entering and lying in the joints, this is hard to overcome entirely. Shrinking of the timbers, rack under impact and strain, and moisture entering in the opening joints speed the deterioration of this type of construction. It is short-lived at best, unsafe. It was practical effort to overcome this inherent weakness of the open wood-floor bridge by sheltering the timbers from exposure to the weather that brought about the development of the old-time covered bridge.

Many an otherwise altogether gratifying bridge fails of complete success through careless disregard in the matter of finishing touches. These, in reality, do not affect the structural efficiency of the bridge, but the frequent neglect of them might indicate to the man-days that involve. The parapet railing or wing wall should not terminate abruptly at through contents with a mere toe-hold on the slope; a man should carry well back from the face of the bridge before reaching the ground. Sometimes this is very evidently sufficient bearing. Sometimes there is great merit in playing the parapet down from the point of approach to a bridge, particularly if the bridge is narrow. Often the silhouette is improved by stepping down, "reading" as it were, the parapet or railing into the grade at the approach. Logical transition, convincing structurally, desirable to relieve any abrupt change of material in construction, especially in bridges of composite stone and concrete, a satisfactory solution



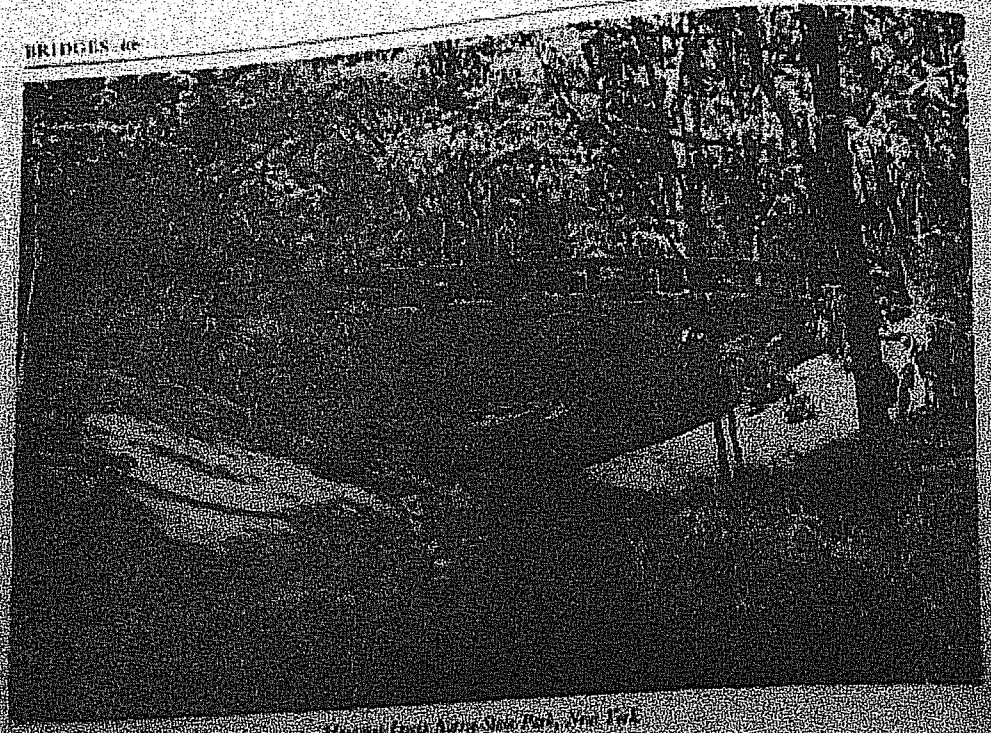


Rustic Foot and Horse Trail Bridge

Rustic Foot and Horse Trail Bridge

RUSTIC FOOT-AND-HORSE-TRAIL BRIDGES

Surrounding the bridges of the most elementary pattern, mere platform bridging an obstacle, a type termed in France a passerelle. Enhanced by a sylvan setting, the casual simplicity of these seems the concordant note for a narrow, rustic, wilderness trail. Wherever a narrow and shallow brook is hardly an obstacle to call for protective rail or handrail. The example with foot rail as shown at lower left is transitional between this simple and that shown on following page.



Stephen Taylor Memorial State Park, New York

MINOR VARIOUS STRUCTURES OF MASONRY

The following small bridges allow variety by reason of the many small profiles, color and texture, and material combinations. It is possible to employ [illegible] with the least of arch stones and [illegible] any [illegible] to bring the [illegible] to any [illegible] to [illegible] the [illegible] [illegible] [illegible]

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APPENDIX D

Energy Impact Study

HEADWORKS SITE DEVELOPMENT PROJECT

Energy Impact Study

Prepared for:
Michael Baker International

Prepared by:
Terry A. Hayes Associates Inc.

January 2024

taha
environmental planners

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1.0 SUMMARY OF FINDINGS

Terry A. Hayes Associates Inc. (TAHA) completed an Energy Impact Study (Study) for the Headworks Site Development Project (proposed project) located in the City of Los Angeles (City). The Study analyzes environmental impacts related to energy resources that would occur during construction and future operation of the proposed project in accordance with the California Environmental Quality Act (CEQA) Statutes and Guidelines. The determination of potentially significant impacts is framed through addressing the Environmental Checklist criteria outlined in Appendix G of the CEQA Guidelines. **Table 1-1** presents the Appendix G criteria for Energy Resources and discloses the conclusions of the Study for the proposed project. Potential impacts related to energy resources were determined to be less-than-significant and no mitigation measures are required.

TABLE 1-1: SUMMARY OF IMPACT STATEMENTS

Impact Statement	Proposed Project Level of Significance	Applicable Mitigation Measures
Would the proposed project result in potentially significant environment impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	Less-Than-Significant Impact	None
Would the proposed project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?	Less-Than-Significant Impact	None

SOURCE: TAHA, 2024.

2.0 INTRODUCTION

2.1 STUDY PURPOSE

This Study compares the proposed project characteristics with applicable regulations, plans, and policies related to renewable energy or energy efficiency to determine if the proposed project would result in wasteful, inefficient, or unnecessary consumption of energy resources.

2.2 PROJECT DESCRIPTION

The proposed water quality lab (WQL) would include approximately 100,000 gross square feet of floor space; surface parking for 12 visitor vehicles, 102 staff vehicles, and 20 Los Angeles Department of Water and Power (LADWP) fleet vehicles; a mobile laboratory trailer; landscaping; and other site improvements. It would be located to the east of the Direct Potable Reuse (DPR) Demonstration Facility at the Headworks Spreading Grounds (HWSG) property. The facility would also be designed to meet Mayor Garcetti's Resilience by Design Directive by obtaining Leadership in Energy and Environmental Design (LEED) gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The facility would also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater. The building would achieve energy efficiency by implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency heating, ventilation, and air conditioning (HVAC) systems. The proposed project would include EV charging stations in compliance with Los Angeles Department of Building and Safety (LADBS) Electric Vehicle Charging Stations (EVCS) requirements. It would incorporate recycled material in all aspects of the building construction to promote a sustainable supply chain. All lighting and lighting controls for the facility would comply with the latest version of the Building Energy Efficiency Standard (Title 24) and the California Green Building Standard Code.

The DPR Demonstration Facility would be an advanced water purification facility (AWPF). The AWPF and support facilities and areas would be approximately 20,000 square feet, with an additional 20,000 square feet for a surrounding vehicle access road. A visitor center and a parking lot would also be provided. The visitor center would be approximately 5,000 square feet, and a parking lot would require approximately 16,500 square feet to accommodate staff and visitors. The DPR Demonstration Facility and visitor center would be located at the at the west end of the HWSG property.

The centerpiece of Headworks Park would be the West Reservoir Gardens, constructed on top of the approximately eight-acre West Reservoir, which will have been covered with several feet of soil to enable planting. Surrounding the reservoir garden and extending into other portions of the HWSG property would be a series of pedestrian, bicycle, and equestrian pathways, including the Headworks segment of the Los Angeles River Trail. The park would be developed in the eastern portion of the property, atop the West Reservoir, with other park features, including parking, a pavilion building, trails and site landscaping, located in adjacent areas.

The primary vehicular access to the Headworks site for all the proposed project components would be from Forest Lawn Drive at Mount Sinai Drive. Secondary access for employee, service, and maintenance vehicles would be provided from Forest Lawn Drive at the west end of the Headworks site. Public access to the Headworks site, would be limited to dawn to dusk.

Figure 2-1 shows the regional location of the proposed project. **Figure 2-2** shows the site plan.



Source: AECOM, 2021.

Headworks Site Development Project
Energy Impact Study

MICHAEL BAKER INTERNATIONAL

TAHA 2021-041

FIGURE 2-1

REGIONAL LOCATION



Legend

1. Headworks Park (Proposed)
2. Headworks Park - Pavilion Gateway (Proposed)
3. Headworks Park - Parking Lot (Proposed)
4. LA River Trail Segment (Proposed)
5. Access Road (Proposed)
6. Equestrian Tunnel (Existing)
7. Connection to Griffith Park (Existing)
8. Water Quality Lab (Proposed)
9. DPR Demonstration Facility (Proposed)
10. DPR Demonstration Facility Visitor Center (Proposed)
11. East Reservoir (Existing)
12. Flow Control Station (In Construction)

Source: LADWP, 2024.

FIGURE 2-2

PROJECT LOCATION

2.3 CONSTRUCTION SCHEDULE

Construction of the proposed project is anticipated to begin in the fourth quarter of 2024 with the Headworks Restoration Park, which would take approximately 3.3 years to complete, concluding in the first quarter of 2028. The construction of the proposed WQL would begin in the second quarter of 2027, overlapping the last phases of the park construction by approximately 9 months. The proposed WQL construction would take approximately 2.5 years to complete, concluding in the first quarter of 2030. Construction of the proposed DPR Demonstration Facility would follow in succession, starting in the second quarter of 2030 and ending in the fourth quarter of 2031, a period of approximately 1.5 years. Accounting for overlaps in the construction periods for the project components, the total construction time for the proposed project would be approximately 7 years, from late 2024 to late 2031. Construction activities would typically occur Monday through Friday during the daytime hours, beginning no earlier than 7:00 a.m. and generally ending by 5:00 p.m. Saturday construction may also be required at times.

3.0 ENERGY RESOURCES

This section describes the regulatory framework of applicable rules, regulations, plans, and guidance related to energy resources; discusses the existing energy environment and quantifies and evaluates energy use associated with construction and operations of the proposed project.

3.1 REGULATORY FRAMEWORK

3.1.1 Federal

Energy Policy and Conservation Acts

The Federal Energy Policy and Conservation Act of 1975, the Federal Energy Policy Act of 2005, and the Energy Independence and Security Act of 2007 require the United States Department of Energy to set electrical efficiency standards of various appliances, fixtures, and equipment. The Energy Independence and Security Act of 2007 includes standards for an increased Corporate Average Fuel Economy standard of 35 miles per gallon for the combined fleet of cars and light trucks by the 2020 model year, in addition to provisions for Renewable Fuel Standard, Appliance and Lighting Efficiency Standards, and Building Energy Efficiency. The Act includes standards for general service lighting that will require lightbulbs to consume 60 percent less energy by 2020. This standard is leading to the phasing out of incandescent lightbulbs to be replaced by more efficient lighting. Other provisions address energy savings in government and public institutions; promote research for alternative energy, carbon capture, and international energy programs; and create green jobs.

Corporate Average Fuel Economy Standards

Established by the US Congress in 1975, the Corporate Average Fuel Economy (CAFE) standards reduce energy consumption by increasing the fuel economy of cars and light trucks. The National Highway Traffic Safety Administration (NHTSA) and United States Environmental Protection Agency (USEPA) jointly administer CAFE standards. The CAFE standards must be set at the "maximum feasible level" with consideration given to: (1) technological feasibility; (2) economic practicality; (3) effect of other standards on fuel economy; and (4) need for the nation to conserve energy. Fuel efficiency standards for medium- and heavy-duty trucks have been jointly developed by USEPA and NHTSA. The Phase 1 heavy-duty truck standards apply to combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles for model years 2014 through 2018, and result in a reduction in fuel consumption from 6 to 23 percent over the 2010 baseline, depending on the vehicle type. USEPA and NHTSA have also adopted the Phase 2 heavy-duty truck standards, which cover model years 2021 through 2027 and require the phase-in of a 5 to 25 percent reduction in fuel consumption over the 2017 baseline depending on the compliance year and vehicle type.

3.1.2 State

California Public Utilities Commission

The California Public Utilities Commission (CPUC) has authority to set electric rates, regulate natural gas utility service, protect consumers, promote energy efficiency, and ensure electric system reliability. The CPUC has established rules for the planning and construction of new transmission facilities, distribution facilities, and substations. Utility companies are required to obtain permits to construct certain power line facilities or substations. The CPUC also has jurisdiction over the siting of natural gas transmission lines.

The CPUC regulates distributed energy generation policies and programs for both customers and utilities. This includes incentive programs (e.g., California Solar Initiative) and net energy metering

policies. Net energy metering allows customers to receive a financial credit for power generated by their on-site system and fed back to the utility. The CPUC is involved with utilities through a variety of energy procurement programs, including the Renewable Portfolio Standard program.

In 2008, the CPUC adopted the Long-Term Energy Efficiency Strategic Plan, which is a road map to achieving maximum energy savings in California. Consistent with California's energy policy and electricity "loading order," the Energy Efficiency Strategic Plan indicates that energy efficiency is the highest priority resource in meeting California's energy needs. The CPUC has adopted goals that all new commercial construction in California will be zero net energy by 2030 and 50 percent of existing commercial buildings will be retrofit to zero net energy by 2030.

California Energy Commission

The California Energy Commission (CEC) is primary energy policy and planning agency in California. Created by the California Legislature in 1974, the CEC has five major responsibilities: (1) forecasting future energy needs and keeping historical energy data; (2) licensing thermal power plants 50 megawatts (MW) or larger; (3) promoting energy efficiency through appliance and building standards; (4) developing energy technologies and supporting renewable energy; and (5) planning for and directing State response to energy emergencies. Senate Bill (SB) 1389 requires the CEC to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the electricity, natural gas, and transportation fuel sectors in California, and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the State economy; and protect public health and safety. The 2019 Integrated Energy Policy Report provides the results of the CEC assessments of a variety of energy topics in California, including electricity sector trends, building decarbonization and energy efficiency, zero-emission vehicles, energy equity, climate change adaptation, electricity reliability in Southern California, natural gas assessment, and electricity, natural gas, and transportation energy demand forecasts.

Title 24, Building Standards Code and CALGreen Code

The CEC first adopted the Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the State. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods. Part 11 of the Title 24 Building Standards is referred to as the California Green Building Standards (CALGreen) Code and was developed to help the State achieve its GHG reduction goals under HSC Division 25.5 by codifying standards for reducing building-related energy, water, and resource demand, which in turn reduces GHG emissions from energy, water, and resource demand. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality." The CALGreen Code is not intended to substitute for or be identified as meeting the certification requirements of any green building program that is not administered and adopted by the California Building Standards Commission. The CALGreen Code established mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality.

The 2022 Title 24 Standards became effective in January 2023. The 2022 standards continue to improve upon the previous (2019) Title 24 standards for new construction of, and additions and alterations to, residential and non-residential buildings. The Title 24 Standards, the standards ensure

that builders use the most energy efficient and energy conserving technologies and construction practices. Compliance with Title 24 is enforced through the building permit process.

Renewables Portfolio Standard

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017 as a Renewables Portfolio Standard (RPS). Subsequent amendments provided additional targets throughout the years. Most recently, on October 7, 2015, SB 350 (Chapter 547, Statues of 2015), also known as the Clean Energy and Pollution Reduction Act, further increased the RPS to 50 percent by 2030. The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027. SB 350 also requires the State to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. On September 10, 2018, SB 100 promulgated additional RPS targets of 44 percent by 2024, 52 percent by 2027, and 60 percent by 2030, and that CARB should plan for 100 percent eligible renewable energy resources and zero-carbon resources by 2045.

California Low Carbon Fuel Standard

Executive Order S-01-07 was enacted on January 18, 2007 to reduce the carbon intensity of California's transportation fuels. The final regulation was approved by the Office of Administrative Law and filed with the Secretary of State on January 12, 2010; the LCFS became effective on the same day. In September 2015, CARB approved the re-adoption of the LCFS, which became effective on January 1, 2016, to address procedural deficiencies in the way the original regulation was adopted.

Regional

Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)

The Southern California Association of Governments (SCAG) adopted the 2020–2045 RTP/SCS in October 2020. This vision for the region incorporates a range of best practices for increasing transportation choices, reducing dependence on personal automobiles, further improving air quality, and encouraging growth in walkable, mixed-use communities with ready access to transit infrastructure and employment. More and varied housing types and employment opportunities would be located in and near job centers, transit stations and walkable neighborhoods where goods and services are easily accessible via shorter trips. To support shorter trips, people would have the choice of using neighborhood bike networks, car share or micro-mobility services like shared bicycles or scooters. For longer commutes, people would have expanded regional transit services and more employer incentives to carpool or vanpool. Other longer trips would be supported by on-demand services such as microtransit, carshare, and citywide partnerships with ride hailing services. For those that choose to drive, hotspots of congestion would be less difficult to navigate due to cordon pricing and using an electric vehicle will be easier thanks to an expanded regional charging network.

The 2020–2045 RTP/SCS states that the SCAG region was home to about 18.8 million people in 2016 and currently includes approximately 6.0 million homes and 8.4 million jobs. By 2045, the integrated growth forecast projects that these figures will increase by 3.7 million people, with nearly 1.6 million more homes and 1.6 million more jobs. Transit Priority Areas will account for less than 1 percent of regional total land but are projected to accommodate 30 percent of future household growth between 2016 and 2045. The 2020–2045 RTP/SCS overall land use pattern reinforces the trend of focusing new housing and employment in the region's TPAs. TPAs are a cornerstone of land use planning best practice in the SCAG region because they concentrate roadway repair investments, leverage transit and active transportation investments, reduce regional life cycle

infrastructure costs, improve accessibility, create local jobs, and have the potential to improve public health and housing affordability.

3.1.4 Local

LADWP Power Strategic Long-Term Resource Plan

The 2022 Power Strategic Long-Term Resource Plan (SLTRP) serves as a comprehensive roadmap through 2045 that guides LADWP Power System in its efforts to supply reliable electricity in an environmentally responsible and cost-effective manner. The 2022 SLTRP is largely driven by Mayoral directives and City Council motions that instructed LADWP to prepare an SLTRP to achieve 100 percent carbon-free energy by 2035. Previous SLTRPs, including the most recent 2017 SLTRP, only considered incremental updates in clean energy objectives which reflected the general cadence of development within the power utility industry. The 2022 SLTRP includes numerous updates related to new renewable projects, associated transmission upgrade cost and fuel cost assumptions, staffing requirements, and several other critical updates. The SLTRP uses system modeling tools to analyze and determine the long-term economic, environmental, and operational impact of alternative resource portfolios by simulating the integration of new resource alternatives within LADWP's existing mix of assets and providing the analytic results to inform the selection of a recommended case that considers various factors such as minimal adverse rate impacts on customers, prioritizing environmental stewardship and equity, and maintaining reliability and resiliency.

Green New Deal

The City of Los Angeles first addressed the issue of global climate change in *GreenLA, An Action Plan to Lead the Nation in Fighting Global Warming* ("LA Green Plan/ClimateLA") in 2007. This document outlines the goals and actions the City has identified to conserve energy and reduce the generation and emission of greenhouse gases (GHG) from both public and private activities. On April 8, 2015, Mayor Eric Garcetti released Los Angeles' first ever *Sustainable City pLAn* (the *pLAn*). The *pLAn* sets the course for a cleaner environment and stronger economy, with commitment to equity as its foundation. The pLAn is made up of short term (2017 horizon) and long term (2025 and 2035 horizons) targets in various topic areas, including: water, solar power, energy-efficient buildings, carbon and climate leadership, waste and landfills, housing and development, mobility and transit, and air quality, among others.

In April 2019, the *Green New Deal (Sustainable City Plan 2019)*, was released, consisting of a program of actions designed to create sustainability-based performance targets through 2050 designed to advance economic, environmental, and equity objectives. L.A.'s Green New Deal is the first four-year update to the City's first Sustainable City pLAn that was released in 2015. It augments, expands, and elaborates L.A.'s vision for a sustainable future and tackles the climate emergency with accelerated targets and new aggressive goals. These include the following near-term outcomes:

- Reduce potable water use per capita by 22.5 percent by 2025; 25 percent by 2035; and maintain or reduce 2035 per capita water use through 2050.
- Reduce building energy use per square feet for all building types 22 percent by 2025; 34 percent by 2035; and 44 percent by 2050.
- All new buildings will be net zero carbon by 2030 and 100 percent of buildings will be net zero carbon by 2050.

- Ensure proportion of Angelenos living within 1/2 mile of a park or open space is at least 65 percent by 2025; 75 percent by 2035; and 100 percent by 2050.

City of Los Angeles Green Building Code

On December 11, 2019, the Los Angeles City Council approved Ordinance No. 186,488, which amended Chapter IX of the Los Angeles Municipal Code, referred to as the Los Angeles Green Building Code, by adding a new Article 9 to incorporate various provisions of the 2019 CALGreen Code. Projects filed on or after January 1, 2020, must comply with the provisions of the Los Angeles Green Building Code. Specific mandatory requirements and elective measures are provided for three categories: (1) low-rise residential buildings; (2) nonresidential and high-rise residential buildings; and (3) additions and alterations to nonresidential and high-rise residential buildings. Article 9, Division 5 includes mandatory measures for newly constructed nonresidential and high-rise residential buildings.

3.2 EXISTING SETTING

California contains abundant sources of nonrenewable and renewable energy. Nonrenewable resources include large crude oil and natural gas deposits that are located within six geological basins in the Central Valley and along the coast. Much of these reserves are concentrated in the southern San Joaquin Basin. Regarding renewable resources, the State leads the nation in net electricity generation from solar, geothermal, and biomass. California has considerable solar potential, especially in the southeastern deserts and several of the world's largest solar thermal plants are located in California's Mojave Desert. Although California's wind power potential is widespread, especially along the eastern and southern mountain ranges, much of the State is excluded from development of this resource because it is in wilderness areas, parks, or urban areas. The transportation sector is responsible for the most energy consumption of any sector within the State. More motor vehicles are registered in California than in any other state, and commute times in California rank among some of the longest in the country.

Electricity to the proposed project would be provided by LADWP. LADWP's power system supplies more than 26 million megawatt-hours (MWh) of electricity a year for the City of Los Angeles' 1.5 million residential and business customers as well as over 5,000 customers in Owens Valley. Typical residential energy use per customer is approximately 500 kilowatt-hours per month. Business and industry consume approximately 70 percent of the electricity in Los Angeles. LADWP has a generation capacity of 7,880 MW from a mix of energy sources. Approximately 29 percent of electricity is generated from renewable energy, 34 percent from natural gas, 9 percent from nuclear, 3 percent from hydroelectric, 19 percent from coal, and 6 percent from purchased power.

Natural gas is provided and distributed to residents and businesses in the City by the Southern California Gas Company (SoCalGas). According to the 2023 Supplemental California Gas Report, SoCalGas provided 2,458,000,000 thousand British Thermal Unit (kBTU) per day in 2022. The 2022 California Gas Report states that SoCalGas projects total gas demand to decline at an annual rate of 1.5 percent from 2022 to 2035. The forecasted, accelerated decline in throughput demand is being driven by modest economic growth and the forecasted energy efficiency and fuel substitution. Other factors that contribute to the downward trend are tighter standards created by revised Title 24 Codes and Standards, and renewable energy goals that impact gas-fired electricity.

According to the CEC, approximately 11,495 million gallons of gasoline and 1,846 million gallons of diesel, including off-road diesel were sold and consumed in 2022. Approximately 97 percent of all gasoline consumed in California is utilized by light-duty cars, pickup trucks, and sport utility vehicles. Nearly all heavy-duty trucks, delivery vehicles, buses, trains, ships, boats and barges, farm, construction, and heavy-duty military vehicles have diesel engines.

3.3 METHODOLOGY AND SIGNIFICANCE THRESHOLDS

3.3.1 Methodology

Appendix F of the CEQA Guidelines states that the goal of conserving energy implies the wise and efficient use of energy, to be achieved by decreasing overall per capita energy consumption; decreasing reliance on natural gas and oil; and increasing reliance on renewable energy resources. To assure energy implications are considered in project decisions, CEQA requires that environmental impact reports include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

Construction

The GHG emissions analysis, included in the appendix for the environmental documentation, includes a quantification of construction-related carbon dioxide (CO_2) emissions using the California Emissions Estimator Model (CalEEMod, Version 2022.1.1.21). These emissions were used to estimate construction energy from CO_2 emission factors derived for the CARB GHG emissions inventory. The 2018 Climate Registry indicates that for gasoline fuel, approximately 8.78 kilograms of CO_2 are generated per gallon combusted, and for diesel fuel, approximately 10.21 kilograms of CO_2 are generated per gallon combusted. The fuel consumption was estimated from the equipment and vehicles that would be employed in construction activities. Diesel engines are installed in heavy-duty off-road construction equipment and on-road haul trucks. Gasoline engines are typically found in passenger vehicles that would be used for construction worker daily commutes.

Operations

Annual consumption of electricity and natural gas was calculated using the LADWP demand factors provided in CalEEMod. Electricity usage and natural gas consumption is calculated based on default energy demand factors contained within CalEEMod for the proposed project land use. Electricity from water usage is also based on CalEEMod demand factors for water usage and wastewater production. Transportation fuel use was estimated based on a detailed vehicle miles traveled (VMT) analysis was completed for the proposed project. The daily operational VMT is anticipated to be 2,133 miles for 172 employees at the WQL, 159 miles for the DPR demo facility, and 120 miles for the park. Accounting for existing LADWP employee commuting trips that will be redirected to the new WQL, the net change in WQL daily VMT would be 1,051 miles, for a total daily VMT of 1,330 miles.

3.3.2 Significance Thresholds

In accordance with the State CEQA Guidelines Appendix G, the proposed project would have a significant impact related to energy if it would:

- Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation; and/or
- Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

3.4 ENVIRONMENTAL IMPACTS

3.4.1 Would the proposed project result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation? (Less-Than-Significant Impact)

Impact Analysis

Construction. Construction would require electricity for lighting, construction trailers, and operation of electrically powered hands tools. Electricity to the site would be provided by LADWP and it is likely that most electrically powered equipment would connect to the grid. Consumption of electricity for construction would be minimal and would cease after completion of the proposed project. Electricity use would be minimized to the extent feasible through incorporation of sustainability features and best management practices. Therefore, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of electricity.

Construction activities typically do not require the consumption of natural gas to power equipment or heavy machinery. Natural gas that would be consumed during construction would be negligible and would not result in a significant drain on natural gas resources. Therefore, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of natural gas.

Petroleum would be consumed during construction activities by heavy-duty equipment, which is usually diesel powered. Construction would also result in an increased consumption of gasoline and diesel fuels associated with haul trucks, deliveries, and worker commute trips. The proposed project would require a one-time expenditure of approximately 355,380 gallons of diesel fuel and 110,616 gallons of gasoline over the seven-year construction period. The annual average petroleum fuels consumption would be approximately 50,769 gallons of diesel fuel and 15,802 gallons of gasoline per year during construction of the proposed project. The proposed project would use best practices to eliminate the potential for the wasteful consumption of petroleum. Exported materials (e.g., demolition debris and soil hauling) would be disposed of at the closest facility that accepts such materials, and the proposed project would be required to comply with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to five minutes. Therefore, because petroleum use would be minimized to the extent feasible and represents a relatively small amount of fuel consumption, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of petroleum.

Operations. Operation of the proposed project would require electricity for indoor and outdoor lighting, appliances, and powering other equipment typically associated with functions at the WQL and DPR Demonstration Facility. Excluding the electricity required for the micro-filtration and reverse osmosis processes during water treatment at the DPR Demonstration Facility, the proposed project is estimated to consume 2,220 MWh of electricity per year. The WQL would also be designed to meet Mayor Garcetti's Resilience by Design Directive by obtaining LEED gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The facility would also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater.

The conceptual design for the WQL incorporates best management practices and high-performance strategies in several of the major Sustainable City pLAn target areas. The facility would have a photovoltaic array on the roof tops of the building. It would also include an internal landscaped courtyard and green roof to conserve water through stormwater capture and treatment. Recycled water from LAGWRP would provide irrigation water for the proposed project landscaping, which would be drought-tolerant in the types and use of plant material. The building would achieve energy efficiency by

implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency HVAC systems. The proposed project would include electric vehicle charging stations in compliance with LADBS requirements. It would incorporate recycled material in all aspects of the building construction to promote a sustainable supply chain. All lighting and lighting controls for the facility would comply with the latest version of the Building Energy Efficiency Standard (Title 24) and the California Green Building Standard Code.

The City of Los Angeles has a goal to reuse all of its wastewater by 2035 in order to reduce its use of energy-consumptive imported water supplies. To help meet this goal, LADWP is exploring various advanced treatment technologies that would ultimately support the reuse of wastewater, thereby offsetting similar volumes of imported water. The DPR Demonstration Facility component of the proposed project would be an advanced water purification facility for treated drinking water augmentation. A demonstration facility would provide the opportunity to verify the technologies and processes required to produce purified recycled water suitable for the DPR Demonstration Facility. The facility would also include an educational element to inform the public about the DPR Demonstration Facility and other aspects of water use in the City. The DPR Demonstration Facility would help determine opportunities to reduce regional energy use associated with water use in future years. Therefore, based on the energy savings associated with the proposed WQL compared to existing operations and the substantial energy savings from decreasing imported water that would be realized from the technologies tested at the DPR Demonstration Facility, operation of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of electricity.

The proposed project would not include a significant source of natural gas consumption. Natural gas would be used to heat water in faucets associated with the WQL, which would consume approximately 2,512 million BTU (MMBTU) of natural gas annually. This level of consumption has no potential to interfere with natural gas supplies. Therefore, operation of the proposed project would not result in a significant impact related to wasteful, inefficient, or unnecessary consumption of natural gas.

Petroleum consumption during operations would be related to vehicle trips for employees and visitors. The assessment of transportation fuels is based on the detailed VMT analysis completed for the proposed project. The City of has developed screening criteria to identify when a detailed analysis is required for projects. The City's guidelines state that public services (e.g., police, fire stations, public utilities, public parks) do not generally generate substantial VMT. Instead, these land uses are often built-in response to development from other land uses (e.g., office and residential). The proposed project includes a public park and a drinking water treatment facility, which are public services that are presumed to have a less than significant VMT impact.

In order to evaluate the VMT per employee for the WQL, the net change per employee was calculated. The proposed project would replace the Pasadena and Rinaldi facilities. For this evaluation, the net VMT was calculated by subtracting the total VMT per employee for the Pasadena and Rinaldi facilities from the VMT for the proposed project. The VMT per employee for employees that are expected to transfer to the WQL from LADWP facilities in downtown Los Angeles were not subtracted because it is anticipated that those positions would be backfilled at the current locations in the future, unlike the positions in Pasadena and Rinaldi. The Pasadena facility is in Traffic Analysis Zone (TAZ) 22121400 of the SCAG RTP Model. The VMT per employee for the TAZ is 16.3 miles per employee. The Rinaldi facility is included in the City of Los Angeles VMT Calculator, which shows a VMT per employee of 14.1 miles per employee. The VMT/Employee for the proposed project site is 12.4 miles/employee based on the VMT Calculator.

The total VMT for existing and proposed WQL facilities were calculated by multiplying the VMT per employee for the existing and proposed facilities. The decrease of 62 employees at the Pasadena location will result in a VMT reduction of 1,011 miles, and the decrease at the Rinaldi facility will result in a reduction of 71 miles. The new Headworks WQL daily VMT is anticipated to be 2,133 miles for 172 employees. The net change in VMT is 1,051 miles, which results in a net VMT of 6.11 miles per employee. The proposed project is located in the Central Area Planning Commission (APC), which has a VMT Impact Criteria (15 percent below APC Average) of 7.6 miles per employee. The VMT per employee would be less than the average for the Central APC. An additional 159 daily VMT would be attributed to the DPR Demonstration Facility, and an additional 120 daily VMT would be attributed to the park, for a total of 1,330 daily operational VMT for the entire site. Operational mobile source vehicle trips would consume approximately 17,930 gallons of motor gasoline and 812 gallons of diesel fuel annually. This level of petroleum-based transportation fuel consumption would not place an undue burden on existing commercially available resources, and would not interfere with LADWP and regional initiatives to reduce reliance on fossil fuels in transportation applications.

There are no unusual characteristics or processes that would require intensive petroleum consumption, or the use of equipment that would not conform to current emissions standards and related fuel efficiencies. Implementation of the proposed project would not require the development of additional petroleum fuels infrastructure or supply. Therefore, operation of the proposed project would not result in a significant impact related to wasteful, inefficient, or unnecessary consumption of petroleum.

Mitigation Measures

No mitigation measures are required.

3.4.2 Would the proposed project conflict with or obstruct a State or local plan for renewable energy or energy efficiency? (Less-Than-Significant Impact)

Impact Analysis

The proposed project would not obstruct a State or local plan for renewable energy or energy efficiency. The WQL would also be designed to meet Mayor Garcetti's Resilience by Design Directive by obtaining LEED gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The facility would also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater. The conceptual design for the WQL incorporates best management practices and high-performance strategies in several of the major Sustainable City pLAn target areas. The facility would have a photovoltaic array on the roof tops of the building. It would also include an internal landscaped courtyard and green roof to conserve water through stormwater capture and treatment. Recycled water from LAGWRP would provide irrigation water for landscaping, which would be drought-tolerant in the types and use of plant material.

The building would achieve energy efficiency by implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency HVAC systems. The proposed project would include EV charging stations in compliance with LADBS EVCS requirements. It would incorporate recycled material in all aspects of the building construction to promote a sustainable supply chain. All lighting and lighting controls for the facility would comply with the latest version of the Building Energy Efficiency Standard (Title 24) and the California Green Building Standard Code. The Headworks Park component would incorporate landscaping reflective of native plant communities and also use recycled water for irrigation.

The City of Los Angeles has a goal to reuse all of its wastewater by 2035 in order to reduce its use of energy-consumptive imported water supplies. This reuse may include the continued use of recycled wastewater for non-drinking water purposes, such as irrigation, and/or the purification of recycled wastewater through advanced treatment processes for non-direct potable reuse, such as groundwater recharge. To help meet this goal, LADWP is exploring various advanced treatment technologies that would ultimately support DPR. The DPR Demonstration Facility component would be an advanced water purification facility. A demonstration facility would provide the opportunity to verify the technologies and processes required to produce purified recycled water suitable for the DPR, which would potentially result in increased energy efficiency in future years related to various advanced treatment technologies that would ultimately support the reuse of wastewater, thereby offsetting similar volumes of imported water, which consumes the majority of the energy used by the water sector in the state.

Mitigation Measures

No mitigation measures are required.

4.0 REFERENCES

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APPENDIX

CalEEMod Files

- Headworks Construction Energy Calculation Sheet
- Headworks Park Construction Detailed Report
- Headworks Water Quality Lab Construction Detailed Report
- Headworks DPR Demonstration Facility Detailed Report
- Headworks Project Operations Detailed Report

Headworks Construction Energy Consumption Calculations

Diesel Equipment			gal/bhp-hr
HP>100	BSFC (lb/hp-hr)	0.367	0.051625427
HP<100	BSFC (lb/hp-hr)	0.408	0.057392846
	Unit conversion (lb/gallon)	7.1089	

USEPA 2023 Fuel Carbon Intensity Factors	
kgCO2/gal-D	10.21
kgCO2/gal-G	8.78

Park

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	11/14/2024	1/1/2025	5	35	site clearing
Grading	Grading	1/2/2025	4/2/2025	5	65	excavation and grading
Building Construction	Building Construction	4/3/2025	1/7/2026	5	200	installation of park canopies and structures
Paving	Paving	1/8/2026	2/16/2028	5	550	paving of parking lot and access roads/paths
Architectural Coating	Architectural Coating	1/8/2026	2/16/2028	5	550	landscaping & finishing on structures

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor	Days	Gallons
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2	8	84	0.37	35	999
Site Preparation	Air Compressors	Diesel	Average	1	4	37	0.48	35	143
Site Preparation	Skid Steer Loaders	Diesel	Average	1	6	71	0.37	35	317
Site Preparation	Aerial Lifts	Diesel	Average	5	6	46	0.31	35	859
Site Preparation	Rubber Tired Loaders	Diesel	Average	2	6	150	0.36	35	1,171
Site Preparation	Welders	Diesel	Average	3	4	46	0.45	35	499
Site Preparation	Cranes	Diesel	Average	1	4	367	0.29	35	769
Grading	Graders	Diesel	Average	2	8	148	0.41	65	3,258
Grading	Excavators	Diesel	Average	1	6	36	0.38	65	306
Grading	Tractors/Loaders/Backhoes	Diesel	Average	6	7	84	0.37	65	4,870
Grading	Air Compressors	Diesel	Average	2	6	37	0.48	65	795
Grading	Rollers	Diesel	Average	1	6	36	0.38	65	306
Grading	Rubber Tired Loaders	Diesel	Average	5	7	150	0.36	65	6,342
Grading	Welders	Diesel	Average	3	7	46	0.45	65	1,622
Grading	Aerial Lifts	Diesel	Average	9	6	46	0.31	65	2,873
Grading	Generator Sets	Diesel	Average	2	6	14	0.74	65	464
Grading	Cranes	Diesel	Average	1	4	367	0.29	65	1,429
Grading	Forklifts	Diesel	Average	4	7	82	0.2	65	1,713
Grading	Pressure Washers	Diesel	Average	3	6	14	0.3	65	282
Grading	Trenchers	Diesel	Average	1	4	40	0.5	65	298
Grading	Surfacing Equipment	Diesel	Average	1	4	399	0.3	65	1,607

Headworks Construction Energy Consumption Calculations

Building Construction	Forklifts	Diesel	Average	2	8	82	0.2	200	3,012
Building Construction	Generator Sets	Diesel	Average	1	8	14	0.74	200	951
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3	7	84	0.37	200	7,492
Building Construction	Rollers	Diesel	Average	2	7	36	0.38	200	2,198
Building Construction	Rubber Tired Loaders	Diesel	Average	4	7	150	0.36	200	15,612
Building Construction	Skid Steer Loaders	Diesel	Average	2	7	71	0.37	200	4,222
Building Construction	Graders	Diesel	Average	2	6	148	0.41	200	7,518
Building Construction	Surfacing Equipment	Diesel	Average	1	4	399	0.3	200	4,944
Building Construction	Off-Highway Tractors	Diesel	Average	1	6	38	0.44	200	1,152
Paving	Pavers	Diesel	Average	1	7	81	0.42	550	7,517
Paving	Rollers	Diesel	Average	1	7	36	0.38	550	3,023
Paving	Graders	Diesel	Average	1	6	148	0.41	550	10,338
Paving	Welders	Diesel	Average	1	6	46	0.45	550	3,921
Architectural Coating	Skid Steer Loaders	Diesel	Average	2	7	71	0.37	550	11,609
Architectural Coating	Forklifts	Diesel	Average	2	7	82	0.2	550	7,248
Architectural Coating	Aerial Lifts	Diesel	Average	1	7	46	0.31	550	3,151
Architectural Coating	Rubber Tired Loaders	Diesel	Average	1	7	150	0.36	550	10,733
Architectural Coating	Trenchers	Diesel	Average	1	6	40	0.5	550	3,788

5.3. Construction Vehicles — Equip Diesel (gal) 139,348

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix	Fuel	MTCO2-year1	MTCO2-year2	MTCO2-year3	Gallons
Site Preparation									
Site Preparation	Worker	64	18.5	LDA,LDT1,LDT2	G	13.5	0.28		1,569
Site Preparation	Vendor	6	10.2	HHDT,MHDT	D	3.01	0.06		301
Site Preparation	Hauling	4	20	HHDT	D	4.39	0.09		439
Site Preparation	Onsite truck	4	4	HHDT,MHDT	D	0.83	0.02		83
Grading									
Grading	Worker	110	18.5	LDA,LDT1,LDT2	G	43.1			4,909
Grading	Vendor	10	10.2	HHDT,MHDT	D	9.36			917
Grading	Hauling	4	20	HHDT	D	8.17			800
Grading	Onsite truck	9	4	HHDT,MHDT	D	3.47			340
Building Construction									
Building Construction	Worker	160	18.5	LDA,LDT1,LDT2	G	188	4.73		21,951
Building Construction	Vendor	20	10.2	HHDT,MHDT	D	56.1	1.41		5,633
Building Construction	Hauling	2	20	HHDT	D	12.3	0.31		1,235
Building Construction	Onsite truck	11	4	HHDT,MHDT	D	12.7	0.32		1,275
Paving									
Paving	Worker	80	18.5	LDA,LDT1,LDT2	G	121	121	15.3	29,305
Paving	Vendor	4	10.2	HHDT,MHDT	D	14.5	14.5	1.82	3,019
Paving	Hauling	0	20	HHDT	D	0	0	0	0
Paving	Onsite truck	9	4	HHDT,MHDT	D	13.4	13.4	1.69	2,790
Architectural Coating									
Architectural Coating	Worker	20	18.5	LDA,LDT1,LDT2	G	30.2	30.2	3.82	7,314
Architectural Coating	Vendor	0	10.2	HHDT,MHDT	D	0	0	0	0
Architectural Coating	Hauling	2	20	HHDT	D	15.8	15.8	1.99	3,290
Architectural Coating	Onsite truck	7	4	HHDT,MHDT	D	10.4	10.4	1.31	2,166

Worker (gas-gal) 65,049

Other (diesel-gal) 22,287

Headworks Construction Energy Consumption Calculations

WQL

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase
Site Preparation	Site Preparation	6/14/2027	11/5/2027	5	105
Grading	Grading	11/8/2027	2/18/2028	5	75
Building Construction	Building Construction	2/21/2028	8/10/2029	5	385
Paving	Paving	8/13/2029	12/28/2029	5	100
Architectural Coating	Architectural Coating	8/13/2029	12/28/2029	5	100

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor	Days	Gallons
Site Preparation	Rubber Tired Dozers	Diesel	Average	2	6	367	0.4	105	9,549
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	3	8	84	0.37	105	4,495
Site Preparation	Excavators	Diesel	Average	2	8	36	0.38	105	1,319
Site Preparation	Rubber Tired Loaders	Diesel	Average	1	8	150	0.36	105	2,342
Site Preparation	Scrapers	Diesel	Average	3	6	423	0.48	105	19,811
Site Preparation	Off-Highway Tractors	Diesel	Average	2	6	38	0.44	105	1,209
Grading	Excavators	Diesel	Average	1	8	36	0.38	75	471
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2	8	84	0.37	75	2,141
Grading	Air Compressors	Diesel	Average	1	7	37	0.48	75	535
Grading	Skid Steer Loaders	Diesel	Average	1	7	71	0.37	75	792
Grading	Surfacing Equipment	Diesel	Average	1	6	399	0.3	75	2,781
Grading	Rubber Tired Loaders	Diesel	Average	1	8	150	0.36	75	1,673
Grading	Pressure Washers	Diesel	Average	2	6	14	0.3	75	217
Grading	Cranes	Diesel	Average	2	6	367	0.29	75	4,945
Grading	Welders	Diesel	Average	4	6	46	0.45	75	2,138
Building Construction	Forklifts	Electric	Average	2	8	82	0.2	385	5,798
Building Construction	Generator Sets	Diesel	Average	2	8	14	0.74	385	3,663
Building Construction	Welders	Diesel	Average	1	8	46	0.45	385	3,659
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3	7	84	0.37	385	14,422
Building Construction	Aerial Lifts	Diesel	Average	8	8	46	0.31	385	20,166
Paving	Pavers	Diesel	Average	1	8	81	0.42	100	1,562
Paving	Rollers	Diesel	Average	2	8	36	0.38	100	1,256
Architectural Coating	Forklifts	Electric	Average	1	8	82	0.2	100	753
Architectural Coating	Graders	Diesel	Average	1	8	148	0.41	100	2,506
Architectural Coating	Scrapers	Diesel	Average	2	6	423	0.48	100	12,578
Architectural Coating	Tractors/Loaders/Backhoes	Diesel	Average	2	8	84	0.37	100	2,854
Architectural Coating	Generator Sets	Diesel	Average	2	8	14	0.74	100	951
Architectural Coating	Trenchers	Diesel	Average	1	6	40	0.5	100	689

125,275

Headworks Construction Energy Consumption Calculations

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix	Fuel	MTCO2-year1	MTCO2-year2	MTCO2-year3	Gallons
Site Preparation									
Site Preparation	Worker	30	18.5	LDA,LDT1,LDT2	G	18.3			2,084
Site Preparation	Vendor	16	10.2	HHDT,MHDT	D	23.3			2,282
Site Preparation	Hauling	4	20	HHDT	D	12.7			1,244
Site Preparation	Onsite truck	4	4	HHDT,MHDT	D	2.4			235
Grading									
Grading	Worker	40	18.5	LDA,LDT1,LDT2	G	8.95	7.97		1,927
Grading	Vendor	16	10.2	HHDT,MHDT	D	8.56	7.59		1,582
Grading	Hauling	4	20	HHDT	D	4.67	4.14		863
Grading	Onsite truck	6	4	HHDT,MHDT	D	1.33	1.18		246
Building Construction									
Building Construction	Worker	60	18.5	LDA,LDT1,LDT2	G	76.9	53.3		14,829
Building Construction	Vendor	4	10.2	HHDT,MHDT	D	12.2	8.37		2,015
Building Construction	Hauling	0	20	HHDT	D	0	0		0
Building Construction	Onsite truck	7	4	HHDT,MHDT	D	8.81	6.05		1,455
Paving									
Paving	Worker	80	18.5	LDA,LDT1,LDT2	G	44.8			5,103
Paving	Vendor	0	10.2	HHDT,MHDT	D	0			0
Paving	Hauling	8	20	HHDT	D	23.1			2,262
Paving	Onsite truck	9	4	HHDT,MHDT	D	4.91			481
Architectural Coating									
Architectural Coating	Worker	80	18.5	LDA,LDT1,LDT2	G	44.8			5,103
Architectural Coating	Vendor	0	10.2	HHDT,MHDT	D	0			0
Architectural Coating	Hauling	0	20	HHDT	D	0			0
Architectural Coating	Onsite truck	3	4	HHDT,MHDT	D	1.64			161

Worker (gas-gal)	29,046
Other (diesel-gal)	12,826

Headworks Construction Energy Consumption Calculations

DPR

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase
Site Preparation	Site Preparation	5/1/2030	7/2/2030	5	45
Grading	Grading	7/3/2030	9/3/2030	5	45
Building Construction	Building Construction	9/4/2030	11/26/2030	5	60
Paving	Paving	2/3/2031	3/28/2031	5	40
Architectural Coating	Architectural Coating	12/2/2030	10/31/2031	5	240

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor	Days	Gallons
Site Preparation	Graders	Diesel	Average	1	8	148	0.41	45	1,128
Site Preparation	Scrapers	Diesel	Average	1	8	423	0.48	45	3,774
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2	7	84	0.37	45	1,124
Grading	Graders	Diesel	Average	1	8	148	0.41	45	1,128
Grading	Rubber Tired Dozers	Diesel	Average	1	8	367	0.4	45	2,728
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3	7	84	0.37	45	1,686
Grading	Excavators	Diesel	Average	2	8	36	0.38	45	565
Grading	Scrapers	Diesel	Average	2	6	423	0.48	45	5,660
Grading	Rubber Tired Loaders	Diesel	Average	1	8	150	0.36	45	1,004
Grading	Off-Highway Tractors	Diesel	Average	1	7	38	0.44	45	302
Building Construction	Forklifts	Electric	Average	3	7	82	0.2	60	1,186
Building Construction	Generator Sets	Diesel	Average	2	8	14	0.74	60	571
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2	6	84	0.37	60	1,284
Building Construction	Welders	Diesel	Average	1	8	46	0.45	60	570
Building Construction	Aerial Lifts	Diesel	Average	6	7	46	0.31	60	2,062
Building Construction	Rubber Tired Loaders	Diesel	Average	1	7	150	0.36	60	1,171
Building Construction	Air Compressors	Diesel	Average	1	7	37	0.48	60	428
Building Construction	Skid Steer Loaders	Diesel	Average	1	7	71	0.37	60	633
Building Construction	Surfacing Equipment	Diesel	Average	1	6	399	0.3	60	2,225
Building Construction	Excavators	Diesel	Average	1	7	36	0.38	60	330
Paving	Pavers	Diesel	Average	1	8	81	0.42	40	625
Paving	Rollers	Diesel	Average	2	8	36	0.38	40	502
Paving	Surfacing Equipment	Diesel	Average	1	7	399	0.3	40	1,730
Paving	Trenchers	Diesel	Average	1	7	40	0.5	40	321
Paving	Graders	Diesel	Average	1	8	148	0.41	40	1,002
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1	7	84	0.37	40	499
Architectural Coating	Forklifts	Electric	Average	4	8	82	0.2	240	7,229
Architectural Coating	Generator Sets	Diesel	Average	3	8	14	0.74	240	3,425
Architectural Coating	Welders	Diesel	Average	1	7	46	0.45	240	1,996
Architectural Coating	Aerial Lifts	Diesel	Average	3	7	46	0.31	240	4,125

Headworks Construction Energy Consumption Calculations

5.3. Construction Vehicles 51,014

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix	Fuel	MTCO2-year1	MTCO2-year2	MTCO2-year3	Gallons
Site Preparation									
Site Preparation	Worker	30	18.5	LDA,LDT1,LDT2	G	7.44			847
Site Preparation	Vendor	8	10.2	HHDT,MHDT	D	4.61			452
Site Preparation	Hauling	2	20	HHDT	D	2.53			248
Site Preparation	Onsite truck	4	4	HHDT,MHDT	D	0.95			93
Grading									
Grading	Worker	30	18.5	LDA,LDT1,LDT2	G	7.44			847
Grading	Vendor	4	10.2	HHDT,MHDT	D	2.3			225
Grading	Hauling	8	20	HHDT	D	10.1			989
Grading	Onsite truck	5	4	HHDT,MHDT	D	1.19			117
Building Construction									
Building Construction	Worker	80	18.5	LDA,LDT1,LDT2	G	26.4			3,007
Building Construction	Vendor	6	10.2	HHDT,MHDT	D	4.61			452
Building Construction	Hauling	4	20	HHDT	D	6.76			662
Building Construction	Onsite truck	9	4	HHDT,MHDT	D	2.86			280
Paving									
Paving	Worker	120	18.5	LDA,LDT1,LDT2	G	26			2,961
Paving	Vendor	6	10.2	HHDT,MHDT	D	2.97			291
Paving	Hauling	0	20	HHDT	D	0			0
Paving	Onsite truck	11	4	HHDT,MHDT	D	2.26			221
Architectural Coating									
Architectural Coating	Worker	60	18.5	LDA,LDT1,LDT2	G	7.08	70.7		8,859
Architectural Coating	Vendor	0	10.2	HHDT,MHDT	D	0	0		0
Architectural Coating	Hauling	0	20	HHDT	D	0	0		0
Architectural Coating	Onsite truck	5	4	HHDT,MHDT	D	0.57	5.57		601

Worker (gas-gal)	16,522	
Other (diesel-gal)	4,631	
Total Equip Gallons D	315,636	
Total Vehicle Gallons D	39,743	**Annual Average**
Total Gallons D	**355,380**	50,769
Total Gallons G	**110,616**	15,802

LADWP Headworks Project - Park Construction Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - Park Construction
Construction Start Date	11/14/2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.153231832974924, -118.31594338641173
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Parking Lot	3.00	Acre	3.00	0.00	13,000	13,000	—	Parking lot and paved access roads.

City Park	17.5	Acre	17.5	0.00	387,830	387,830	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-4*	Use Local and Sustainable Building Materials

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136
Mit.	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
Mit.	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
Mit.	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
Mit.	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136

2026	1.59	11.5	22.3	0.03	0.45	10.6	11.1	0.41	1.26	1.66	—	4,222	4,222	0.18	0.14	5.76	4,273
2027	1.52	10.8	21.8	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,187	4,187	0.18	0.13	5.24	4,237
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.67	14.2	21.8	0.03	0.47	4.38	4.86	0.44	0.57	1.01	—	4,351	4,351	0.19	0.14	0.13	4,396
2025	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
2026	2.87	20.1	39.9	0.05	0.83	11.7	12.5	0.76	1.49	2.25	—	8,098	8,098	0.34	0.25	0.25	8,181
2027	1.51	11.0	20.9	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,119	4,119	0.14	0.13	0.14	4,162
2028	1.45	10.4	20.6	0.03	0.35	10.6	11.0	0.32	1.26	1.58	—	4,087	4,087	0.13	0.13	0.12	4,130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.16	1.34	2.07	< 0.005	0.04	0.39	0.44	0.04	0.05	0.09	—	410	410	0.02	0.01	0.20	414
2025	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
2026	1.15	8.40	15.7	0.02	0.32	7.23	7.56	0.30	0.86	1.16	—	3,033	3,033	0.13	0.10	1.80	3,068
2027	1.08	7.82	15.1	0.02	0.28	7.22	7.50	0.26	0.86	1.12	—	2,955	2,955	0.10	0.10	1.61	2,988
2028	0.13	0.96	1.92	< 0.005	0.03	0.93	0.96	0.03	0.11	0.14	—	378	378	0.01	0.01	0.19	382
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.03	0.24	0.38	< 0.005	0.01	0.07	0.08	0.01	0.01	0.02	—	67.9	67.9	< 0.005	< 0.005	0.03	68.6
2025	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
2026	0.21	1.53	2.87	< 0.005	0.06	1.32	1.38	0.05	0.16	0.21	—	502	502	0.02	0.02	0.30	508
2027	0.20	1.43	2.76	< 0.005	0.05	1.32	1.37	0.05	0.16	0.20	—	489	489	0.02	0.02	0.27	495
2028	0.02	0.17	0.35	< 0.005	0.01	0.17	0.18	0.01	0.02	0.03	—	62.5	62.5	< 0.005	< 0.005	0.03	63.2

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136
2026	1.59	11.5	22.3	0.03	0.45	10.6	11.1	0.41	1.26	1.66	—	4,222	4,222	0.18	0.14	5.76	4,273
2027	1.52	10.8	21.8	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,187	4,187	0.18	0.13	5.24	4,237
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.67	14.2	21.8	0.03	0.47	4.38	4.86	0.44	0.57	1.01	—	4,351	4,351	0.19	0.14	0.13	4,396
2025	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
2026	2.87	20.1	39.9	0.05	0.83	11.7	12.5	0.76	1.49	2.25	—	8,098	8,098	0.34	0.25	0.25	8,181
2027	1.51	11.0	20.9	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,119	4,119	0.14	0.13	0.14	4,162
2028	1.45	10.4	20.6	0.03	0.35	10.6	11.0	0.32	1.26	1.58	—	4,087	4,087	0.13	0.13	0.12	4,130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.16	1.34	2.07	< 0.005	0.04	0.39	0.44	0.04	0.05	0.09	—	410	410	0.02	0.01	0.20	414
2025	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
2026	1.15	8.40	15.7	0.02	0.32	7.23	7.56	0.30	0.86	1.16	—	3,033	3,033	0.13	0.10	1.80	3,068
2027	1.08	7.82	15.1	0.02	0.28	7.22	7.50	0.26	0.86	1.12	—	2,955	2,955	0.10	0.10	1.61	2,988
2028	0.13	0.96	1.92	< 0.005	0.03	0.93	0.96	0.03	0.11	0.14	—	378	378	0.01	0.01	0.19	382
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.03	0.24	0.38	< 0.005	0.01	0.07	0.08	0.01	0.01	0.02	—	67.9	67.9	< 0.005	< 0.005	0.03	68.6
2025	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
2026	0.21	1.53	2.87	< 0.005	0.06	1.32	1.38	0.05	0.16	0.21	—	502	502	0.02	0.02	0.30	508
2027	0.20	1.43	2.76	< 0.005	0.05	1.32	1.37	0.05	0.16	0.20	—	489	489	0.02	0.02	0.27	495
2028	0.02	0.17	0.35	< 0.005	0.01	0.17	0.18	0.01	0.02	0.03	—	62.5	62.5	< 0.005	< 0.005	0.03	63.2

3. Construction Emissions Details

3.1. Site Preparation (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.37	13.2	17.4	0.03	0.47	—	0.47	0.43	—	0.43	—	2,965	2,965	0.12	0.02	—	2,975
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	53.3	53.3	< 0.005	0.01	< 0.005	55.6
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.24	1.64	< 0.005	0.04	—	0.04	0.04	—	0.04	—	279	279	0.01	< 0.005	—	279
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.30	0.30	< 0.005	0.03	0.03	—	5.00	5.00	< 0.005	< 0.005	0.01	5.22
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.23	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.1	46.1	< 0.005	< 0.005	—	46.3

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.86
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.36	4.08	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	856	856	0.04	0.03	0.09	867
Vendor	0.01	0.24	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	194	194	0.01	0.03	0.01	202
Hauling	0.01	0.37	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	282	282	0.02	0.05	0.02	296
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.40	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	81.6	81.6	< 0.005	< 0.005	0.14	82.8
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	18.2	18.2	< 0.005	< 0.005	0.02	19.0
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	26.5	26.5	< 0.005	< 0.005	0.03	27.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.5	13.5	< 0.005	< 0.005	0.02	13.7
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.01	3.01	< 0.005	< 0.005	< 0.005	3.14
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.39	4.39	< 0.005	< 0.005	< 0.005	4.61

3.2. Site Preparation (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.37	13.2	17.4	0.03	0.47	—	0.47	0.43	—	0.43	—	2,965	2,965	0.12	0.02	—	2,975
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	53.3	53.3	< 0.005	0.01	< 0.005	55.6
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.24	1.64	< 0.005	0.04	—	0.04	0.04	—	0.04	—	279	279	0.01	< 0.005	—	279
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.30	0.30	< 0.005	0.03	0.03	—	5.00	5.00	< 0.005	< 0.005	0.01	5.22
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.23	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.1	46.1	< 0.005	< 0.005	—	46.3
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.86
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.36	4.08	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	856	856	0.04	0.03	0.09	867
Vendor	0.01	0.24	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	194	194	0.01	0.03	0.01	202
Hauling	0.01	0.37	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	282	282	0.02	0.05	0.02	296
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.40	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	81.6	81.6	< 0.005	< 0.005	0.14	82.8
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	18.2	18.2	< 0.005	< 0.005	0.02	19.0
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	26.5	26.5	< 0.005	< 0.005	0.03	27.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.5	13.5	< 0.005	< 0.005	0.02	13.7
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.01	3.01	< 0.005	< 0.005	< 0.005	3.14
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.39	4.39	< 0.005	< 0.005	< 0.005	4.61

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	12.3	17.3	0.03	0.40	—	0.40	0.37	—	0.37	—	2,965	2,965	0.12	0.02	—	2,975

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	52.4	52.4	< 0.005	0.01	< 0.005	54.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.80	5.80	< 0.005	< 0.005	—	5.82
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.11
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.96	0.96	< 0.005	< 0.005	—	0.96
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.02	0.02	< 0.005	< 0.005	< 0.005	0.02
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.31	3.78	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	839	839	0.04	0.03	0.08	849
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	190	190	0.01	0.03	0.01	199
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.67	1.67	< 0.005	< 0.005	< 0.005	1.69
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.37	0.37	< 0.005	< 0.005	< 0.005	0.39
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.54	0.54	< 0.005	< 0.005	< 0.005	0.57
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.28	0.28	< 0.005	< 0.005	< 0.005	0.28
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.09	0.09	< 0.005	< 0.005	< 0.005	0.09

3.4. Site Preparation (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	12.3	17.3	0.03	0.40	—	0.40	0.37	—	0.37	—	2,965	2,965	0.12	0.02	—	2,975
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	52.4	52.4	< 0.005	0.01	< 0.005	54.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.80	5.80	< 0.005	< 0.005	—	5.82

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.11
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.96	0.96	< 0.005	< 0.005	—	0.96
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.02	0.02	< 0.005	< 0.005	< 0.005	0.02
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.31	3.78	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	839	839	0.04	0.03	0.08	849
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	190	190	0.01	0.03	0.01	199
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.67	1.67	< 0.005	< 0.005	< 0.005	1.69
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.37	0.37	< 0.005	< 0.005	< 0.005	0.39
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.54	0.54	< 0.005	< 0.005	< 0.005	0.57
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.28	0.28	< 0.005	< 0.005	< 0.005	0.28
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06

Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.09	0.09	< 0.005	< 0.005	< 0.005	0.09

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.31	123
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.01	123
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.77	6.78	9.40	0.02	0.27	—	0.27	0.25	—	0.25	—	1,570	1,570	0.06	0.01	—	1,575

Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.03	0.02	< 0.005	< 0.005	1.30	1.30	< 0.005	0.13	0.13	—	21.0	21.0	< 0.005	< 0.005	0.02	21.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	1.24	1.71	< 0.005	0.05	—	0.05	0.05	—	0.05	—	260	260	0.01	< 0.005	—	261
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	3.47	3.47	< 0.005	< 0.005	< 0.005	3.63
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.48	7.65	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,521	1,521	0.06	0.05	5.57	1,544
Vendor	0.01	0.36	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.87	332
Hauling	< 0.005	0.34	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.64	291
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.53	6.49	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,442	1,442	0.07	0.05	0.14	1,460
Vendor	0.01	0.38	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.02	331
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.10	1.21	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	261	261	0.01	0.01	0.43	264
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	56.5	56.5	< 0.005	0.01	0.07	59.0
Hauling	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	49.4	49.4	< 0.005	0.01	0.05	51.8

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	43.1	43.1	< 0.005	< 0.005	0.07	43.7
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.36	9.36	< 0.005	< 0.005	0.01	9.77
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.17	8.17	< 0.005	< 0.005	0.01	8.57

3.6. Grading (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.31	123
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.01	123
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.77	6.78	9.40	0.02	0.27	—	0.27	0.25	—	0.25	—	1,570	1,570	0.06	0.01	—	1,575
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.03	0.02	< 0.005	< 0.005	1.30	1.30	< 0.005	0.13	0.13	—	21.0	21.0	< 0.005	< 0.005	0.02	21.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	1.24	1.71	< 0.005	0.05	—	0.05	0.05	—	0.05	—	260	260	0.01	< 0.005	—	261
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	3.47	3.47	< 0.005	< 0.005	< 0.005	3.63
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.48	7.65	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,521	1,521	0.06	0.05	5.57	1,544
Vendor	0.01	0.36	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.87	332
Hauling	< 0.005	0.34	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.64	291
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.53	6.49	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,442	1,442	0.07	0.05	0.14	1,460
Vendor	0.01	0.38	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.02	331
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.10	1.21	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	261	261	0.01	0.01	0.43	264

Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	56.5	56.5	< 0.005	0.01	0.07	59.0
Hauling	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	49.4	49.4	< 0.005	0.01	0.05	51.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	43.1	43.1	< 0.005	< 0.005	0.07	43.7
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.36	9.36	< 0.005	< 0.005	0.01	9.77
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.17	8.17	< 0.005	< 0.005	0.01	8.57

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.37	151
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.23	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.01	150
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.29	10.7	16.3	0.03	0.50	—	0.50	0.46	—	0.46	—	2,746	2,746	0.11	0.02	—	2,756
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	4.75	4.75	< 0.005	0.48	0.48	—	76.9	76.9	< 0.005	0.01	0.09	80.4

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	1.95	2.98	< 0.005	0.09	—	0.09	0.08	—	0.08	—	455	455	0.02	< 0.005	—	456
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.87	0.87	< 0.005	0.09	0.09	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.69	0.69	11.1	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,212	2,212	0.09	0.08	8.10	2,245
Vendor	0.02	0.72	0.35	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	1.74	663
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.32	146
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.68	0.77	9.44	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,097	2,097	0.10	0.08	0.21	2,123
Vendor	0.02	0.75	0.36	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	0.05	662
Hauling	< 0.005	0.18	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.01	145
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.36	0.44	5.30	0.00	0.00	1.10	1.10	0.00	0.26	0.26	—	1,137	1,137	0.05	0.04	1.87	1,152
Vendor	0.01	0.40	0.19	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	339	339	0.01	0.05	0.40	354
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	74.0	74.0	< 0.005	0.01	0.07	77.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.97	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	188	188	0.01	0.01	0.31	191
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	56.1	56.1	< 0.005	0.01	0.07	58.6
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.3	12.3	< 0.005	< 0.005	0.01	12.9

3.8. Building Construction (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.37	151
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.23	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.01	150
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.29	10.7	16.3	0.03	0.50	—	0.50	0.46	—	0.46	—	2,746	2,746	0.11	0.02	—	2,756
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	4.75	4.75	< 0.005	0.48	0.48	—	76.9	76.9	< 0.005	0.01	0.09	80.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	1.95	2.98	< 0.005	0.09	—	0.09	0.08	—	0.08	—	455	455	0.02	< 0.005	—	456
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.87	0.87	< 0.005	0.09	0.09	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.69	0.69	11.1	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,212	2,212	0.09	0.08	8.10	2,245
Vendor	0.02	0.72	0.35	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	1.74	663

Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.32	146
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.68	0.77	9.44	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,097	2,097	0.10	0.08	0.21	2,123
Vendor	0.02	0.75	0.36	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	0.05	662
Hauling	< 0.005	0.18	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.01	145
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.36	0.44	5.30	0.00	0.00	1.10	1.10	0.00	0.26	0.26	—	1,137	1,137	0.05	0.04	1.87	1,152
Vendor	0.01	0.40	0.19	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	339	339	0.01	0.05	0.40	354
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	74.0	74.0	< 0.005	0.01	0.07	77.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.97	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	188	188	0.01	0.01	0.31	191
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	56.1	56.1	< 0.005	0.01	0.07	58.6
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.3	12.3	< 0.005	< 0.005	0.01	12.9

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.26	18.2	30.5	0.05	0.82	—	0.82	0.76	—	0.76	—	5,141	5,141	0.21	0.04	—	5,159

Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	142	142	0.01	0.02	0.01	148
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.25	0.42	< 0.005	0.01	—	0.01	0.01	—	0.01	—	70.4	70.4	< 0.005	< 0.005	—	70.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.94	1.94	< 0.005	< 0.005	< 0.005	2.03
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.7	11.7	< 0.005	< 0.005	—	11.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.59	0.70	8.82	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,055	2,055	0.09	0.08	0.19	2,080
Vendor	0.02	0.72	0.34	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	624	624	0.03	0.09	0.04	651
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	28.6	28.6	< 0.005	< 0.005	0.04	29.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.54	8.54	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.86	1.86	< 0.005	< 0.005	< 0.005	1.96
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.73	4.73	< 0.005	< 0.005	0.01	4.79
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.41	1.41	< 0.005	< 0.005	< 0.005	1.48
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.31	0.31	< 0.005	< 0.005	< 0.005	0.32

3.10. Building Construction (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.26	18.2	30.5	0.05	0.82	—	0.82	0.76	—	0.76	—	5,141	5,141	0.21	0.04	—	5,159
Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	142	142	0.01	0.02	0.01	148
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.25	0.42	< 0.005	0.01	—	0.01	0.01	—	0.01	—	70.4	70.4	< 0.005	< 0.005	—	70.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.94	1.94	< 0.005	< 0.005	< 0.005	2.03
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.7	11.7	< 0.005	< 0.005	—	11.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.59	0.70	8.82	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,055	2,055	0.09	0.08	0.19	2,080
Vendor	0.02	0.72	0.34	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	624	624	0.03	0.09	0.04	651
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	28.6	28.6	< 0.005	< 0.005	0.04	29.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.54	8.54	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.86	1.86	< 0.005	< 0.005	< 0.005	1.96
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.73	4.73	< 0.005	< 0.005	0.01	4.79
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.41	1.41	< 0.005	< 0.005	< 0.005	1.48
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.31	0.31	< 0.005	< 0.005	< 0.005	0.32

3.11. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.30	121

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.01	121
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.57	4.64	0.01	0.17	—	0.17	0.15	—	0.15	—	688	688	0.03	0.01	—	690
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	3.41	3.41	< 0.005	0.34	0.34	—	81.1	81.1	< 0.005	0.01	0.09	84.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.65	0.85	< 0.005	0.03	—	0.03	0.03	—	0.03	—	114	114	< 0.005	< 0.005	—	114
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.62	0.62	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.31	5.17	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,084	1,084	0.04	0.04	3.67	1,100
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.34	130
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.35	4.41	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,028	1,028	0.05	0.04	0.10	1,040
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.01	130
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.27	3.23	0.00	0.00	0.72	0.72	0.00	0.17	0.17	—	731	731	0.03	0.03	1.11	740
Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.3
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.59	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	0.01	< 0.005	0.18	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.12. Paving (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.30	121
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.01	121
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.57	4.64	0.01	0.17	—	0.17	0.15	—	0.15	—	688	688	0.03	0.01	—	690
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	3.41	3.41	< 0.005	0.34	0.34	—	81.1	81.1	< 0.005	0.01	0.09	84.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.65	0.85	< 0.005	0.03	—	0.03	0.03	—	0.03	—	114	114	< 0.005	< 0.005	—	114

Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.62	0.62	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.31	5.17	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,084	1,084	0.04	0.04	3.67	1,100
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.34	130
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.35	4.41	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,028	1,028	0.05	0.04	0.10	1,040
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.01	130
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.27	3.23	0.00	0.00	0.72	0.72	0.00	0.17	0.17	—	731	731	0.03	0.03	1.11	740
Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.3
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.59	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	0.01	< 0.005	0.18	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.13. Paving (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.28	119
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.01	119
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	3.45	4.73	0.01	0.16	—	0.16	0.14	—	0.14	—	701	701	0.03	0.01	—	704

Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	3.47	3.47	< 0.005	0.35	0.35	—	81.1	81.1	< 0.005	0.01	0.09	84.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.63	0.86	< 0.005	0.03	—	0.03	0.03	—	0.03	—	116	116	< 0.005	< 0.005	—	117
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.63	0.63	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.28	4.81	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,063	1,063	0.04	0.04	3.31	1,079
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.32	128
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.34	4.07	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,008	1,008	0.01	0.04	0.09	1,020
Vendor	< 0.005	0.14	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.01	128
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.25	3.06	0.00	0.00	0.74	0.74	0.00	0.17	0.17	—	731	731	0.01	0.03	1.02	740

Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.2
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.56	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	< 0.005	< 0.005	0.17	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.14. Paving (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.28	119
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—

Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.01	119
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	3.45	4.73	0.01	0.16	—	0.16	0.14	—	0.14	—	701	701	0.03	0.01	—	704
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	3.47	3.47	< 0.005	0.35	0.35	—	81.1	81.1	< 0.005	0.01	0.09	84.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.63	0.86	< 0.005	0.03	—	0.03	0.03	—	0.03	—	116	116	< 0.005	< 0.005	—	117
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.63	0.63	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.28	4.81	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,063	1,063	0.04	0.04	3.31	1,079
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.32	128
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.34	4.07	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,008	1,008	0.01	0.04	0.09	1,020
Vendor	< 0.005	0.14	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.01	128
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.25	3.06	0.00	0.00	0.74	0.74	0.00	0.17	0.17	—	731	731	0.01	0.03	1.02	740
Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.2
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.56	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	< 0.005	< 0.005	0.17	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.15. Paving (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56	4.57	6.62	0.01	0.19	—	0.19	0.18	—	0.18	—	982	982	0.04	0.01	—	986

Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	111	111	0.01	0.02	0.01	116
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.42	0.61	< 0.005	0.02	—	0.02	0.02	—	0.02	—	90.3	90.3	< 0.005	< 0.005	—	90.6
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.05	—	10.2	10.2	< 0.005	< 0.005	0.01	10.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.0	15.0	< 0.005	< 0.005	—	15.0
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.69	1.69	< 0.005	< 0.005	< 0.005	1.77
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.27	0.31	3.84	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	990	990	0.01	0.04	0.08	1,002
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.37	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	92.4	92.4	< 0.005	< 0.005	0.12	93.6
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.0	11.0	< 0.005	< 0.005	0.01	11.5
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.02	15.5
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.82	1.82	< 0.005	< 0.005	< 0.005	1.90
Hauling	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

3.16. Paving (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56	4.57	6.62	0.01	0.19	—	0.19	0.18	—	0.18	—	982	982	0.04	0.01	—	986
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	< 0.005	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	111	111	0.01	0.02	0.01	116
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.42	0.61	< 0.005	0.02	—	0.02	0.02	—	0.02	—	90.3	90.3	< 0.005	< 0.005	—	90.6
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.05	—	10.2	10.2	< 0.005	< 0.005	0.01	10.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.0	15.0	< 0.005	< 0.005	—	15.0
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.69	1.69	< 0.005	< 0.005	< 0.005	1.77
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.31	3.84	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	990	990	0.01	0.04	0.08	1,002
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.37	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	92.4	92.4	< 0.005	< 0.005	0.12	93.6
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.0	11.0	< 0.005	< 0.005	0.01	11.5
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.02	15.5
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.82	1.82	< 0.005	< 0.005	< 0.005	1.90
Hauling	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

3.17. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.0	90.0	0.01	0.01	0.23	94.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.1	90.1	0.01	0.01	0.01	94.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.40	3.77	6.26	0.01	0.14	—	0.14	0.13	—	0.13	—	994	994	0.04	0.01	—	997
Onsite truck	< 0.005	0.10	0.06	< 0.005	< 0.005	2.65	2.65	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	66.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.69	1.14	< 0.005	0.03	—	0.03	0.02	—	0.02	—	165	165	0.01	< 0.005	—	165
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.48	0.48	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.29	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	271	271	0.01	0.01	0.92	275
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.31	143
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.10	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	257	257	0.01	0.01	0.02	260
Vendor	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
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.07	0.81	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	0.01	0.01	0.28	185
Vendor	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
Hauling	< 0.005	0.12	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	0.01	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.05	30.6
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.02	16.6

3.18. Architectural Coating (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.0	90.0	0.01	0.01	0.23	94.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.1	90.1	0.01	0.01	0.01	94.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.40	3.77	6.26	0.01	0.14	—	0.14	0.13	—	0.13	—	994	994	0.04	0.01	—	997
Onsite truck	< 0.005	0.10	0.06	< 0.005	< 0.005	2.65	2.65	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	66.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.69	1.14	< 0.005	0.03	—	0.03	0.02	—	0.02	—	165	165	0.01	< 0.005	—	165
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.48	0.48	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.29	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	271	271	0.01	0.01	0.92	275
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.31	143
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.10	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	257	257	0.01	0.01	0.02	260
Vendor	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
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.07	0.81	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	0.01	0.01	0.28	185
Vendor	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
Hauling	< 0.005	0.12	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	0.01	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.05	30.6
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.02	16.6

3.19. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.3	88.3	0.01	0.01	0.22	92.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.4	88.4	0.01	0.01	0.01	92.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.39	3.63	6.37	0.01	0.12	—	0.12	0.11	—	0.11	—	1,014	1,014	0.04	0.01	—	1,017
Onsite truck	< 0.005	0.10	0.05	< 0.005	< 0.005	2.70	2.70	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	65.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.66	1.16	< 0.005	0.02	—	0.02	0.02	—	0.02	—	168	168	0.01	< 0.005	—	168
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.49	0.49	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	1.20	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	266	266	0.01	0.01	0.83	270
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.28	140
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.02	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	252	252	< 0.005	0.01	0.02	255

Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.01	140
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.76	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	< 0.005	0.01	0.25	185
Vendor	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
Hauling	< 0.005	0.12	0.04	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	< 0.005	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.04	30.6
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.01	16.6

3.20. Architectural Coating (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.3	88.3	0.01	0.01	0.22	92.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.4	88.4	0.01	0.01	0.01	92.2

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.39	3.63	6.37	0.01	0.12	—	0.12	0.11	—	0.11	—	1,014	1,014	0.04	0.01	—	1,017
Onsite truck	< 0.005	0.10	0.05	< 0.005	< 0.005	2.70	2.70	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	65.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.66	1.16	< 0.005	0.02	—	0.02	0.02	—	0.02	—	168	168	0.01	< 0.005	—	168
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.49	0.49	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	1.20	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	266	266	0.01	0.01	0.83	270
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.28	140
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.02	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	252	252	< 0.005	0.01	0.02	255
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.01	140
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.76	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	< 0.005	0.01	0.25	185
Vendor	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
Hauling	< 0.005	0.12	0.04	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	< 0.005	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.04	30.6

Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.01	16.6

3.21. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.52	4.86	8.93	0.01	0.15	—	0.15	0.14	—	0.14	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	86.4	86.4	< 0.005	0.01	0.01	90.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.45	0.82	< 0.005	0.01	—	0.01	0.01	—	0.01	—	131	131	0.01	< 0.005	—	131
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.35	0.35	< 0.005	0.03	0.04	—	7.94	7.94	< 0.005	< 0.005	0.01	8.30
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.6	21.6	< 0.005	< 0.005	—	21.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	1.31	1.31	< 0.005	< 0.005	< 0.005	1.37
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.96	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	247	247	< 0.005	0.01	0.02	250
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	130	130	0.01	0.02	0.01	137
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	23.1	23.1	< 0.005	< 0.005	0.03	23.4
Vendor	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
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.0	12.0	< 0.005	< 0.005	0.01	12.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.82	3.82	< 0.005	< 0.005	< 0.005	3.87
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.99	1.99	< 0.005	< 0.005	< 0.005	2.08

3.22. Architectural Coating (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.52	4.86	8.93	0.01	0.15	—	0.15	0.14	—	0.14	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	86.4	86.4	< 0.005	0.01	0.01	90.2

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.45	0.82	< 0.005	0.01	—	0.01	0.01	—	0.01	—	131	131	0.01	< 0.005	—	131
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.35	0.35	< 0.005	0.03	0.04	—	7.94	7.94	< 0.005	< 0.005	0.01	8.30
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.6	21.6	< 0.005	< 0.005	—	21.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	1.31	1.31	< 0.005	< 0.005	< 0.005	1.37
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.96	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	247	247	< 0.005	0.01	0.02	250
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	130	130	0.01	0.02	0.01	137
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	23.1	23.1	< 0.005	< 0.005	0.03	23.4
Vendor	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
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.0	12.0	< 0.005	< 0.005	0.01	12.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.82	3.82	< 0.005	< 0.005	< 0.005	3.87
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.99	1.99	< 0.005	< 0.005	< 0.005	2.08

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	11/14/2024	1/1/2025	5.00	35.0	site clearing
Grading	Grading	1/2/2025	4/2/2025	5.00	65.0	excavation and grading
Building Construction	Building Construction	4/3/2025	1/7/2026	5.00	200	installation of park canopies and structures
Paving	Paving	1/8/2026	2/16/2028	5.00	550	paving of parking lot and access roads/paths
Architectural Coating	Architectural Coating	1/8/2026	2/16/2028	5.00	550	landscaping & finishing on structures

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Site Preparation	Air Compressors	Diesel	Average	1.00	4.00	37.0	0.48
Site Preparation	Skid Steer Loaders	Diesel	Average	1.00	6.00	71.0	0.37
Site Preparation	Aerial Lifts	Diesel	Average	5.00	6.00	46.0	0.31
Site Preparation	Rubber Tired Loaders	Diesel	Average	2.00	6.00	150	0.36
Site Preparation	Welders	Diesel	Average	3.00	4.00	46.0	0.45
Site Preparation	Cranes	Diesel	Average	1.00	4.00	367	0.29
Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	1.00	6.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	6.00	7.00	84.0	0.37
Grading	Air Compressors	Diesel	Average	2.00	6.00	37.0	0.48
Grading	Rollers	Diesel	Average	1.00	6.00	36.0	0.38
Grading	Rubber Tired Loaders	Diesel	Average	5.00	7.00	150	0.36
Grading	Welders	Diesel	Average	3.00	7.00	46.0	0.45
Grading	Aerial Lifts	Diesel	Average	9.00	6.00	46.0	0.31
Grading	Generator Sets	Diesel	Average	2.00	6.00	14.0	0.74
Grading	Cranes	Diesel	Average	1.00	4.00	367	0.29
Grading	Forklifts	Diesel	Average	4.00	7.00	82.0	0.20
Grading	Pressure Washers	Diesel	Average	3.00	6.00	14.0	0.30
Grading	Trenchers	Diesel	Average	1.00	4.00	40.0	0.50
Grading	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
Building Construction	Forklifts	Diesel	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74

Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Rollers	Diesel	Average	2.00	7.00	36.0	0.38
Building Construction	Rubber Tired Loaders	Diesel	Average	4.00	7.00	150	0.36
Building Construction	Skid Steer Loaders	Diesel	Average	2.00	7.00	71.0	0.37
Building Construction	Graders	Diesel	Average	2.00	6.00	148	0.41
Building Construction	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
Building Construction	Off-Highway Tractors	Diesel	Average	1.00	6.00	38.0	0.44
Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Graders	Diesel	Average	1.00	6.00	148	0.41
Paving	Welders	Diesel	Average	1.00	6.00	46.0	0.45
Architectural Coating	Skid Steer Loaders	Diesel	Average	2.00	7.00	71.0	0.37
Architectural Coating	Forklifts	Diesel	Average	2.00	7.00	82.0	0.20
Architectural Coating	Aerial Lifts	Diesel	Average	1.00	7.00	46.0	0.31
Architectural Coating	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Site Preparation	Air Compressors	Diesel	Average	1.00	4.00	37.0	0.48
Site Preparation	Skid Steer Loaders	Diesel	Average	1.00	6.00	71.0	0.37
Site Preparation	Aerial Lifts	Diesel	Average	5.00	6.00	46.0	0.31
Site Preparation	Rubber Tired Loaders	Diesel	Average	2.00	6.00	150	0.36
Site Preparation	Welders	Diesel	Average	3.00	4.00	46.0	0.45
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Grading	Rubber Tired Loaders	Diesel	Average	5.00	7.00	150	0.36
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Grading	Cranes	Diesel	Average	1.00	4.00	367	0.29
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Grading	Pressure Washers	Diesel	Average	3.00	6.00	14.0	0.30
Grading	Trenchers	Diesel	Average	1.00	4.00	40.0	0.50
Grading	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
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Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
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Building Construction	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
Building Construction	Off-Highway Tractors	Diesel	Average	1.00	6.00	38.0	0.44
Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Graders	Diesel	Average	1.00	6.00	148	0.41

Paving	Welders	Diesel	Average	1.00	6.00	46.0	0.45
Architectural Coating	Skid Steer Loaders	Diesel	Average	2.00	7.00	71.0	0.37
Architectural Coating	Forklifts	Diesel	Average	2.00	7.00	82.0	0.20
Architectural Coating	Aerial Lifts	Diesel	Average	1.00	7.00	46.0	0.31
Architectural Coating	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	64.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	6.00	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	110	18.5	LDA,LDT1,LDT2
Grading	Vendor	10.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	9.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	160	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	20.0	10.2	HHDT,MHDT
Building Construction	Hauling	2.00	20.0	HHDT
Building Construction	Onsite truck	11.0	4.00	HHDT,MHDT
Paving	—	—	—	—

Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	4.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	20.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	2.00	20.0	HHDT
Architectural Coating	Onsite truck	7.00	4.00	HHDT,MHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	64.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	6.00	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	110	18.5	LDA,LDT1,LDT2
Grading	Vendor	10.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	9.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	160	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	20.0	10.2	HHDT,MHDT
Building Construction	Hauling	2.00	20.0	HHDT
Building Construction	Onsite truck	11.0	4.00	HHDT,MHDT

Paving	—	—	—	—
Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	4.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	20.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	2.00	20.0	HHDT
Architectural Coating	Onsite truck	7.00	4.00	HHDT,MHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	57%	57%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	0.00	0.00	—

Grading	0.00	0.00	65.0	0.00	—
Paving	0.00	0.00	37.5	0.00	3.00

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Parking Lot	3.00	100%
City Park	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	690	0.05	0.01
2025	0.00	690	0.05	0.01
2026	0.00	690	0.05	0.01
2027	0.00	690	0.05	0.01
2028	0.00	690	0.05	0.01

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

6.4.1. Wildfire

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-14: Maintain Trails and Parks	Improved Public Health, Social Equity	—	1.00	1.00

6.4.2. Temperature and Extreme Heat

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
D-3: Install Drought Resistant Landscaping	Water Conservation	—	1.00	1.00

EH-9: Expand Urban Tree Canopy	Energy and Fuel Savings, Improved Air Quality, Improved Public Health, Social Equity	1.00	1.00	—
MH-14: Maintain Trails and Parks	Improved Public Health, Social Equity	—	1.00	1.00
MH-23: Landscape with Climate Considerations	Improved Ecosystem Health, Water Conservation	—	1.00	—
MH-41: Expand Urban Greening/Agriculture	Enhanced Food Security, Improved Air Quality, Improved Public Health, Social Equity, Water Conservation	1.00	1.00	1.00

6.4.3. Air Quality Degradation

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-41: Expand Urban Greening/Agriculture	Enhanced Food Security, Improved Air Quality, Improved Public Health, Social Equity, Water Conservation	1.00	1.00	1.00

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	69.6
AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0

Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8
Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—

High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0

Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0
Children	99.4
Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9

Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Park construction schedule obtained from PD dated 1-11-24.

Construction: Off-Road Equipment	Equipment inventory provided by LADWP.
Construction: Dust From Material Movement	Included all phases with earthmoving equipment (i.e., grader).
Construction: Trips and VMT	Personnel & vehicle inventories provided by LADWP.
Construction: On-Road Fugitive Dust	Vehicle speeds on unpaved areas limited to 15 mph = 57% dust reduction (SCAQMD Table XI-A)

LADWP Headworks Project - WQL Construction Detailed Report

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2.3. Construction Emissions by Year, Mitigated

3. Construction Emissions Details

3.1. Site Preparation (2027) - Unmitigated

3.2. Site Preparation (2027) - Mitigated

3.3. Grading (2027) - Unmitigated

3.4. Grading (2027) - Mitigated

3.5. Grading (2028) - Unmitigated

3.6. Grading (2028) - Mitigated

3.7. Building Construction (2028) - Unmitigated

3.8. Building Construction (2028) - Mitigated

3.9. Building Construction (2029) - Unmitigated

3.10. Building Construction (2029) - Mitigated

3.11. Paving (2029) - Unmitigated

3.12. Paving (2029) - Mitigated

3.13. Architectural Coating (2029) - Unmitigated

3.14. Architectural Coating (2029) - Mitigated

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.2.2. Mitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.3.2. Mitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

5.18.2.2. Mitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - WQL Construction
Construction Start Date	6/14/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.15313612290838, -118.3185549473283
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Research & Development	100	1000sqft	4.85	100,000	111,500	111,500	—	—

Parking Lot	2.15	Acre	2.15	0.00	15,625	15,625	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-4*	Use Local and Sustainable Building Materials

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12.2	33.3	37.7	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,448	9,448	0.39	0.22	6.64	9,521
Mit.	12.2	33.3	37.7	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,448	9,448	0.39	0.22	6.64	9,521
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12.2	33.4	37.5	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,428	9,428	0.38	0.22	0.17	9,497
Mit.	12.2	33.4	37.5	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,428	9,428	0.38	0.22	0.17	9,497
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	3.82	11.4	15.3	0.03	0.43	5.34	5.60	0.39	0.67	0.99	—	3,510	3,510	0.13	0.09	1.25	3,542
Mit.	3.82	11.4	15.3	0.03	0.43	5.34	5.60	0.39	0.67	0.99	—	3,510	3,510	0.13	0.09	1.25	3,542
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.70	2.09	2.80	0.01	0.08	0.97	1.02	0.07	0.12	0.18	—	581	581	0.02	0.02	0.21	586
Mit.	0.70	2.09	2.80	0.01	0.08	0.97	1.02	0.07	0.12	0.18	—	581	581	0.02	0.02	0.21	586
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86	33.3	37.7	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,448	9,448	0.39	0.20	3.21	9,521

2028	1.11	11.5	17.4	0.03	0.20	6.81	7.00	0.18	0.79	0.97	—	3,347	3,347	0.11	0.08	2.74	3,376
2029	12.2	18.0	30.3	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,656	7,656	0.26	0.22	6.64	7,734
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86	33.4	37.5	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,428	9,428	0.38	0.20	0.10	9,497
2028	1.97	16.3	24.4	0.05	0.48	6.81	7.00	0.44	0.79	1.14	—	5,910	5,910	0.23	0.18	0.09	5,969
2029	12.2	18.1	29.0	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,550	7,550	0.26	0.22	0.17	7,622
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.33	11.4	13.4	0.03	0.43	2.59	3.02	0.39	0.60	0.99	—	3,342	3,342	0.13	0.08	0.57	3,368
2028	0.87	8.70	12.8	0.02	0.17	4.52	4.69	0.15	0.53	0.68	—	2,613	2,613	0.09	0.06	0.87	2,635
2029	3.82	9.94	15.3	0.02	0.26	5.34	5.60	0.24	0.67	0.91	—	3,510	3,510	0.12	0.09	1.25	3,542
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.24	2.09	2.45	0.01	0.08	0.47	0.55	0.07	0.11	0.18	—	553	553	0.02	0.01	0.09	558
2028	0.16	1.59	2.34	< 0.005	0.03	0.83	0.86	0.03	0.10	0.12	—	433	433	0.02	0.01	0.14	436
2029	0.70	1.81	2.80	< 0.005	0.05	0.97	1.02	0.04	0.12	0.17	—	581	581	0.02	0.02	0.21	586

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86	33.3	37.7	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,448	9,448	0.39	0.20	3.21	9,521
2028	1.11	11.5	17.4	0.03	0.20	6.81	7.00	0.18	0.79	0.97	—	3,347	3,347	0.11	0.08	2.74	3,376
2029	12.2	18.0	30.3	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,656	7,656	0.26	0.22	6.64	7,734
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2027	3.86	33.4	37.5	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,428	9,428	0.38	0.20	0.10	9,497
2028	1.97	16.3	24.4	0.05	0.48	6.81	7.00	0.44	0.79	1.14	—	5,910	5,910	0.23	0.18	0.09	5,969
2029	12.2	18.1	29.0	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,550	7,550	0.26	0.22	0.17	7,622
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.33	11.4	13.4	0.03	0.43	2.59	3.02	0.39	0.60	0.99	—	3,342	3,342	0.13	0.08	0.57	3,368
2028	0.87	8.70	12.8	0.02	0.17	4.52	4.69	0.15	0.53	0.68	—	2,613	2,613	0.09	0.06	0.87	2,635
2029	3.82	9.94	15.3	0.02	0.26	5.34	5.60	0.24	0.67	0.91	—	3,510	3,510	0.12	0.09	1.25	3,542
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.24	2.09	2.45	0.01	0.08	0.47	0.55	0.07	0.11	0.18	—	553	553	0.02	0.01	0.09	558
2028	0.16	1.59	2.34	< 0.005	0.03	0.83	0.86	0.03	0.10	0.12	—	433	433	0.02	0.01	0.14	436
2029	0.70	1.81	2.80	< 0.005	0.05	0.97	1.02	0.04	0.12	0.17	—	581	581	0.02	0.02	0.21	586

3. Construction Emissions Details

3.1. Site Preparation (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272
Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	0.13	52.8

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272
Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	< 0.005	52.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.30	10.2	0.02	0.37	—	0.37	0.34	—	0.34	—	2,371	2,371	0.10	0.02	—	2,380
Dust From Material Movement	—	—	—	—	—	0.91	0.91	—	0.40	0.40	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.92	0.92	< 0.005	0.09	0.09	—	14.5	14.5	< 0.005	< 0.005	0.02	15.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	1.86	< 0.005	0.07	—	0.07	0.06	—	0.06	—	393	393	0.02	< 0.005	—	394
Dust From Material Movement	—	—	—	—	—	0.17	0.17	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.17	0.17	< 0.005	0.02	0.02	—	2.40	2.40	< 0.005	< 0.005	< 0.005	2.51
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	1.80	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	399	399	0.02	0.01	1.24	405

Vendor	0.01	0.53	0.25	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	1.28	511
Hauling	< 0.005	0.32	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.57	281
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.13	1.53	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	378	378	0.01	0.01	0.03	382
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.46	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	110	110	< 0.005	< 0.005	0.15	112
Vendor	< 0.005	0.16	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	141	141	0.01	0.02	0.16	147
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	76.7	76.7	< 0.005	0.01	0.07	80.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.3	18.3	< 0.005	< 0.005	0.03	18.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.3	23.3	< 0.005	< 0.005	0.03	24.3
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3

3.2. Site Preparation (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272

Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	0.13	52.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272
Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	< 0.005	52.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.30	10.2	0.02	0.37	—	0.37	0.34	—	0.34	—	2,371	2,371	0.10	0.02	—	2,380
Dust From Material Movement	—	—	—	—	—	0.91	0.91	—	0.40	0.40	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.92	0.92	< 0.005	0.09	0.09	—	14.5	14.5	< 0.005	< 0.005	0.02	15.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	1.86	< 0.005	0.07	—	0.07	0.06	—	0.06	—	393	393	0.02	< 0.005	—	394
Dust From Material Movement	—	—	—	—	—	0.17	0.17	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.17	0.17	< 0.005	0.02	0.02	—	2.40	2.40	< 0.005	< 0.005	< 0.005	2.51

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	1.80	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	399	399	0.02	0.01	1.24	405
Vendor	0.01	0.53	0.25	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	1.28	511
Hauling	< 0.005	0.32	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.57	281
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.13	1.53	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	378	378	0.01	0.01	0.03	382
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.46	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	110	110	< 0.005	< 0.005	0.15	112
Vendor	< 0.005	0.16	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	141	141	0.01	0.02	0.16	147
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	76.7	76.7	< 0.005	0.01	0.07	80.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.3	18.3	< 0.005	< 0.005	0.03	18.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.3	23.3	< 0.005	< 0.005	0.03	24.3
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3

3.3. Grading (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.89	16.1	22.1	0.05	0.53	—	0.53	0.49	—	0.49	—	4,601	4,601	0.19	0.04	—	4,616
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	75.8	75.8	< 0.005	0.01	< 0.005	79.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	2.34	< 0.005	0.06	—	0.06	0.05	—	0.05	—	486	486	0.02	< 0.005	—	488
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.51	0.51	< 0.005	0.05	0.05	—	8.00	8.00	< 0.005	< 0.005	0.01	8.36
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.31	0.43	< 0.005	0.01	—	0.01	0.01	—	0.01	—	80.5	80.5	< 0.005	< 0.005	—	80.8
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.09	0.09	< 0.005	0.01	0.01	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.38
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.17	2.04	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	504	504	0.01	0.02	0.04	510
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.23	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	54.0	54.0	< 0.005	< 0.005	0.08	54.7
Vendor	< 0.005	0.06	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	51.7	51.7	< 0.005	0.01	0.06	53.9
Hauling	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	28.2	28.2	< 0.005	< 0.005	0.03	29.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.95	8.95	< 0.005	< 0.005	0.01	9.06
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.56	8.56	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.67	4.67	< 0.005	< 0.005	< 0.005	4.90

3.4. Grading (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.89	16.1	22.1	0.05	0.53	—	0.53	0.49	—	0.49	—	4,601	4,601	0.19	0.04	—	4,616

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	75.8	75.8	< 0.005	0.01	< 0.005	79.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	2.34	< 0.005	0.06	—	0.06	0.05	—	0.05	—	486	486	0.02	< 0.005	—	488
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.51	0.51	< 0.005	0.05	0.05	—	8.00	8.00	< 0.005	< 0.005	0.01	8.36
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.31	0.43	< 0.005	0.01	—	0.01	0.01	—	0.01	—	80.5	80.5	< 0.005	< 0.005	—	80.8
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.09	0.09	< 0.005	0.01	0.01	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.38
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.17	2.04	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	504	504	0.01	0.02	0.04	510
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.23	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	54.0	54.0	< 0.005	< 0.005	0.08	54.7
Vendor	< 0.005	0.06	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	51.7	51.7	< 0.005	0.01	0.06	53.9
Hauling	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	28.2	28.2	< 0.005	< 0.005	0.03	29.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.95	8.95	< 0.005	< 0.005	0.01	9.06
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.56	8.56	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.67	4.67	< 0.005	< 0.005	< 0.005	4.90

3.5. Grading (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.81	15.2	22.1	0.05	0.47	—	0.47	0.44	—	0.44	—	4,602	4,602	0.19	0.04	—	4,618
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.11	0.06	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	74.1	74.1	< 0.005	0.01	< 0.005	77.3
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	1.46	2.12	< 0.005	0.05	—	0.05	0.04	—	0.04	—	441	441	0.02	< 0.005	—	443

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.47	0.47	< 0.005	0.05	0.05	—	7.10	7.10	< 0.005	< 0.005	0.01	7.42
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.27	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	73.1	73.1	< 0.005	< 0.005	—	73.3
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.18	1.18	< 0.005	< 0.005	< 0.005	1.23
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.16	1.92	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	495	495	0.01	0.02	0.04	501
Vendor	0.01	0.52	0.24	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	478	478	0.02	0.07	0.03	499
Hauling	< 0.005	0.32	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	261	261	0.01	0.04	0.01	274
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	48.2	48.2	< 0.005	< 0.005	0.06	48.8
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	45.8	45.8	< 0.005	0.01	0.05	47.8
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.0	25.0	< 0.005	< 0.005	0.02	26.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.97	7.97	< 0.005	< 0.005	0.01	8.08
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.59	7.59	< 0.005	< 0.005	0.01	7.92

Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.14	4.14	< 0.005	< 0.005	< 0.005	4.35

3.6. Grading (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.81	15.2	22.1	0.05	0.47	—	0.47	0.44	—	0.44	—	4,602	4,602	0.19	0.04	—	4,618
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.11	0.06	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	74.1	74.1	< 0.005	0.01	< 0.005	77.3
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	1.46	2.12	< 0.005	0.05	—	0.05	0.04	—	0.04	—	441	441	0.02	< 0.005	—	443
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.47	0.47	< 0.005	0.05	0.05	—	7.10	7.10	< 0.005	< 0.005	0.01	7.42
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.27	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	73.1	73.1	< 0.005	< 0.005	—	73.3

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.18	1.18	< 0.005	< 0.005	< 0.005	1.23
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.16	1.92	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	495	495	0.01	0.02	0.04	501
Vendor	0.01	0.52	0.24	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	478	478	0.02	0.07	0.03	499
Hauling	< 0.005	0.32	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	261	261	0.01	0.04	0.01	274
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	48.2	48.2	< 0.005	< 0.005	0.06	48.8
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	45.8	45.8	< 0.005	0.01	0.05	47.8
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.0	25.0	< 0.005	< 0.005	0.02	26.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.97	7.97	< 0.005	< 0.005	0.01	8.08
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.59	7.59	< 0.005	< 0.005	0.01	7.92
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.14	4.14	< 0.005	< 0.005	< 0.005	4.35

3.7. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.3	86.3	< 0.005	0.01	0.21	90.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.4	86.4	< 0.005	0.01	0.01	90.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.55	6.84	8.55	0.01	0.12	—	0.12	0.11	—	0.11	—	1,454	1,454	0.06	0.01	—	1,459
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.49	3.49	< 0.005	0.35	0.35	—	53.2	53.2	< 0.005	0.01	0.05	55.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	1.25	1.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	241	241	0.01	< 0.005	—	241
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.64	0.64	< 0.005	0.06	0.06	—	8.81	8.81	< 0.005	< 0.005	0.01	9.21
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.20	3.38	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	783	783	0.01	0.03	2.23	794
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	119	119	< 0.005	0.02	0.30	125
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.23	2.88	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	742	742	0.01	0.03	0.06	751
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.14	1.85	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	464	464	0.01	0.02	0.60	470
Vendor	< 0.005	0.08	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	73.6	73.6	< 0.005	0.01	0.08	76.9
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.34	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	76.9	76.9	< 0.005	< 0.005	0.10	77.9
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.2	12.2	< 0.005	< 0.005	0.01	12.7
Hauling	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

3.8. Building Construction (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.3	86.3	< 0.005	0.01	0.21	90.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.4	86.4	< 0.005	0.01	0.01	90.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.55	6.84	8.55	0.01	0.12	—	0.12	0.11	—	0.11	—	1,454	1,454	0.06	0.01	—	1,459
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.49	3.49	< 0.005	0.35	0.35	—	53.2	53.2	< 0.005	0.01	0.05	55.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	1.25	1.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	241	241	0.01	< 0.005	—	241
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.64	0.64	< 0.005	0.06	0.06	—	8.81	8.81	< 0.005	< 0.005	0.01	9.21
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.20	3.38	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	783	783	0.01	0.03	2.23	794
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	119	119	< 0.005	0.02	0.30	125
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.23	2.88	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	742	742	0.01	0.03	0.06	751
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.14	1.85	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	464	464	0.01	0.02	0.60	470
Vendor	< 0.005	0.08	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	73.6	73.6	< 0.005	0.01	0.08	76.9

Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.34	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	76.9	76.9	< 0.005	< 0.005	0.10	77.9
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.2	12.2	< 0.005	< 0.005	0.01	12.7
Hauling	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

3.9. Building Construction (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.1	84.1	< 0.005	0.01	0.20	88.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.2	84.2	< 0.005	0.01	0.01	88.0
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38	4.77	6.02	0.01	0.08	—	0.08	0.07	—	0.07	—	1,024	1,024	0.04	0.01	—	1,028
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	2.46	2.46	< 0.005	0.25	0.25	—	36.6	36.6	< 0.005	0.01	0.04	38.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.07	0.87	1.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	170	170	0.01	< 0.005	—	170
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.04	—	6.05	6.05	< 0.005	< 0.005	0.01	6.33
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	3.16	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	770	770	0.01	0.03	2.00	780
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.28	122
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.21	2.68	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	730	730	0.01	0.03	0.05	739
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.01	122
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.09	1.22	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	322	322	< 0.005	0.01	0.38	326
Vendor	< 0.005	0.05	0.03	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	50.5	50.5	< 0.005	0.01	0.05	52.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	53.3	53.3	< 0.005	< 0.005	0.06	54.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.37	8.37	< 0.005	< 0.005	0.01	8.74
Hauling	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

3.10. Building Construction (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.1	84.1	< 0.005	0.01	0.20	88.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.2	84.2	< 0.005	0.01	0.01	88.0
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38	4.77	6.02	0.01	0.08	—	0.08	0.07	—	0.07	—	1,024	1,024	0.04	0.01	—	1,028
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	2.46	2.46	< 0.005	0.25	0.25	—	36.6	36.6	< 0.005	0.01	0.04	38.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.87	1.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	170	170	0.01	< 0.005	—	170
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.04	—	6.05	6.05	< 0.005	< 0.005	0.01	6.33
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	3.16	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	770	770	0.01	0.03	2.00	780
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.28	122
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.21	2.68	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	730	730	0.01	0.03	0.05	739
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.01	122
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.09	1.22	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	322	322	< 0.005	0.01	0.38	326
Vendor	< 0.005	0.05	0.03	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	50.5	50.5	< 0.005	0.01	0.05	52.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	53.3	53.3	< 0.005	< 0.005	0.06	54.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.37	8.37	< 0.005	< 0.005	0.01	8.74
Hauling	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

3.11. Paving (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.25	113

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.01	113
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.11	< 0.005	0.03	—	0.03	0.03	—	0.03	—	164	164	0.01	< 0.005	—	165
Paving	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.04	0.03	< 0.005	< 0.005	1.33	1.33	< 0.005	0.13	0.13	—	29.6	29.6	< 0.005	< 0.005	0.03	31.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	27.2	27.2	< 0.005	< 0.005	—	27.3
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	4.91	4.91	< 0.005	< 0.005	< 0.005	5.13
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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
Hauling	0.01	0.59	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.98	534
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985

Vendor	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
Hauling	0.01	0.61	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.03	534
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.12	146
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.1	23.1	< 0.005	< 0.005	0.02	24.2

3.12. Paving (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.25	113
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.01	113
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.11	< 0.005	0.03	—	0.03	0.03	—	0.03	—	164	164	0.01	< 0.005	—	165
Paving	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.04	0.03	< 0.005	< 0.005	1.33	1.33	< 0.005	0.13	0.13	—	29.6	29.6	< 0.005	< 0.005	0.03	31.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	27.2	27.2	< 0.005	< 0.005	—	27.3
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	4.91	4.91	< 0.005	< 0.005	< 0.005	5.13
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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
Hauling	0.01	0.59	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.98	534
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985
Vendor	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
Hauling	0.01	0.61	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.03	534
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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

Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.12	146
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.1	23.1	< 0.005	< 0.005	0.02	24.2

3.13. Architectural Coating (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—
Architectural Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.0	36.0	< 0.005	0.01	0.08	37.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—

Architectu Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.1	36.1	< 0.005	0.01	< 0.005	37.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	3.76	4.79	0.01	0.15	—	0.15	0.14	—	0.14	—	1,192	1,192	0.05	0.01	—	1,196
Dust From Material Movement	—	—	—	—	—	0.15	0.15	—	0.02	0.02	—	—	—	—	—	—	—
Architectu ral Coatings	2.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.44	0.44	< 0.005	0.04	0.04	—	9.88	9.88	< 0.005	< 0.005	0.01	10.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.69	0.87	< 0.005	0.03	—	0.03	0.02	—	0.02	—	197	197	0.01	< 0.005	—	198
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Architectu ral Coatings	0.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.64	1.64	< 0.005	< 0.005	< 0.005	1.71
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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

Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	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

3.14. Architectural Coating (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—

Architectu Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.0	36.0	< 0.005	0.01	0.08	37.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—
Architectu ral Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.1	36.1	< 0.005	0.01	< 0.005	37.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	3.76	4.79	0.01	0.15	—	0.15	0.14	—	0.14	—	1,192	1,192	0.05	0.01	—	1,196
Dust From Material Movement	—	—	—	—	—	0.15	0.15	—	0.02	0.02	—	—	—	—	—	—	—
Architectu ral Coatings	2.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.44	0.44	< 0.005	0.04	0.04	—	9.88	9.88	< 0.005	< 0.005	0.01	10.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.69	0.87	< 0.005	0.03	—	0.03	0.02	—	0.02	—	197	197	0.01	< 0.005	—	198

Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Architectural Coatings	0.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.64	1.64	< 0.005	< 0.005	< 0.005	1.71
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	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

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	6/14/2027	11/5/2027	5.00	105	—
Grading	Grading	11/8/2027	2/18/2028	5.00	75.0	—
Building Construction	Building Construction	2/21/2028	8/10/2029	5.00	385	—
Paving	Paving	8/13/2029	12/28/2029	5.00	100	—
Architectural Coating	Architectural Coating	8/13/2029	12/28/2029	5.00	100	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

Site Preparation	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Site Preparation	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Site Preparation	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Site Preparation	Scrapers	Diesel	Average	3.00	6.00	423	0.48
Site Preparation	Off-Highway Tractors	Diesel	Average	2.00	6.00	38.0	0.44
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Grading	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Grading	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Pressure Washers	Diesel	Average	2.00	6.00	14.0	0.30
Grading	Cranes	Diesel	Average	2.00	6.00	367	0.29
Grading	Welders	Diesel	Average	4.00	6.00	46.0	0.45
Building Construction	Forklifts	Electric	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Aerial Lifts	Diesel	Average	8.00	8.00	46.0	0.31
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Forklifts	Electric	Average	1.00	8.00	82.0	0.20
Architectural Coating	Graders	Diesel	Average	1.00	8.00	148	0.41
Architectural Coating	Scrapers	Diesel	Average	2.00	6.00	423	0.48

Architectural Coating	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Architectural Coating	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Site Preparation	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Site Preparation	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Site Preparation	Scrapers	Diesel	Average	3.00	6.00	423	0.48
Site Preparation	Off-Highway Tractors	Diesel	Average	2.00	6.00	38.0	0.44
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Grading	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Grading	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Pressure Washers	Diesel	Average	2.00	6.00	14.0	0.30
Grading	Cranes	Diesel	Average	2.00	6.00	367	0.29
Grading	Welders	Diesel	Average	4.00	6.00	46.0	0.45
Building Construction	Forklifts	Electric	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37

Building Construction	Aerial Lifts	Diesel	Average	8.00	8.00	46.0	0.31
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Forklifts	Electric	Average	1.00	8.00	82.0	0.20
Architectural Coating	Graders	Diesel	Average	1.00	8.00	148	0.41
Architectural Coating	Scrapers	Diesel	Average	2.00	6.00	423	0.48
Architectural Coating	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Architectural Coating	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	16.0	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	40.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	16.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	6.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	60.0	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	4.00	10.2	HHDT,MHDT

Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	7.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	0.00	10.2	HHDT,MHDT
Paving	Hauling	8.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	80.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	3.00	4.00	HHDT,MHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	16.0	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	40.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	16.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	6.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	60.0	18.5	LDA,LDT1,LDT2

Building Construction	Vendor	4.00	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	7.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	0.00	10.2	HHDT,MHDT
Paving	Hauling	8.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	80.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	3.00	4.00	HHDT,MHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	57%	57%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	150,000	50,000	5,619

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	315	0.00	—
Grading	0.00	0.00	0.00	0.00	—
Paving	0.00	0.00	0.00	0.00	2.15
Architectural Coating	0.00	0.00	200	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Research & Development	0.00	0%
Parking Lot	2.15	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00	690	0.05	0.01
2028	196	690	0.05	0.01
2029	294	690	0.05	0.01

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	69.6

AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0
Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8
Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract

Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—

Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0
Children	99.4

Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9
Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land uses based off PD and updated site plan.
Construction: Construction Phases	Schedule provided by LADWP.
Construction: Off-Road Equipment	Equipment inventory provided by LADWP.
Construction: Dust From Material Movement	All earthwork balanced on-site.
Construction: Trips and VMT	Personnel & vehicle inventories provided by LADWP.
Construction: On-Road Fugitive Dust	Limit vehicle speeds on unpaved areas to 15 mph.

LADWP Headworks Project - DPR Demo Construction Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - DPR Demo Construction
Construction Start Date	5/1/2030
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.15343780699328, -118.31929069851039
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Parking Lot	0.85	Acre	0.85	0.00	0.00	0.00	—	—

Research & Development	25.0	1000sqft	1.37	25,000	34,500	34,500	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-4*	Use Local and Sustainable Building Materials

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
Mit.	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
Mit.	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.14	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.62	2,310
Mit.	1.14	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.62	2,310
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.21	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.10	382
Mit.	0.21	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.10	382
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
2031	1.67	5.49	7.81	0.01	0.12	3.64	3.76	0.11	0.47	0.58	—	1,684	1,684	0.05	0.02	1.70	1,692
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	1.71	12.8	21.1	0.04	0.26	11.4	11.7	0.24	1.31	1.54	—	4,877	4,877	0.17	0.14	0.09	4,924
2031	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.83	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.50	2,310
2031	1.14	4.19	6.38	0.01	0.10	2.91	3.01	0.09	0.38	0.47	—	1,456	1,456	0.04	0.04	0.62	1,470
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.15	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.08	382
2031	0.21	0.76	1.16	< 0.005	0.02	0.53	0.55	0.02	0.07	0.09	—	241	241	0.01	0.01	0.10	243

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
2031	1.67	5.49	7.81	0.01	0.12	3.64	3.76	0.11	0.47	0.58	—	1,684	1,684	0.05	0.02	1.70	1,692
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	1.71	12.8	21.1	0.04	0.26	11.4	11.7	0.24	1.31	1.54	—	4,877	4,877	0.17	0.14	0.09	4,924

2031	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.83	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.50	2,310
2031	1.14	4.19	6.38	0.01	0.10	2.91	3.01	0.09	0.38	0.47	—	1,456	1,456	0.04	0.04	0.62	1,470
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.15	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.08	382
2031	0.21	0.76	1.16	< 0.005	0.02	0.53	0.55	0.02	0.07	0.09	—	241	241	0.01	0.01	0.10	243

3. Construction Emissions Details

3.1. Site Preparation (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.06	8.08	12.2	0.03	0.33	—	0.33	0.31	—	0.31	—	2,969	2,969	0.12	0.02	—	2,979
Dust From Material Movement	—	—	—	—	—	0.41	0.41	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	4.56	4.56	< 0.005	0.46	0.46	—	46.7	46.7	< 0.005	0.01	0.11	48.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.13	1.00	1.51	< 0.005	0.04	—	0.04	0.04	—	0.04	—	366	366	0.01	< 0.005	—	367
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.53	0.53	< 0.005	0.05	0.05	—	5.76	5.76	< 0.005	< 0.005	0.01	6.02
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.18	0.28	< 0.005	0.01	—	0.01	0.01	—	0.01	—	60.6	60.6	< 0.005	< 0.005	—	60.8
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.10	0.10	< 0.005	0.01	0.01	—	0.95	0.95	< 0.005	< 0.005	< 0.005	1.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	226	226	0.01	0.03	0.54	236
Hauling	< 0.005	0.14	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	124	124	0.01	0.02	0.23	130
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.01	16.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.53	2.53	< 0.005	< 0.005	< 0.005	2.66

3.2. Site Preparation (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.06	8.08	12.2	0.03	0.33	—	0.33	0.31	—	0.31	—	2,969	2,969	0.12	0.02	—	2,979
Dust From Material Movement	—	—	—	—	—	0.41	0.41	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	4.56	4.56	< 0.005	0.46	0.46	—	46.7	46.7	< 0.005	0.01	0.11	48.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.00	1.51	< 0.005	0.04	—	0.04	0.04	—	0.04	—	366	366	0.01	< 0.005	—	367
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.53	0.53	< 0.005	0.05	0.05	—	5.76	5.76	< 0.005	< 0.005	0.01	6.02
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02	0.18	0.28	< 0.005	0.01	—	0.01	0.01	—	0.01	—	60.6	60.6	< 0.005	< 0.005	—	60.8
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.10	0.10	< 0.005	0.01	0.01	—	0.95	0.95	< 0.005	< 0.005	< 0.005	1.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	226	226	0.01	0.03	0.54	236
Hauling	< 0.005	0.14	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	124	124	0.01	0.02	0.23	130
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.01	16.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.53	2.53	< 0.005	< 0.005	< 0.005	2.66

3.3. Grading (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.74	21.7	29.8	0.06	0.87	—	0.87	0.80	—	0.80	—	6,484	6,484	0.26	0.05	—	6,507
Dust From Material Movement	—	—	—	—	—	2.26	2.26	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	5.70	5.70	< 0.005	0.57	0.57	—	58.3	58.3	< 0.005	0.01	0.13	61.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34	2.67	3.67	0.01	0.11	—	0.11	0.10	—	0.10	—	799	799	0.03	0.01	—	802
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.66	0.66	< 0.005	0.07	0.07	—	7.20	7.20	< 0.005	< 0.005	0.01	7.52
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.49	0.67	< 0.005	0.02	—	0.02	0.02	—	0.02	—	132	132	0.01	< 0.005	—	133
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.19	1.19	< 0.005	< 0.005	< 0.005	1.24
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	< 0.005	0.11	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	113	113	< 0.005	0.02	0.27	118
Hauling	0.01	0.57	0.23	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	497	497	0.02	0.08	0.90	522
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.9	13.9	< 0.005	< 0.005	0.01	14.5
Hauling	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	61.2	61.2	< 0.005	0.01	0.05	64.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.30	2.30	< 0.005	< 0.005	< 0.005	2.41
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.1	10.1	< 0.005	< 0.005	0.01	10.6

3.4. Grading (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.74	21.7	29.8	0.06	0.87	—	0.87	0.80	—	0.80	—	6,484	6,484	0.26	0.05	—	6,507

Dust From Material Movement	—	—	—	—	—	2.26	2.26	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	5.70	5.70	< 0.005	0.57	0.57	—	58.3	58.3	< 0.005	0.01	0.13	61.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34	2.67	3.67	0.01	0.11	—	0.11	0.10	—	0.10	—	799	799	0.03	0.01	—	802
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.66	0.66	< 0.005	0.07	0.07	—	7.20	7.20	< 0.005	< 0.005	0.01	7.52
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.49	0.67	< 0.005	0.02	—	0.02	0.02	—	0.02	—	132	132	0.01	< 0.005	—	133
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.19	1.19	< 0.005	< 0.005	< 0.005	1.24
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	< 0.005	0.11	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	113	113	< 0.005	0.02	0.27	118
Hauling	0.01	0.57	0.23	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	497	497	0.02	0.08	0.90	522

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.9	13.9	< 0.005	< 0.005	0.01	14.5
Hauling	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	61.2	61.2	< 0.005	0.01	0.05	64.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.30	2.30	< 0.005	< 0.005	< 0.005	2.41
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.1	10.1	< 0.005	< 0.005	0.01	10.6

3.5. Building Construction (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.24	110
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.01	110

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	1.96	2.87	0.01	0.04	—	0.04	0.04	—	0.04	—	558	558	0.02	< 0.005	—	560
Onsite truck	< 0.005	0.03	0.01	< 0.005	< 0.005	1.59	1.59	< 0.005	0.16	0.16	—	17.3	17.3	< 0.005	< 0.005	0.02	18.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.36	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	92.4	92.4	< 0.005	< 0.005	—	92.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	2.86	2.86	< 0.005	< 0.005	< 0.005	2.99
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.20	3.96	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,010	1,010	0.01	0.04	2.37	1,024
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.40	177
Hauling	< 0.005	0.29	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.45	261
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.24	3.34	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	957	957	0.01	0.04	0.06	969
Vendor	< 0.005	0.18	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.01	177
Hauling	< 0.005	0.30	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.01	261
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	160	160	< 0.005	0.01	0.17	162
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.8	40.8	< 0.005	0.01	0.03	42.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.4	26.4	< 0.005	< 0.005	0.03	26.8

Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.76	6.76	< 0.005	< 0.005	0.01	7.09

3.6. Building Construction (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.24	110
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.01	110
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	1.96	2.87	0.01	0.04	—	0.04	0.04	—	0.04	—	558	558	0.02	< 0.005	—	560
Onsite truck	< 0.005	0.03	0.01	< 0.005	< 0.005	1.59	1.59	< 0.005	0.16	0.16	—	17.3	17.3	< 0.005	< 0.005	0.02	18.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.36	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	92.4	92.4	< 0.005	< 0.005	—	92.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	2.86	2.86	< 0.005	< 0.005	< 0.005	2.99

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.20	3.96	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,010	1,010	0.01	0.04	2.37	1,024
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.40	177
Hauling	< 0.005	0.29	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.45	261
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.24	3.34	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	957	957	0.01	0.04	0.06	969
Vendor	< 0.005	0.18	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.01	177
Hauling	< 0.005	0.30	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.01	261
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	160	160	< 0.005	0.01	0.17	162
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.8	40.8	< 0.005	0.01	0.03	42.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.4	26.4	< 0.005	< 0.005	0.03	26.8
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.76	6.76	< 0.005	< 0.005	0.01	7.09

3.7. Paving (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	7.55	12.4	0.02	0.29	—	0.29	0.26	—	0.26	—	2,577	2,577	0.10	0.02	—	2,585
Dust From Material Movement	—	—	—	—	—	0.14	0.14	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	6.29	6.29	< 0.005	0.63	0.63	—	125	125	0.01	0.02	0.01	130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.36	< 0.005	0.03	—	0.03	0.03	—	0.03	—	282	282	0.01	< 0.005	—	283
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.65	0.65	< 0.005	0.07	0.07	—	13.6	13.6	< 0.005	< 0.005	0.01	14.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.25	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.7	46.7	< 0.005	< 0.005	—	46.9
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	2.26	2.26	< 0.005	< 0.005	< 0.005	2.36
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.31	0.36	4.72	0.00	0.00	1.57	1.57	0.00	0.37	0.37	—	1,415	1,415	0.02	0.06	0.08	1,432
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	164	164	0.01	0.02	0.01	171
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.54	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	157	157	< 0.005	0.01	0.15	159
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	18.0	18.0	< 0.005	< 0.005	0.02	18.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.0	26.0	< 0.005	< 0.005	0.02	26.4
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.97	2.97	< 0.005	< 0.005	< 0.005	3.11
Hauling	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

3.8. Paving (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	7.55	12.4	0.02	0.29	—	0.29	0.26	—	0.26	—	2,577	2,577	0.10	0.02	—	2,585

Dust From Material Movement	—	—	—	—	—	0.14	0.14	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	6.29	6.29	< 0.005	0.63	0.63	—	125	125	0.01	0.02	0.01	130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.36	< 0.005	0.03	—	0.03	0.03	—	0.03	—	282	282	0.01	< 0.005	—	283
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.65	0.65	< 0.005	0.07	0.07	—	13.6	13.6	< 0.005	< 0.005	0.01	14.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.25	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.7	46.7	< 0.005	< 0.005	—	46.9
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	2.26	2.26	< 0.005	< 0.005	< 0.005	2.36
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.31	0.36	4.72	0.00	0.00	1.57	1.57	0.00	0.37	0.37	—	1,415	1,415	0.02	0.06	0.08	1,432
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	164	164	0.01	0.02	0.01	171
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.54	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	157	157	< 0.005	0.01	0.15	159
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	18.0	18.0	< 0.005	< 0.005	0.02	18.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.0	26.0	< 0.005	< 0.005	0.02	26.4
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.97	2.97	< 0.005	< 0.005	< 0.005	3.11
Hauling	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

3.9. Architectural Coating (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.51	5.27	4.98	0.01	0.12	—	0.12	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	58.4	58.4	< 0.005	0.01	< 0.005	61.0

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.31	0.29	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.7	51.7	< 0.005	< 0.005	—	51.9
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	0.02	0.02	—	3.43	3.43	< 0.005	< 0.005	< 0.005	3.58
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.56	8.56	< 0.005	< 0.005	—	8.59
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.57	0.57	< 0.005	< 0.005	< 0.005	0.59
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.18	2.51	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	718	718	0.01	0.03	0.05	727
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	42.8	42.8	< 0.005	< 0.005	0.04	43.3
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.08	7.08	< 0.005	< 0.005	0.01	7.17
Vendor	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
Hauling	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

3.10. Architectural Coating (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.51	5.27	4.98	0.01	0.12	—	0.12	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	58.4	58.4	< 0.005	0.01	< 0.005	61.0
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.31	0.29	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.7	51.7	< 0.005	< 0.005	—	51.9
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	0.02	0.02	—	3.43	3.43	< 0.005	< 0.005	< 0.005	3.58
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.01	0.06	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.56	8.56	< 0.005	< 0.005	—	8.59
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.57	0.57	< 0.005	< 0.005	< 0.005	0.59
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.18	2.51	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	718	718	0.01	0.03	0.05	727
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	42.8	42.8	< 0.005	< 0.005	0.04	43.3
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.08	7.08	< 0.005	< 0.005	0.01	7.17
Vendor	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
Hauling	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

3.11. Architectural Coating (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.5	56.5	< 0.005	0.01	0.12	59.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.6	56.6	< 0.005	0.01	< 0.005	59.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	3.13	2.96	0.01	0.07	—	0.07	0.06	—	0.06	—	524	524	0.02	< 0.005	—	526
Architectural Coatings	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.61	1.61	< 0.005	0.16	0.16	—	33.6	33.6	< 0.005	< 0.005	0.03	35.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.57	0.54	< 0.005	0.01	—	0.01	0.01	—	0.01	—	86.7	86.7	< 0.005	< 0.005	—	87.0

Architectural Coatings	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	5.57	5.57	< 0.005	< 0.005	0.01	5.83
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.15	2.78	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	746	746	0.01	< 0.005	1.58	749
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.18	2.36	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	707	707	0.01	0.03	0.04	716
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.11	1.47	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	427	427	< 0.005	0.02	0.41	433
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.27	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	70.7	70.7	< 0.005	< 0.005	0.07	71.6
Vendor	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
Hauling	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

3.12. Architectural Coating (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.5	56.5	< 0.005	0.01	0.12	59.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.6	56.6	< 0.005	0.01	< 0.005	59.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	3.13	2.96	0.01	0.07	—	0.07	0.06	—	0.06	—	524	524	0.02	< 0.005	—	526
Architectural Coatings	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.61	1.61	< 0.005	0.16	0.16	—	33.6	33.6	< 0.005	< 0.005	0.03	35.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.57	0.54	< 0.005	0.01	—	0.01	0.01	—	0.01	—	86.7	86.7	< 0.005	< 0.005	—	87.0

Architectu Coatings	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	5.57	5.57	< 0.005	< 0.005	0.01	5.83
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.15	2.78	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	746	746	0.01	< 0.005	1.58	749
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.18	2.36	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	707	707	0.01	0.03	0.04	716
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.11	1.47	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	427	427	< 0.005	0.02	0.41	433
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.27	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	70.7	70.7	< 0.005	< 0.005	0.07	71.6
Vendor	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
Hauling	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

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	5/1/2030	7/2/2030	5.00	45.0	—
Grading	Grading	7/3/2030	9/3/2030	5.00	45.0	—
Building Construction	Building Construction	9/4/2030	11/26/2030	5.00	60.0	—
Paving	Paving	2/3/2031	3/28/2031	5.00	40.0	—
Architectural Coating	Architectural Coating	12/2/2030	10/31/2031	5.00	240	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37

Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Scrapers	Diesel	Average	2.00	6.00	423	0.48
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Off-Highway Tractors	Diesel	Average	1.00	7.00	38.0	0.44
Building Construction	Forklifts	Electric	Average	3.00	7.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Aerial Lifts	Diesel	Average	6.00	7.00	46.0	0.31
Building Construction	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Building Construction	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Building Construction	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Building Construction	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Building Construction	Excavators	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Paving	Surfacing Equipment	Diesel	Average	1.00	7.00	399	0.30
Paving	Trenchers	Diesel	Average	1.00	7.00	40.0	0.50
Paving	Graders	Diesel	Average	1.00	8.00	148	0.41
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Architectural Coating	Forklifts	Electric	Average	4.00	8.00	82.0	0.20
Architectural Coating	Generator Sets	Diesel	Average	3.00	8.00	14.0	0.74
Architectural Coating	Welders	Diesel	Average	1.00	7.00	46.0	0.45

Architectural Coating	Aerial Lifts	Diesel	Average	3.00	7.00	46.0	0.31

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Scrapers	Diesel	Average	2.00	6.00	423	0.48
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Off-Highway Tractors	Diesel	Average	1.00	7.00	38.0	0.44
Building Construction	Forklifts	Electric	Average	3.00	7.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Aerial Lifts	Diesel	Average	6.00	7.00	46.0	0.31
Building Construction	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Building Construction	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Building Construction	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Building Construction	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Building Construction	Excavators	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42

Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Paving	Surfacing Equipment	Diesel	Average	1.00	7.00	399	0.30
Paving	Trenchers	Diesel	Average	1.00	7.00	40.0	0.50
Paving	Graders	Diesel	Average	1.00	8.00	148	0.41
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Architectural Coating	Forklifts	Electric	Average	4.00	8.00	82.0	0.20
Architectural Coating	Generator Sets	Diesel	Average	3.00	8.00	14.0	0.74
Architectural Coating	Welders	Diesel	Average	1.00	7.00	46.0	0.45
Architectural Coating	Aerial Lifts	Diesel	Average	3.00	7.00	46.0	0.31

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	8.00	10.2	HHDT,MHDT
Site Preparation	Hauling	2.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	30.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	4.00	10.2	HHDT,MHDT
Grading	Hauling	8.00	20.0	HHDT
Grading	Onsite truck	5.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	80.0	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	6.00	10.2	HHDT,MHDT

Building Construction	Hauling	4.00	20.0	HHDT
Building Construction	Onsite truck	9.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	120	18.5	LDA,LDT1,LDT2
Paving	Vendor	6.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	11.0	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	60.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	5.00	4.00	HHDT,MHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	8.00	10.2	HHDT,MHDT
Site Preparation	Hauling	2.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	30.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	4.00	10.2	HHDT,MHDT
Grading	Hauling	8.00	20.0	HHDT
Grading	Onsite truck	5.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	80.0	18.5	LDA,LDT1,LDT2

Building Construction	Vendor	6.00	10.2	HHDT,MHDT
Building Construction	Hauling	4.00	20.0	HHDT
Building Construction	Onsite truck	9.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	120	18.5	LDA,LDT1,LDT2
Paving	Vendor	6.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	11.0	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	60.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	5.00	4.00	HHDT,MHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	57%	57%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	37,500	12,500	2,222

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	67.5	0.00	—
Grading	0.00	0.00	113	0.00	—
Paving	0.00	0.00	20.0	0.00	0.85

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Parking Lot	0.85	100%
Research & Development	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2030	648	690	0.05	0.01
2031	391	690	0.05	0.01

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	2	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	0	N/A
Wildfire	1	2	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	2	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	1	3
Wildfire	1	2	1	3
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	2	1	3

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

6.4.1. Temperature and Extreme Heat

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-23: Landscape with Climate Considerations	Improved Ecosystem Health, Water Conservation	—	1.00	—

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—

AQ-Ozone	69.6
AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0
Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8
Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—

Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0

Children	99.4
Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9
Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land uses based on PD and site plan.
Construction: Construction Phases	Construction schedule provided by LADWP.
Construction: Off-Road Equipment	Equipment inventory provided by LADWP.
Construction: Dust From Material Movement	All earthwork will be balanced on site.
Construction: On-Road Fugitive Dust	Limit vehicle speeds on unpaved roads to 15 mph (SCAQMD Rule 403).
Construction: Trips and VMT	Vehicle and personnel inventories provided by LADWP.

LADWP Headworks Project - Operations Detailed Report

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6.4. Climate Risk Reduction Measures

6.4.1. Temperature and Extreme Heat

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - Operations
Operational Year	2031
Lead Agency	LADWP
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.15285671760434, -118.3170842391024
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Research & Development	100	1000sqft	4.85	100,000	111,500	111,500	—	—

Research & Development	25.0	1000sqft	1.37	25,000	34,500	34,500	—	—
City Park	17.5	Acre	17.5	0.00	387,830	387,830	—	—
Parking Lot	6.00	Acre	6.00	0.00	13,000	13,000	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Transportation	T-34*	Provide Bike Parking
Energy	E-21*	Install Cool Pavements

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
Mit.	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535
Mit.	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535

% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561
Mit.	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252
Mit.	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	3,000
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	3,000
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Area	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Area	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.33	0.59	5.67	0.01	0.01	0.93	0.94	0.01	0.24	0.24	—	1,001	1,001	0.09	0.07	0.83	1,023
Area	3.87	0.03	3.72	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	15.3	15.3	< 0.005	< 0.005	—	15.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169
Area	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Energy	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	828	828	0.06	0.01	—	832
Water	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244
Waste	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
Total	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Area	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Area	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472

Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.33	0.59	5.67	0.01	0.01	0.93	0.94	0.01	0.24	0.24	—	1,001	1,001	0.09	0.07	0.83	1,023
Area	3.87	0.03	3.72	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	15.3	15.3	< 0.005	< 0.005	—	15.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169
Area	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Energy	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	828	828	0.06	0.01	—	832
Water	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244
Waste	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
Total	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.34	0.53	5.30	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	948	948	0.09	0.06	1.74	970
City Park	0.02	0.02	0.25	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	81.2	81.2	< 0.005	< 0.005	0.17	82.0
Parking Lot	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
Total	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.33	0.57	5.44	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	913	913	0.09	0.06	0.05	934
City Park	0.02	0.02	0.22	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	77.5	77.5	< 0.005	< 0.005	< 0.005	78.2
Parking Lot	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
Total	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.24	0.10	0.99	< 0.005	< 0.005	0.15	0.16	< 0.005	0.04	0.04	—	153	153	0.02	0.01	0.12	156
City Park	< 0.005	< 0.005	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	13.0	13.0	< 0.005	< 0.005	0.01	13.1
Parking Lot	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
Total	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.34	0.53	5.30	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	948	948	0.09	0.06	1.74	970
City Park	0.02	0.02	0.25	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	81.2	81.2	< 0.005	< 0.005	0.17	82.0
Parking Lot	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
Total	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.33	0.57	5.44	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	913	913	0.09	0.06	0.05	934
City Park	0.02	0.02	0.22	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	77.5	77.5	< 0.005	< 0.005	< 0.005	78.2
Parking Lot	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
Total	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.24	0.10	0.99	< 0.005	< 0.005	0.15	0.16	< 0.005	0.04	0.04	—	153	153	0.02	0.01	0.12	156
City Park	< 0.005	< 0.005	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	13.0	13.0	< 0.005	< 0.005	0.01	13.1
Parking Lot	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
Total	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	624	624	0.04	0.01	—	626
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	71.7	71.7	0.01	< 0.005	—	72.0
Total	—	—	—	—	—	—	—	—	—	—	—	695	695	0.05	0.01	—	699

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	624	624	0.04	0.01	—	626
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	71.7	71.7	0.01	< 0.005	—	72.0
Total	—	—	—	—	—	—	—	—	—	—	—	695	695	0.05	0.01	—	699

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134
City Park	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
Parking Lot	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
Total	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134
City Park	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
Parking Lot	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
Total	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.89	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Total	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscap Equipment	0.11	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Total	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.89	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Total	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Consumer Products	0.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.11	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Total	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346
City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346

City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	19.5	139	158	2.01	0.05	—	223
City Park	—	—	—	—	—	—	—	—	—	—	0.00	20.1	20.1	< 0.005	< 0.005	—	20.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.67	0.67	< 0.005	< 0.005	—	0.68
Total	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346
City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346

City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	19.5	139	158	2.01	0.05	—	223
City Park	—	—	—	—	—	—	—	—	—	—	0.00	20.1	20.1	< 0.005	< 0.005	—	20.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.67	0.67	< 0.005	< 0.005	—	0.68
Total	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	0.85	0.00	0.85	0.08	0.00	—	2.97
City Park	—	—	—	—	—	—	—	—	—	—	0.13	0.00	0.13	0.01	0.00	—	0.47
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	0.85	0.00	0.85	0.08	0.00	—	2.97
City Park	—	—	—	—	—	—	—	—	—	—	0.13	0.00	0.13	0.01	0.00	—	0.47
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipme Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Research & Development	580	580	580	211,700	1,051	1,051	1,051	383,615

Research & Development	16.0	16.0	16.0	5,840	159	159	159	58,195
City Park	12.1	12.1	12.1	4,407	120	120	120	43,919
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Research & Development	580	580	580	211,700	1,051	1,051	1,051	383,615
Research & Development	16.0	16.0	16.0	5,840	159	159	159	58,195
City Park	12.1	12.1	12.1	4,407	120	120	120	43,919
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	187,500	62,500	15,682

5.10.3. Landscape Equipment

Season	Unit	Value

Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Research & Development	1,592,875	690	0.0489	0.0069	2,009,186
Research & Development	398,219	690	0.0489	0.0069	502,296
City Park	0.00	690	0.0489	0.0069	0.00
Parking Lot	228,951	690	0.0489	0.0069	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Research & Development	1,592,875	690	0.0489	0.0069	2,009,186
Research & Development	398,219	690	0.0489	0.0069	502,296
City Park	0.00	690	0.0489	0.0069	0.00
Parking Lot	228,951	690	0.0489	0.0069	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Research & Development	49,169,395	3,474,980
Research & Development	12,292,349	1,075,218
City Park	0.00	12,087,009
Parking Lot	0.00	405,155

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Research & Development	49,169,395	3,474,980
Research & Development	12,292,349	1,075,218
City Park	0.00	12,087,009
Parking Lot	0.00	405,155

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Research & Development	7.60	—
Research & Development	1.90	—
City Park	1.50	—
Parking Lot	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Research & Development	7.60	—
Research & Development	1.90	—
City Park	1.50	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	2	3	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	2	2
Wildfire	2	2	2	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A

Air Quality Degradation	5	2	3	3

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	3	1
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	2	2
Wildfire	2	2	2	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	5	2	3	3

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

6.4.1. Temperature and Extreme Heat

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
EH-9: Expand Urban Tree Canopy	Energy and Fuel Savings, Improved Air Quality, Improved Public Health, Social Equity	1.00	1.00	—
MH-23: Landscape with Climate Considerations	Improved Ecosystem Health, Water Conservation	—	1.00	—

MH-39: Implement Pervious and Climate-Smart Surfaces	Energy and Fuel Savings, Improved Air Quality, Improved Ecosystem Health, Improved Public Health, Water Conservation	—	1.00	—

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	69.6
AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0
Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8

Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—

Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0

Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0
Children	99.4
Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9
Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—

Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

Measure Title	Co-Benefits Achieved
PH-2: Increase Urban Tree Canopy and Green Spaces	Energy and Fuel Savings, Enhanced Energy Security, Improved Air Quality, Improved Ecosystem Health, Improved Public Health, Social Equity
IC-4: Enhanced Open and Green Spaces	Improved Ecosystem Health, Improved Public Health, Social Equity, Water Conservation

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land uses based on updated PD & site plan.
Operations: Vehicle Data	Trips from traffic memo: 608 total daily, 580 WQL, 159 DPR, 120 Park.
Operations: Fleet Mix	No medium or heavy-duty trucks for Park patrons.

APPENDIX E

Greenhouse Gas Emissions Impact Study

HEADWORKS SITE DEVELOPMENT PROJECT

Greenhouse Gas Emissions Impact Study

Prepared for:
Michael Baker International

Prepared by:
Terry A. Hayes Associates Inc.

January 2024

taha
environmental planners

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1.0 SUMMARY OF FINDINGS

Terry A. Hayes Associates Inc. (TAHA) completed a Greenhouse Gas (GHG) Emissions Impact Study (Study) for the Headworks Site Development Project (proposed project) located in the City of Los Angeles (City). The Study analyzes environmental impacts related to GHG emissions that would occur during construction and future operation of the proposed project in accordance with the California Environmental Quality Act (CEQA) Statutes and Guidelines. The determination of potentially significant impacts is framed through addressing the Environmental Checklist criteria outlined in Appendix G of the CEQA Guidelines. **Table 1-1** presents the Appendix G criteria for GHG Emissions and discloses the conclusions of the Study for the proposed project. Potential impacts related to GHG emissions were determined to be less-than-significant and no mitigation measures are required.

TABLE 1-1: SUMMARY OF IMPACT STATEMENTS

Impact Statement	Proposed Project Level of Significance	Applicable Mitigation Measures
Would the proposed project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less-Than-Significant Impact	None
Would the proposed project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less-Than-Significant Impact	None

SOURCE: TAHA, 2024.

2.0 INTRODUCTION

2.1 STUDY PURPOSE

This Study compares the proposed project characteristics with applicable regulations, plans, and policies to reduce GHG emissions to determine whether the proposed project is consistent with and/or would conflict with the provisions of these plans. To assist in analyzing the proposed project's potential to conflict with applicable regulations, plans and policies, this section also estimates GHG emissions generated by construction and operational activities.

2.2 PROJECT DESCRIPTION

The proposed water quality lab (WQL) would include approximately 100,000 gross square feet of floor space; surface parking for 12 visitor vehicles, 102 staff vehicles, and 20 Los Angeles Department of Water and Power (LADWP) fleet vehicles; a mobile laboratory trailer; landscaping; and other site improvements. It would be located to the east of the Direct Potable Reuse (DPR) Demonstration Facility at the Headworks Spreading Grounds (HWSG) property. The facility would also be designed to meet Mayor Garcetti's Resilience by Design Directive by obtaining Leadership in Energy and Environmental Design (LEED) gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The facility would also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater. The building would achieve energy efficiency by implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency heating, ventilation, and air conditioning (HVAC) systems. The proposed project would include EV charging stations in compliance with Los Angeles Department of Building and Safety (LADBS) Electric Vehicle Charging Stations (EVCS) requirements. It would incorporate recycled material in all aspects of the building construction to promote a sustainable supply chain. All lighting and lighting controls for the facility would comply with the latest version of the Building Energy Efficiency Standard (Title 24) and the California Green Building Standard Code.

The DPR Demonstration Facility would be an advanced water purification facility (AWPF). The AWPF and support facilities and areas would be approximately 20,000 square feet, with an additional 20,000 square feet for a surrounding vehicle access road. A visitor center and a parking lot would also be provided. The visitor center would be approximately 5,000 square feet, and a parking lot would require approximately 16,500 square feet to accommodate staff and visitors. The DPR Demonstration Facility and visitor center would be at the at the west end of the HWSG property.

The centerpiece of Headworks Park would be the West Reservoir Gardens, constructed on top of the approximately eight-acre West Reservoir, which will have been covered with several feet of soil to enable planting. Surrounding the reservoir garden and extending into other portions of the HWSG property would be a series of pedestrian, bicycle, and equestrian pathways, including the Headworks segment of the Los Angeles River Trail. The park would be developed in the eastern portion of the property, atop the West Reservoir, with other park features, including parking, a pavilion building, trails and site landscaping, located in adjacent areas.

The primary vehicular access to the Headworks site for all the proposed project components would be from Forest Lawn Drive at Mount Sinai Drive. Secondary access for employee, service, and maintenance vehicles would be provided from Forest Lawn Drive at the west end of the Headworks site. Public access to the Headworks site, would be limited to dawn to dusk.

Figure 2-1 shows the regional location of the proposed project. **Figure 2-2** shows the site plan.



Source: AECOM, 2021.

taha environmental planners

TAHA 2021-041

Headworks Site Development Project
Greenhouse Gas Emissions Impact Study

MICHAEL BAKER INTERNATIONAL

FIGURE 2-1

REGIONAL LOCATION



Legend

1. Headworks Park (Proposed)
2. Headworks Park - Pavilion Gateway (Proposed)
3. Headworks Park - Parking Lot (Proposed)
4. LA River Trail Segment (Proposed)
5. Access Road (Proposed)
6. Equestrian Tunnel (Existing)
7. Connection to Griffith Park (Existing)
8. Water Quality Lab (Proposed)
9. DPR Demonstration Facility (Proposed)
10. DPR Demonstration Facility Visitor Center (Proposed)
11. East Reservoir (Existing)
12. Flow Control Station (In Construction)

Source: LADWP, 2024.

FIGURE 2-2
PROJECT LOCATION

2.3 CONSTRUCTION SCHEDULE

Construction of the proposed project is anticipated to begin in the fourth quarter of 2024 with the Headworks Restoration Park, which would take approximately 3.3 years to complete, concluding in the first quarter of 2028. The construction of the proposed WQL would begin in the second quarter of 2027, overlapping the last phases of the park construction by approximately 9 months. The proposed WQL construction would take approximately 2.5 years to complete, concluding in the first quarter of 2030. Construction of the proposed DPR Demonstration Facility would follow in succession, starting in the second quarter of 2030 and ending in the fourth quarter of 2031, a period of approximately 1.5 years. Accounting for overlaps in the construction periods for the project components, the total construction time for the proposed project would be approximately 7 years, from late 2024 to late 2031. Construction activities would typically occur Monday through Friday during the daytime hours, beginning no earlier than 7:00 a.m. and generally ending by 5:00 p.m. Saturday construction may also be required at times.

3.0 GREENHOUSE GAS EMISSIONS

This section describes the characteristics of GHGs, and the regulatory framework of applicable rules, regulations, plans, and guidance related to GHG emissions; discusses the existing GHG emissions landscape and quantifies and evaluates GHG emissions that would be generated by construction and operations of the proposed project.

3.1 ENVIRONMENTAL SETTING

Global climate change refers to changes in average climatic conditions on Earth as a whole, including changes in temperature, wind patterns, precipitation, and severe weather events. Global warming, a related concept, is the observed increase in average temperature of Earth's surface and atmosphere. One identified cause of global warming is an increase of GHGs in the atmosphere. GHGs are those compounds in Earth's atmosphere that play a critical role in determining Earth's surface temperature.

Earth's natural warming process is known as the "greenhouse effect." It is called the greenhouse effect because Earth and the atmosphere surrounding it are similar to a greenhouse with glass panes in that the glass allows solar radiation (sunlight) into Earth's atmosphere but prevents radiative heat from escaping, thus warming Earth's atmosphere. Some levels of GHGs keep the average surface temperature of Earth close to a hospitable 60 degrees Fahrenheit. However, it is believed that excessive concentrations of anthropogenic GHGs in the atmosphere can result in increased global mean temperatures, with associated adverse climatic and ecological consequences.[1]

Scientists studying the particularly rapid rise in global temperatures have determined that human activity has resulted in increased emissions of GHGs, primarily from the burning of fossil fuels (from motor vehicle travel, electricity generation, consumption of natural gas, industrial activity, manufacturing, etc.), deforestation, agricultural activity, and the decomposition of solid waste. Scientists refer to the global warming context of the past century as the "enhanced greenhouse effect" to distinguish it from the natural greenhouse effect.[2]

Global GHG emissions due to human activities have grown since pre-industrial times. As reported by the United States Environmental Protection Agency (USEPA), global carbon emissions from fossil fuels increased by over 16 times between 1900 and 2008 and by about 1.5 times between 1990 and 2008. In addition, in the Global Carbon Budget 2014 report, published in September 2014, atmospheric carbon dioxide (CO_2) concentrations in 2013 were found to be 43 percent above the concentration at the start of the Industrial Revolution, and the present concentration is the highest during at least the last 800,000 years.[3] Global increases in CO_2 concentrations are due primarily to fossil fuel use, with land use change providing another significant but smaller contribution. With regard to emissions of non-CO_2 GHG, these have also increased significantly since 1990.[4] In particular, studies have concluded that it is highly likely that the observed increase in methane (CH_4) concentration is predominantly due to agriculture and fossil fuel use.[5]

[1]USEPA, *Climate Change: Basic Information*, https://19january2017snapshot.epa.gov/climatechange/climate-change-basic-information_.html, accessed July 12, 2022.

[2]Pew Center on Global Climate Change, *Climate Change 101: Understanding and Responding to Global Climate Change*.

[3]C. Le Quéré, et al., *Global Carbon Budget 2014*, (Earth System Science Data, 2015, doi:10.5194/essd–7–47–2015).

[4]USEPA, *Global Greenhouse Gas Emissions Data*, www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data, accessed July 12, 2022.

[5]USEPA, *Atmospheric Concentrations of Greenhouse Gas*, updated June 2015.

In August 2007, international climate talks held under the auspices of the United Nations Framework Convention on Climate Change led to the official recognition by the participating nations that global emissions of GHG must be reduced. According to the "Ad Hoc Working Group on Further Commitments of Annex I Parties under the Kyoto Protocol," avoiding the most catastrophic events forecast by the United Nations Intergovernmental Panel on Climate Change (IPCC) would entail emissions reductions by industrialized countries in the range of 25 to 40 percent below 1990 levels. Because of the Kyoto Protocol's Clean Development Mechanism, which gives industrialized countries credit for financing emission-reducing projects in developing countries, such an emissions goal in industrialized countries could ultimately spur efforts to cut emissions in developing countries as well.[6]

With regard to the adverse effects of global warming, as reported by Southern California Association of Governments (SCAG):

> *Global warming poses a serious threat to the economic well-being, public health and natural environment in southern California and beyond. The potential adverse impacts of global warming include, among others, a reduction in the quantity and quality of water supply, a rise in sea level, damage to marine and other ecosystems, and an increase in the incidences of infectious diseases. Over the past few decades, energy intensity of the national and state economy has been declining due to the shift to a more service-oriented economy. California ranked fifth lowest among the states in CO_2 emissions from fossil fuel consumption per unit of Gross State Product. However, in terms of total CO_2 emissions, California is second only to Texas in the nation and is the 12th largest source of climate change emissions in the world, exceeding most nations. The SCAG region, with close to half of the state's population and economic activities, is also a major contributor to the global warming problem.*[7]

3.1.1 GHG Fundamentals

GHGs are those compounds in the Earth's atmosphere which play a critical role in determining temperature near the Earth's surface. GHGs include CO_2, CH_4, nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).[8] More specifically, these gases allow high-frequency shortwave solar radiation to enter the Earth's atmosphere, but retain some of the low frequency infrared energy, which is radiated back from the Earth towards space, resulting in a warming of the atmosphere. Compounds that are regulated as GHGs are discussed below in **Table 3-1**.[9,10]

[6]United Nations Framework Convention on Climate Change, *Press Release—Vienna UN Conference Shows Consensus on Key Building Blocks for Effective International Response to Climate Change*, August 31, 2007.

[7]SCAG, *The State of the Region—Measuring Regional Progress*, December 2006, p. 121.

[8]As defined by California Assembly Bill (AB) 32 and Senate Bill (SB) 104.

[9]Intergovernmental Panel on Climate Change, *Second Assessment Report, Working Group I: The Science of Climate Change*, 1995, https://www.ipcc.ch/pdf/climate-changes-1995/ipcc-2nd-assessment/2nd-assessment-en.pdf, accessed July 12, 2022.

[10]Intergovernmental Panel on Climate Change, *Fourth Assessment Report, Working Group I Report: The Physical Science Basis*, *Table 2.14*, 2007, https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html, accessed July 12, 2022.

TABLE 3-1: DESCRIPTION OF IDENTIFIED GHGS//a//

Greenhouse Gas	General Description
Carbon Dioxide (CO_2)	An odorless, colorless GHG, which has both natural and anthropocentric sources. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (human-caused) sources of CO_2 are burning coal, oil, natural gas, and wood.
Methane (CH_4)	A flammable gas and the main component of natural gas. When one molecule of CH_4 is burned in the presence of oxygen, one molecule of CO_2 and two molecules of water are released. A natural source of CH_4 is the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain CH_4, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and cattle.
Nitrous Oxide (N_2O)	A colorless GHG. High concentrations can cause dizziness, euphoria, and sometimes slight hallucinations. N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used in rocket engines, race cars, and as an aerosol spray propellant.
Hydrofluorocarbons (HFCs)	Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are non-toxic, non-flammable, insoluble, and chemically unreactive in the troposphere (the level of air at Earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. Because they destroy stratospheric ozone, the production of CFCs was stopped as required by the Montreal Protocol in 1987. HFCs are synthetic man-made chemicals that are used as a substitute for CFCs as refrigerants. HFCs deplete stratospheric ozone, but to a much lesser extent than CFCs.
Perfluorocarbons (PFCs)	PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. PFCs have exceptionally long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane and hexafluoroethane. The two main sources of PFCs are primary aluminum production and semi-conductor manufacturing.
Sulfur Hexafluoride (SF_6)	An inorganic, odorless, colorless, non-toxic, and non-flammable gas. SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semi-conductor manufacturing, and as a tracer gas for leak detection.
Nitrogen Trifluoride (NF_3)	An inorganic, non-toxic, odorless, non-flammable gas. NF_3 is used in the manufacture of semi-conductors, as an oxidizer of high energy fuels, for the preparation of tetrafluoro-hydrazine, as an etchant gas in the electronic industry, and as a fluorine source in high power chemical lasers.

/a/ GHGs identified in this table are identified in the Kyoto Protocol and other synthetic gases recently added to the IPCC's Fifth Assessment Report.
SOURCES: Association of Environmental Professionals (AEP), *Alternative Approaches to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents, Final*, June 29, 2007; USEPA, *Acute Exposure Guideline Levels (AEGLs) for Nitrogen Trifluoride*; January 2009.

Not all GHGs possess the same ability to induce climate change. CO_2 is the most abundant GHG in Earth's atmosphere. Other GHGs are less abundant but have higher global warming potential (GWP) than CO_2. Thus, emissions of other GHGs are commonly quantified in the units of equivalent mass of carbon dioxide (CO_2e). GWP is based on several factors, including the radiative efficiency (heat-absorbing ability) of each gas relative to that of CO_2, as well as the decay rate of each gas (the

amount removed from the atmosphere over a given number of years otherwise referred to as atmospheric lifetime) relative to that of CO_2.

The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period.[11] These GWP ratios are available from the IPCC. Historically, GHG emission inventories have been calculated using the GWPs from the IPCC's Second Assessment Report (SAR). The IPCC updated the GWP values based on the latest science in its Fourth Assessment Report (AR4). The GWPs in the IPCC AR4 are used by the California Air Resources Board (CARB) for reporting statewide GHG emissions inventories, consistent with international reporting standards. By applying the GWP ratios, project-related CO_2e emissions can be tabulated in metric tons per year. Typically, the GWP ratio corresponding to the warming potential of CO_2 over a 100-year period is used as a baseline.

The IPCC has issued an updated Fifth Assessment Report (AR5), which has revised down the majority of the GWP for key regulated pollutants. As CARB still uses AR4 values and the modeling software California Emissions Estimator Model (CalEEMod) is built on these assumptions, AR4 GWP values are used for the proposed project. The GWP from AR4 and AR5 and atmospheric lifetimes for key regulated GHGs are provided in **Table 3-2**.

TABLE 3-2: ATMOSPHERIC LIFETIMES AND GLOBAL WARMING POTENTIALS

Greenhouse Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
Carbon Dioxide (CO_2)	50–200	1
Methane (CH_4)	12 (+/-3)	25
Nitrous Oxide (N_2O)	114	298
HFC-23: Fluoroform (CHF_3)	270	14,800
HFC-134a: 1,1,1,2-Tetrafluoroethane (CH_2FCF_3)	14	1,430
HFC-152a: 1,1-Difluoroethane ($C_2H_4F_2$)	1.4	124
PFC-14: Tetrafluoromethane (CF_4)	50,000	7,390
PFC-116: Hexafluoroethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800
Nitrogen Trifluoride (NF_3)	740	17,200

SOURCE: IPCC, Climate Change 2007: *Working Group I: The Physical Science Basis, Direct Global Warming Potentials*. www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html, accessed January 2, 2024.

3.1.2 Projected Impacts of Global Warming in California

In 2009, California adopted a statewide Climate Adaptation Strategy (CAS) that summarizes climate change impacts and recommends adaptation strategies across seven sectors: Public Health, Biodiversity and Habitat, Oceans and Coastal Resources, Water, Agriculture, Forestry, and Transportation and Energy. The California Natural Resources Agency will be updating the CAS and

[11]GWPs and associated CO_2e values were developed by the Intergovernmental Panel on Climate Change (IPCC) and published in its SAR in 1996. Historically, GHG emission inventories have been calculated using the GWPs from the IPCC's SAR. The IPCC updated the GWP values based on the latest science in its Fourth Assessment Report (AR4). The CARB has begun reporting GHG emission inventories for California using the GWP values from the IPCC AR4.

is responsible for preparing reports to the Governor on the status of the CAS. The Natural Resources Agency has produced climate change assessments which detail impacts of global warming in California.[12] These include:

- Sea level rise, coastal flooding and erosion of California's coastlines would increase, as well as sea water intrusion.
- The Sierra snowpack would decline between 70 and 90 percent, threatening California's water supply.
- Higher risk of forest fires resulting from increasing temperatures and making forests and brush drier. Climate change will affect tree survival and growth.
- Attainment of air quality standards would be impeded by increasing emissions, accelerating chemical processes, and raising inversion temperatures during stagnation episodes resulting in public health impacts.
- Habitat destruction and loss of ecosystems due to climate change affecting plant and wildlife habitats.
- Global warming can cause drought, warmer temperatures and saltwater contamination resulting in impacts to California's agricultural industry.

With regard to public health, as reported by the Center for Health and the Global Environment at the Harvard Medical School, the following are examples of how climate change can affect cardio-respiratory disease: (1) pollen is increased by higher levels of atmospheric CO_2; (2) heat waves can result in temperature inversions, leading to trapped masses or unhealthy air contaminants by smog, particulates, and other pollutants; and (3) the incidence of forest fires is increased by drought secondary to climate change and to the lack of spring runoff from reduced winter snows. These fires can create smoke and haze, which can settle over urban populations causing acute and exacerbating chronic respiratory illness.[13]

3.2 REGULATORY FRAMEWORK

There are several plans, regulations, and programs that include policies, requirements, and guidelines regarding GHG Emissions at the federal, State, regional, and local levels. As described below, these plans, guidelines, and laws include the following:

- Corporate Average Fuel Economy (CAFE) Standards
- Energy Independence and Security Act
- California Air Resources Board
- California Greenhouse Gas Reduction Targets
- California Global Warming Solutions Act (AB 32)
- Climate Change Scoping Plan
- Cap-and-Trade Program
- Emissions Performance Standards
- Renewables Portfolio Standard Program
- Clean Energy and Pollution Reduction Act
- Pavley Standards
- California Low Carbon Fuel Standard
- Advanced Clean Cars Regulations

[12]State of California, Department of Justice, Office of the Attorney General, *Climate Change Impacts in California*, https://oag.ca.gov/environment/impact, accessed July 12, 2022.

[13]Paul R. Epstein, et al., *Urban Indicators of Climate Change – Report from the Center for Health and the Global Environment*, (Harvard Medical School and the Boston Public Health Commission, August 2003), unpaginated.

- Sustainable Communities and Climate Protection Act (SB 375)
- SB 743
- Executive Order N-79-20
- California Appliance Efficiency Regulations
- Title 24, Building Standards Code and CALGreen Code
- CEQA Guidelines
- South Coast Air Quality Management District
- SCAG Regional Transportation Plan/Sustainable Communities Strategy
- Green New Deal
- City of Los Angeles Green Building Code
- City of Los Angeles Solid Waste Programs and Ordinances
- City of Los Angeles General Plan
- Traffic Study Policies and Procedures

3.2.1 Federal

3.2.1.1 CAFE Standards

In response to *the Massachusetts v. Environmental Protection Agency* ruling, President George W. Bush issued Executive Order 13432 in 2007, directing the USEPA, the United States Department of Transportation (USDOT), and the United States Department of Energy (USDOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. The National Highway Traffic Safety Administration (NHTSA) subsequently issued multiple final rules regulating fuel efficiency for and GHG emissions from cars and light-duty trucks for model year 2011 and later for model years 2012–2016. On May 19, 2009, the President of the United States announced a national policy for fuel efficiency and emissions standards in the auto industry. The adopted federal standard applies to passenger cars and light-duty trucks for model years 2012 through 2016.[14] These standards set a combined fleet wide average of 36.9 to 37 for the model years affected.[15]

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011 the USEPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the USEPA, this regulatory program would reduce GHG emissions and fuel consumption for the affected vehicles by six to 23 percent over the 2010 baselines.[16] Building on the first phase of standards, in August 2016, the EPA and NHTSA finalized Phase 2 standards for medium and heavy-duty vehicles through model year 2027 that will improve fuel efficiency and cut carbon pollution. The Phase 2 standards are expected to lower CO_2 emissions by approximately 1.1 billion metric tons.[17]

[14]USEPA, *Final Rule for Model Year 2012 – 2016 Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards*, 2010, https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-model-year-2012-2016-light-duty-vehicle, accessed July 12, 2022.

[15]National Highway Traffic Safety Administration (NHTSA*), Corporate Average Fuel Economy standards*.

[16]The emission reductions attributable to the regulations for medium- and heavy-duty trucks were not included in the Project's emissions inventory due to the difficulty in quantifying the reductions. Excluding these reductions results in a more conservative (i.e., higher) estimate of emissions for the Project.

[17]USEPA, *EPA and NHTSA Adopt Standards to Reduce GHG and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles for Model Year 2018 and Beyond,* August 2016.

3.2.1.2 Energy Independence and Security Act (EISA)

The EISA of 2007 facilitates the reduction of national GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- Requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and
- While superseded by the USEPA and National Highway Traffic Safety Administration (NHTSA) actions described above, (i) establishing miles per gallon targets for cars and light trucks and (ii) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

Additional provisions of EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."[18]

3.2.2 State

3.2.2.1 California Air Resources Board (CARB)

CARB, a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both federal and State air pollution control programs within California. In this capacity, CARB conducts research, sets the California Air Ambient Standard, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB has primary responsibility for the development of the State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts. The SIP is required for the State to take over implementation of the Clean Air Act. CARB also has primary responsibility for adopting regulations to meet the State's goal of reducing GHG emissions to 1990 levels by 2020. Subsequent State goals include reducing GHG emissions to 40 percent below 1990 levels by 2030 and to 80 percent below 1990 levels by 2050.

3.2.2.2 California Greenhouse Gas Reduction Targets

Executive Order S-3-05. Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05,[19] the following GHG emission reduction targets:

- By 2010, California shall reduce GHG emissions to 2000 levels;
- By 2020, California shall reduce GHG emissions to 1990 levels; and

[18]A green job, as defined by the United States Department of Labor, is a job in business that produces goods or provides services that benefit the environment or conserve natural resources.

[19]Center for Climate Strategies, *Executive Order S-3-05*, http://www.climatestrategies.us/library/library/download/294, accessed July 12, 2022.

- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

In accordance with Executive Order S-3-05, the Secretary of California Environmental Protection Agency (CalEPA) is required to coordinate efforts of various agencies, which comprise the California Climate Action Team (CAT), in order to collectively and efficiently reduce GHGs. The CAT provides periodic reports to the Governor and Legislature on the State of GHG reductions in the State as well as strategies for mitigating and adapting to climate change.

The CAT stated that smart land use is an umbrella term for strategies that integrate transportation and land-use decisions. Such strategies generally encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. These strategies develop more efficient land-use patterns within each jurisdiction or region to match population increases, workforce, and socioeconomic needs for the full spectrum of the population.

Executive Order B-30-15. On April 29, 2015, Governor Brown issued Executive Order B-30-15. Therein, the Governor directed the following:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030.
- Ordered all State agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets.
- Directed CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent.

Executive Order B-55-18. Executive Order B-55-18, issued by Governor Brown in September 2018, establishes a new statewide goal to achieve carbon neutrality as soon as possible, but no later than 2045, and achieve and maintain net negative emissions thereafter. Based on this executive order, the CARB would work with relevant State agencies to develop a framework for implementation and accounting that tracks progress towards this goal as well as ensuring future scoping plans identify and recommend measures to achieve the carbon neutrality goal.

3.2.2.3 California Global Warming Solutions Act of 2006

In 2006, the California State Legislature adopted Assembly Bill (AB) 32 (codified in the California Health and Safety Code (HSC), Division 25.5 – California Global Warming Solutions Act of 2006), which focuses on reducing GHG emissions in California to 1990 levels by 2020. HSC Division 25.5 defines regulated GHGs as CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6 and represents the first enforceable statewide program to limit emissions of these GHGs from all major industries, with penalties for noncompliance. The law further requires that reduction measures be technologically feasible and cost effective. Under HSC Division 25.5, CARB has the primary responsibility for reducing GHG emissions. CARB is required to adopt rules and regulations directing State actions that would achieve GHG emissions reductions.

To achieve these goals, which are consistent with the California CAT GHG targets for 2010 and 2020, AB 32 mandates that CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce statewide GHG emissions from stationary sources consistent with the CAT strategies, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. In order to achieve the reduction targets, AB 32 requires

CARB to adopt rules and regulations in an open public process that achieve the maximum technologically feasible and cost-effective GHG reductions.[20]

In 2016, the California State Legislature adopted Senate Bill (SB) 32 and its companion bill AB 197, and both were signed by Governor Brown. SB 32 and AB 197 amend HSC Division 25.5, establish a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and include provisions to ensure that the benefits of State climate policies reach disadvantaged communities. The new plan, outlined in SB 32, involves increasing renewable energy use, imposing tighter limits on the carbon content of gasoline and diesel fuel, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries.

Climate Change Scoping Plan. AB 32 requires CARB to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emission reduction by 2020 (HSC Section 38561 (h)). The *2008 Climate Change Scoping Plan* proposes a "comprehensive set of actions designed to reduce overall carbon GHG emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health."[21] The 2008 Climate Change Scoping Plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms, such as a cap-and-trade system, and an AB 32 implementation fee to fund the program.

The *2008 Climate Change Scoping Plan* calls for a "coordinated set of solutions" to address all major categories of GHG emissions. Transportation emissions were addressed through a combination of higher standards for vehicle fuel economy, implementation of the Low Carbon Fuel Standard (LCFS), and greater consideration to reducing trip length and generation through land use planning and transit-oriented development. Buildings, land use, and industrial operations were encouraged and, sometimes, required to use energy more efficiently. Utility energy providers were required to include more renewable energy sources through implementation of the Renewables Portfolio Standard (RPS).[22] Additionally, the *2008 Climate Change Scoping Plan* emphasizes opportunities for households and businesses to save energy and money through increasing energy efficiency. It indicates that substantial savings of electricity and natural gas will be accomplished through "improving energy efficiency by 25 percent." The *2008 Climate Change Scoping Plan* identifies a number of specific issues relevant to the proposed project, including:

- The potential of using the green building framework as a mechanism, which could enable GHG emissions reductions in other sectors (i.e., electricity, natural gas), noting that:

  > *A Green Building strategy will produce greenhouse gas savings through buildings that exceed minimum energy efficiency standards, decrease consumption of potable water, reduce solid waste during construction and operation, and incorporate sustainable materials. Combined, these measures can also contribute to healthy indoor air quality, protect human health, and minimize impacts to the environment.*

- The importance of supporting the Department of Water Resources' work to implement the Governor's objective to reduce per capita water use by 20 percent by 2020. Specific measures to achieve this goal include water use efficiency, water recycling, and reuse of

[20]CARB's list of discrete early action measures that could be adopted and implemented before January 1, 2010, was approved on June 21, 2007. The three adopted discrete early action measures are: (1) a low-carbon fuel standard, which reduces carbon intensity in fuels statewide; (2) reduction of refrigerant losses from motor vehicle air conditioning system maintenance; and (3) increased methane capture from landfills, which includes requiring the use of state-of-the-art capture technologies.

[21]CARB, *Climate Change Scoping Plan*, December 2008.

[22]For a discussion of Renewables Portfolio Standard, refer to subsection 3.2.2(D)(i) Renewables Portfolio Standard.

urban runoff. The Climate Change Scoping Plan notes that water use requires significant amounts of energy, including approximately one-fifth of statewide electricity.

- Encouraging local governments to set quantifiable emission reduction targets for their jurisdictions and use their influence and authority to encourage reductions in emissions caused by energy use, waste and recycling, water and wastewater systems, transportation, and community design.

As required by HSC Division 25.5, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions reduction target for 2020. The 2020 emissions reduction target was originally set at 427 MMT CO_2e using the GWP values from the IPCC SAR. Forecasting the amount of emissions that would occur in 2020 if no actions are taken was necessary to assess the scope of the reductions California has to make to return to the 1990 emissions level by 2020 as required by AB 32. CARB originally defined the "business-as-usual" (BAU) scenario as emissions in the absence of any GHG emission reduction measures discussed in the *2008 Climate Change Scoping Plan*, as approximately 596 $MMTCO_2$e (using GWP values from the IPCC SAR). For example, in further explaining CARB's BAU methodology, CARB assumed that all new electricity generation would be supplied by natural gas plants, no further regulatory action would impact vehicle fuel efficiency, and building energy efficiency codes would be held at 2005 standards. Therefore, under these original projections, the State would have had to reduce its 2020 BAU emissions by 28.4 percent to meet the 1990 target of 427 $MMTCO_2$e.

In the *2008 Climate Change Scoping Plan*, CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of approximately 28.5 percent from the otherwise projected 2020 emissions level (i.e., those emissions that would occur in 2020, absent GHG-reducing laws and regulations).[23] CARB originally used an average of the State's GHG emissions from 2002 through 2004 and projected the 2020 levels at approximately 596 $MMTCO_2$e (using GWP values from the IPCC SAR). Therefore, under the original projections, the State would have had to reduce its 2020 BAU emissions by 28.4 percent in order to meet the 1990 target of 427 $MMTCO_2$e.

2014 Update to the Climate Change Scoping Plan. The First Update to the Scoping Plan was approved by CARB in May 2014 and built upon the initial Scoping Plan with new strategies and recommendations.[24] In 2014, CARB revised the target using the GWP values from the IPCC AR4 and determined the 1990 GHG emissions inventory and 2020 GHG emissions limit to be 431 $MMTCO_2$e. CARB also updated the State's 2020 BAU emissions estimate to account for the effect of the 2007–2009 economic recession, new estimates for future fuel and energy demand, and the reductions required by regulation that had recently been adopted for motor vehicles and renewable energy. CARB's projected statewide 2020 emissions estimate using the GWP values from the IPCC AR4 is 509.4 $MMTCO_2$e. Therefore, under the first update to the Scoping Plan, the emission reductions necessary to achieve the 2020 emissions target of 431 $MMTCO_2$e would have been 78.4 $MMTCO_2$e, or a reduction of GHG emissions by approximately 15.4 percent, (down from 28.4 percent).

The stated purpose of the First Update was to "highlight… California's success to date in reducing its GHG emissions and lay… the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050."[25] The First Update found that California is on track to meet the 2020 emissions reduction mandate established by AB 32 and noted that California could reduce emissions further by 2030 to levels squarely in line

[23]CARB, *Climate Change Scoping Plan: A Framework for Change*, p. 12, December 2008.
[24]CARB, *First Update to the Climate Change Scoping Plan: Building on the Framework Pursuant to AB 32 The California Global Warming Solutions Act of 2006*, May 2014, accessed July 12, 2022.
[25]*Ibid*, p. 4.

with those needed to stay on track to reduce emissions to 80 percent below 1990 levels by 2050 if the State realizes the expected benefits of existing policy goals.[26]

In conjunction with the First Update, CARB identified "six key focus areas comprising major components of the State's economy to evaluate and describe the larger transformative actions that will be needed to meet the State's more expansive emission reduction needs by 2050."[27] Those six areas are: (1) energy; (2) transportation (vehicles/equipment, sustainable communities, housing, fuels, and infrastructure); (3) agriculture; (4) water; (5) waste management; and (6) natural and working lands. The First Update identifies key recommended actions for each sector that will facilitate achievement of the 2050 reduction target.

Based on CARB's research efforts, it has a "strong sense of the mix of technologies needed to reduce emissions through 2050."[28] Those technologies include energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies.

The First Update discusses new residential and commercial building energy efficiency improvements, specifically identifying progress towards zero net energy buildings as an element of meeting mid-term and long-term GHG reduction goals. The First Update expresses CARB's commitment to working with the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) to facilitate further achievements in building energy efficiency.

2017 Update to the Climate Change Scoping Plan. In response to the passage of SB 32 and the identification of the 2030 GHG reduction target, CARB adopted the *2017 Climate Change Scoping Plan* at a public meeting held in December 2017.[29] The 2017 Update builds upon the framework established by the *2008 Climate Change Scoping Plan* and the *First Update* while identifying new, technologically feasible, and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health. The *2017 Update* includes policies to require direct GHG reductions at some of the State's largest stationary sources and mobile sources. These policies include the use of lower GHG fuels, efficiency regulations, and the Cap-and-Trade program, which constraints and reduces emissions at covered sources.[30]

CARB's projected statewide 2030 emissions inventory takes into account 2020 GHG reduction policies and programs.[31] The 2017 Scoping Plan also addresses GHG emissions from natural and working lands of California, including the agriculture and forestry sectors. Under the Scoping Plan Scenario, the majority of the reductions would result from the continuation of the Cap-and-Trade regulation. Additional reductions would be achieved from electricity sector standards (i.e., utility providers to supply 50 percent renewable electricity by 2030), doubling the energy efficiency savings at end uses, additional reductions from the LCFS, implementing the short-lived GHG strategy (e.g., HCFs), and implementing the mobile source strategy and sustainable freight action plan. Implementation of mobile source strategies (cleaner technology and fuels) include the following:

[26]CARB, *First Update to the Climate Change Scoping Plan: Building on the Framework Pursuant to AB 32 The California Global Warming Solutions Act of 2006*, May 2014, p. 14, accessed July 12, 2022.
[27]*Ibid*, p. 6.
[28]*Ibid*, p. 32.
[29]CARB, *California's 2017 Climate Change Scoping Plan*, November 2017, https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf, accessed July 12, 2022.
[30]*Ibid*, p. 6.
[31]*Ibid*.

- At least 1.5 million zero emission and plug-in hybrid light-duty electric vehicles by 2025
- At least 4.2 million zero emission and plug-in hybrid light-duty electric vehicles by 2030
- Further increase GHG stringency on all light-duty vehicles beyond existing Advanced Clean Cars regulations
- Medium- and heavy-duty GHG Phase 2
- Innovative Clean Transit: Transition to a suite of to-be-determined innovative clean transit options. Assumed 20 percent of new urban buses purchased beginning in 2018 will be zero emission buses with the penetration of zero-emission technology ramped up to 100 percent of new sales in 2030. Also, new natural gas buses, starting in 2018, and diesel buses, starting in 2020, meet the optional heavy-duty low-NO_X standard.
- Last Mile Delivery: New regulation that would result in the use of low NO_X or cleaner engines and the deployment of increasing numbers of zero-emission trucks primarily for Class 3–7 last mile delivery trucks in California. This measure assumes Zero-Emission Vehicles (ZEVs) comprise 2.5 percent of new Class 3–7 truck sales in local fleets starting in 2020, increasing to 10 percent in 2025 and remaining flat through 2030.
- Further reduce VMT through continued implementation of SB 375 and regional Sustainable Communities Strategies; forthcoming statewide implementation of SB 743; and potential additional VMT reduction strategies not specified in the Mobile Source Strategy but included in the document "Potential VMT Reduction Strategies for Discussion."

The alternatives in the Scoping Plan are designed to consider various combinations of these programs, as well as consideration of a carbon tax in the event the Cap-and-Trade regulation is not continued. However, in July 2017, the California Legislature voted to extend the Cap-and-Trade regulation to 2030.

The 2017 Scoping Plan discusses the role of local governments in meeting the State's greenhouse gas reductions goals because local governments have jurisdiction and land use authority related to: community-scale planning and permitting processes, local codes and actions, outreach and education programs, and municipal operations.[32] Furthermore, local governments may have the ability to incentivize renewable energy, energy efficiency, and water efficiency measures.[33]

For individual projects under CEQA, the 2017 Scoping Plan states that local governments can support climate action when considering discretionary approvals and entitlements. According to the 2017 Scoping Plan, lead agencies have the discretion to develop evidence-based numeric thresholds consistent with the Scoping Plan, the State's long-term goals, and climate change science.[34]

The City has not developed per capita targets for 2030 or 2050; however, the City recognizes that GHG emissions reductions are necessary in the public and private sectors. The City has taken the initiative in combating climate change by developing programs such as the Green New Deal and Green Building Code. Each of these programs is discussed further below.

[32]CARB, *California's 2017 Climate Change Scoping Plan*, p. 97, November 2017.
[33]*Ibid.*
[34]CARB, *California's 2017 Climate Change Scoping Plan*, p. 100, November 2017.

A summary of the GHG emissions reductions required under HSC Division 25.5 is provided in **Table 3-3**, *Estimated Statewide Greenhouse Gas Emissions Reductions Required by HSC Division 25.5*. Under the Scoping Plan Scenario, continuation of the Cap-and-Trade regulation (or carbon tax) is expected to cover approximately 34 to 79 $MMTCO_2$ of the 2030 reduction obligation.[35] The State's short-lived climate pollutants strategy, which is for GHGs that remain in the atmosphere for shorter periods of time compared to longer-lived GHGs like CO_2, is expected to cover approximately 17 to 35 $MMTCO_2e$. The Renewables Portfolio Standard with 50 percent renewable electricity by 2030 is expected to cover approximately 3 $MMTCO_2$. The mobile source strategy and sustainable freight action plan includes maintaining the existing vehicle GHG emissions standards, increasing the number of zero emission vehicles and improving the freight system efficiency, and is expected to cover approximately 11 to 13 $MMTCO_2$.

TABLE 3-3: STATEWIDE GHG EMISSIONS REDUCTIONS REQUIRED BY HSC DIVISION 25.5

Emissions Scenario	GHG Emissions ($MMTCO_2e$)
2008 SCOPING PLAN (IPCC SAR)	
2020 BAU Forecast (CARB 2008 Scoping Plan Estimate)	596
2020 Emissions Target Set by AB 32 (i.e., 1990 level)	427
Reduction below Business-As-Usual necessary to achieve 1990 levels by 2020	169 (28.4%) /a/
2011 SCOPING PLAN (IPCC AR4)	
2020 BAU Forecast (CARB 2011 Scoping Plan Estimate)	509.4
2020 Emissions Target Set by AB 32 (i.e., 1990 level)	431
Reduction below Business-As-Usual necessary to achieve 1990 levels by 2020	78.4 (15.4%) /b/
2017 SCOPING PLAN UPDATE	
2030 BAU Forecast ("Reference Scenario" which includes 2020 GHG reduction policies and programs)	389
2030 Emissions Target Set by HSC Division 25.5 (i.e., 40% below 1990 Level)	260
Reduction below Business-As-Usual Necessary to Achieve 40% below 1990 Level by 2030	129 (33.2%) /c/

NOTES: *$MMTCO_2e$ = million metric tons of carbon dioxide equivalents*

/a/ 596 – 427 = 169 / 596 = 28.4%

/b/ 509.4 – 431 = 78.4 / 509.4 = 15.4%

/c/ 389 – 260 = 129 / 389 = 33.2%

SOURCE: CARB, *Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document (FED), Attachment D*, August 19, 2011; CARB, *2020 Business-as-Usual (BAU) Emissions Projection, 2014 Edition*, 2017, http://www.arb.ca.gov/cc/inventory/data/bau.htm, accessed July 12, 2022; CARB, *California's 2017 Climate Change Scoping Plan*, November 2017, https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf, accessed January 2, 2024.

2022 Scoping Plan for Achieving Carbon Neutrality. The 2022 Scoping Plan Update is the most comprehensive and far-reaching Scoping Plan developed to date. It identifies a technologically feasible, cost-effective, and equity-focused path to achieve new targets for carbon neutrality by 2045 and to reduce anthropogenic GHG emissions to at least 85 percent below 1990 levels, while also assessing the progress California is making toward reducing its GHG emissions by at least 40

[35]CARB, *California's 2017 Climate Change Scoping Plan, Appendix G*, November 2017, https://www.arb.ca.gov/cc/scopingplan/2030sp_appg_alt-ab197aq-health_final.pdf, accessed January 2, 2024.

percent below 1990 levels by 2030, as called for in SB 32 and laid out in the 2017 Scoping Plan.[36] The 2030 target is an interim but important stepping stone along the critical path to the broader goal of deep decarbonization by 2045. The relatively longer path assessed in the 2022 Scoping Plan Update incorporates, coordinates, and leverages many existing and ongoing efforts to reduce GHGs and air pollution, while identifying new clean technologies and energy. Given the focus on carbon neutrality, the 2022 Scoping Plan Update also includes discussion for the first time of the natural and working lands sectors as sources for both sequestration and carbon storage, and as sources of emissions as a result of wildfires. **Table 3-4** provides an overview of the GHG emissions reductions that are forecasted in the 2022 Scoping Plan Update.

TABLE 3-4: STATEWIDE GHG EMISSIONS REDUCTIONS IN THE 2022 SCOPING PLAN

Emissions Scenario	GHG Emissions ($MMTCO_2e$)
2019	
2019 State GHG Emissions	404
2030	
2030 BAU Forecast	312
2030 GHG Emissions without Carbon Removal and Capture	233
2030 GHG Emissions with Carbon Removal and Capture	226
2030 Emissions Target Set by AB 32 (i.e., 1990 levels by 2030)	260
Reduction below BAU Necessary to Achieve 1990 Levels by 2030	52 (16.7%)/a/
2045	
2045 BAU Forecast	266
2045 GHG Emissions without Carbon Removal and Capture	72
2045 GHG Emissions with Carbon Removal and Capture	(3)

NOTES: *$MMTCO_2e$ = million metric tons of carbon dioxide equivalents; parenthetical numbers represent negative values.*
/a/ 312 – 260 = 52; 52 / 312 = 16.7%
SOURCE: CARB, *2022 Climate Change Scoping Plan for Achieving Carbon Neutrality*, accessed January 2, 2024.

Cap-and-Trade Program. The Climate Change Scoping Plan identified a Cap-and-Trade Program as one of the strategies California would employ to reduce GHG emissions. CARB asserts that this program will help put California on the path to meet its goal of reducing GHG emissions to 1990 levels by the year 2020, and ultimately achieving an 80 percent reduction from 1990 levels by 2050. Under Cap-and-Trade, an overall limit on GHG emissions from capped sectors is established and facilities subject to the cap will be able to trade permits to emit GHGs. CARB designed and adopted a California Cap-and-Trade Program pursuant to its authority under AB 32.[37] The development of this Program included a multi-year stakeholder process and consideration of potential impacts on disproportionately impacted communities. The Cap-and-Trade Program is designed to reduce GHG emissions from public and private major sources (deemed "covered entities") by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve AB 32's emission-reduction mandate of returning to 1990 levels of emissions by 2020. The statewide cap for GHG

[36] *CARB, California's 2017 Climate Change Scoping Plan, 2017,* ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf.

[37] California Code of Regulations 17, Sections 95800 to 96023.

emissions from the capped sectors (e.g., electricity generation, petroleum refining, and cement production) commenced in 2013 and will decline over time, achieving GHG emission reductions throughout the Program's duration.[38]

Under the Cap-and-Trade Program, CARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities that emit more than 25,000 $MTCO_2e$ per year must comply with the Cap-and-Trade Program.[39] Triggering of the 25,000 $MTCO_2e$ per year "inclusion threshold" is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Mandatory Reporting Rule or "MRR").[40]

Each covered entity with a compliance obligation is required to surrender "compliance instruments"[41] for each $MTCO_2e$ of GHG they emit. Covered entities are allocated free allowances in whole or part (if eligible), and are able to buy allowances at auction, purchase allowances from others, or purchase offset credits.

The Cap-and-Trade Regulation provides a firm cap, ensuring that the statewide emission limits will not be exceeded. In sum, the Cap-and-Trade Program will achieve aggregate, rather than site-specific or project-level, GHG emissions reductions. Also, due to the regulatory architecture adopted by CARB under AB 32, the reductions attributed to the Cap-and-Trade Program can change over time depending on the State's emissions forecasts and the effectiveness of direct regulatory measures.

The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-State or imported.[42] Accordingly, for projects that are subject to the CEQA, GHG emissions from electricity consumption are covered by the Cap-and-Trade Program. The Program applies to emissions that cover approximately 80 percent of the State's GHG emissions. Demonstrating the efficacy of AB 32 policies, California achieved its 2020 GHG Reduction Target four years earlier than mandated. The largest reductions were the result of increased renewable electricity in the electricity sector, which is a covered sector in the Cap-and-Trade Program.

AB 398 was enacted in 2017 to extend and clarify the role of the State's Cap-and-Trade Program through December 31, 2030. As part of AB 398, refinements were made to the Cap-and-Trade program to establish updated protocols and allocation of proceeds to reduce GHG emissions.

3.2.2.4 Energy-Related (Stationary) Sources

Emission Performance Standards. SB 1368, signed September 29, 2006, is a companion bill to AB 32, which requires the CPUC and the CEC to establish GHG emission performance standards for the generation of electricity. These standards also generally apply to power that is generated outside of California and imported into the State. SB 1368 provides a mechanism for reducing the emissions of electricity providers, thereby assisting CARB to meet its mandate under AB 32.

Renewables Portfolio Standard. SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017 as an RPS. Subsequent amendments

[38]*Ibid,* Sections 95811 and 95812.
[39]*Ibid,* Section 95812.
[40]*Ibid,* Sections 95100-95158.
[41]Compliance instruments are permits to emit, the majority of which will be "allowances," but entities also are allowed to use CARB-approved offset credits to meet up to 8% of their compliance obligations.
[42]California Code of Regulations 17, Section 95811(b).

provided additional targets throughout the years. Most recently, on October 7, 2015, SB 350 (Chapter 547, Statues of 2015), also known as the Clean Energy and Pollution Reduction Act, further increased the RPS to 50 percent by 2030. The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027. SB 350 also requires the State to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. The 2017 Climate Change Scoping Plan incorporated the SB 350 standards and estimated the GHG reductions would account for approximately 21 percent of the Scoping Plan reductions.[43] On September 10, 2018, SB 100, provided additional RPS targets of 44 percent by 2024, 52 percent by 2027, and 60 percent by 2030, and that CARB should plan for 100 percent eligible renewable energy resources and zero-carbon resources by 2045.[44]

3.2.2.5 Mobile Sources

Pavley Standards. AB 1493 (Chapter 200, Statutes of 2002), enacted on July 22, 2002, required CARB to set GHG emission standards for passenger vehicles, light duty trucks, and other vehicles whose primary use is non-commercial personal transportation manufactured in and after 2009. In 2004, CARB approved the Pavley regulation to require automakers to control GHG from new passenger vehicles for the 2009 through 2016 model years. Upon adoption of subsequent federal GHG standards by the USEPA that preserved the benefits of the Pavley regulations, the Pavley regulations were revised to accept compliance with the federal standards as compliance with California's standards in the 2012 through 2016 model years. This is referred to as the "deemed to comply" option.

In January 2012, CARB approved greenhouse gas emission regulations which require further reductions in passenger greenhouse gas emissions for 2017 and subsequent vehicle model years. As noted above, in August 2012, the USEPA and USDOT adopted GHG emission standards for model year 2017 through 2025 vehicles. On November 15, 2012, CARB approved an amendment that allows manufacturers to comply with the 2017-2025 national standards to meet State law. Automobile manufacturers generally comply with these standards through a combination of improved energy efficiency in vehicle equipment (e.g., air conditioning systems) and engines as well as sleeker aerodynamics, use of strong but lightweight materials, and lower-rolling resistance tires.[45]

California Low Carbon Fuel Standard. Executive Order S-01-07 was enacted on January 18, 2007. The order mandates the following: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and (2) that a LCFS for transportation fuels be established in California. The final regulation was approved by the Office of Administrative Law and filed with the Secretary of State on January 12, 2010. In September 2015, CARB approved the re-adoption of the LCFS to address procedural deficiencies in the way the original regulation was adopted.[46] The development of the 2017 Update has identified LCFS as a regulatory measure to reduce GHG emission to meet the 2030 emissions target. In September 2018, the standards were amended by CARB to require a 20 percent reduction in carbon intensity by 2030, aligning with California's 2030 targets set by SB 32.[47]

[43]CARB, *California's 2017 Climate Change Scoping Plan*, Table 3, p. 31, November 2017. Calculated as: (108 – 53) / 260 = 21 percent.

[44]California Legislative Information, *SB-100 California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases*.

[45]CARB, *California's Advanced Clean Cars Midterm Review*, pp. ES-17, C-9.

[46]CARB, *Low Carbon Fuel Standard*, 2018, https://www.arb.ca.gov/fuels/lcfs/lcfs.htm, accessed July 12, 2022.

[47]CARB, *CARB amends Low Carbon Fuel Standard for wider impact*, 2018, https://ww2.arb.ca.gov/index.php/news/carb-amends-low-carbon-fuel-standard-wider-impact, accessed July 12, 2022.

Advanced Clean Cars Regulations. In 2012, CARB approved the Advanced Clean Cars program, a new emissions-control program for model years 2015–2025.[48] The components of the Advanced Clean Cars program include the Low-Emission Vehicle (LEV) regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the ZEV regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles in the 2018 through 2025 model years. During the March 2017 Midterm Review, CARB voted unanimously to continue with the vehicle GHG emission standards and the ZEV program for cars and light trucks sold in California through 2025.[49] Effective November 26, 2019, the federal SAFE Vehicles Rule Part One: One National Program withdrew the California waiver for the GHG and ZEV programs under section 209 of the Clean Air Act, which revokes California's authority to implement the Advanced Clean Cars and ZEV mandates. In response, several states including California filed a lawsuit challenging the withdrawal of the EPA waiver.[50] In April 2021, the USEPA announced it will move to reconsider its previous withdrawal of the waiver.[51]

In addition, Governor Gavin Newsom signed an executive order (Executive Order No. N-79-20) on September 23, 2020, that would phase out sales of new gas-powered passenger cars by 2035 in California with an additional 10-year transition period for heavy vehicles. The State would not restrict used car sales, nor forbid residents from owning gas-powered vehicles. In accordance with the Executive Order, CARB is developing a 2020 Mobile Source Strategy, a comprehensive analysis that presents scenarios for possible strategies to reduce the carbon, toxic and unhealthy pollution from cars, trucks, equipment, and ships. The strategies will provide important information for numerous regulations and incentive programs going forward by conveying what is necessary to address the aggressive emission reduction requirements.

The primary mechanism for achieving the ZEV target for passenger cars and light trucks is CARB's Advanced Clean Cars II (ACC II) Program. The ACC II regulations will focus on post-2025 model year light-duty vehicles, as requirements are already in place for new vehicles through the 2025 model year.

Sustainable Communities and Climate Protection Act (SB 375). The Sustainable Communities and Climate Protection Act of 2008, or SB 375 (Chapter 728, Statutes of 2008), establishes mechanisms for the development of regional targets for reducing passenger vehicle GHG emissions, was adopted by the State on September 30, 2008. SB 375 finds that the "transportation sector is the single largest contributor of greenhouse gases of any sector."[52] Under SB 375, CARB is required, in consultation with the Metropolitan Planning Organizations, to set regional GHG reduction targets for the passenger vehicle and light-duty truck sector for 2020 and 2035. SCAG is the Metropolitan Planning Organization in which the City of Los Angeles is located in. CARB set targets for 2020 and 2035 for each of the 18 metropolitan planning organization regions in 2010, and updated them in 2018.[53] In March 2018, the CARB updated the SB 375 targets for the SCAG region to require an 8 percent reduction by 2020 and a 19 percent reduction by 2035 in per capita passenger vehicle GHG emissions.[54] As discussed further below, SCAG has adopted an updated Regional Transportation Plan / Sustainable Community Strategies (RTP/SCS) subsequent to the update of the emission

[48]CARB, *California's Advanced Clean Cars Program*, www.arb.ca.gov/msprog/acc/acc.htm.

[49]CARB, News Release: *CARB finds vehicle standards are achievable and cost-effective*, ww2.arb.ca.gov/news/carb-finds-vehicle-standards-are-achievable-and-cost-effective, accessed July 12, 2022.

[50]United States District Court for the District Court of Columbia, State of California vs. Chao, Case 1:19-cv-02826, 2019.

[51]United States Federal Register, *California State Motor Vehicle Pollution Control Standards; Advanced Clean Car Program; Reconsideration of a Previous Withdrawal of a Waiver of Preemption; Opportunity for Public Hearing and Public Comment (Document Number: 2021-08826)*, April 28, 2021.

[52]State of California, Senate Bill No. 375, September 30, 2008.

[53]CARB, *Sustainable Communities & Climate Protection Program – About*. https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-climate-protection-program/about, accessed July 12, 2022.

[54]CARB, *SB 375 Regional Greenhouse Gas Emissions Reduction Targets*, 2018.

targets. The 2020–2045 RTP/SCS is expected to reduce per capita transportation emissions by 19 percent by 2035, which is consistent with SB 375 compliance with respect to meeting the State's GHG emission reduction goals.[55]

Under SB 375, the target must be incorporated within that region's RTP, which is used for long-term transportation planning, in SCS) Certain transportation planning and programming activities would then need to be consistent with the SCS; however, SB 375 expressly provides that the SCS does not regulate the use of land, and further provides that local land use plans and policies (e.g., general plans) are not required to be consistent with either the RTP or SCS.

Senate Bill 743. Governor Brown signed SB 743 in 2013, which creates a process to change the way that transportation impacts are analyzed under CEQA. Specifically, SB 743 requires the Office of Planning and Research (OPR) to amend the CEQA Guidelines to provide an alternative to level of service methodology for evaluating transportation impacts. Particularly within areas served by transit, the required alternative criteria must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." Measurements of transportation impacts may include "vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated."

3.2.2.6 Building Standards

California Appliance Efficiency Regulations. The 2014 Appliance Efficiency Regulations (Title 20, Sections 1601 through 1608), adopted by the CEC, include standards for new appliances (e.g., refrigerators) and lighting, if they are sold or offered for sale in California. These standards include minimum levels of operating efficiency, and other cost-effective measures, to promote the use of energy- and water-efficient appliances.

Title 24, Building Standards Code and CALGreen Code. The CEC first adopted the Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the State. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods.

Part 11 of the Title 24 Building Standards is referred to as the California Green Building Standards (CALGreen) Code and was developed to help the State achieve its GHG reduction goals under HSC Division 25.5 (e.g., AB 32) by codifying standards for reducing building-related energy, water, and resource demand, which in turn reduces GHG emissions from energy, water, and resource demand. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality."[56] The CALGreen Code is not intended to substitute for or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission. The CALGreen Code establishes mandatory measures for new residential and non-

[55]SCAG, *Final 2020–2045 RTP/SCS, Chapter 0: Making Connections*, p. 5, 2020.
[56]California Building Standards Commission, *2010 California Green Building Standards Code*, (2010).

residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality.[57]

On August 11, 2021, the CEC adopted the 2022 Title 24 Standards, which went into effect on January 1, 2023. The 2022 standards continue to improve upon the previous (2019) Title 24 standards for new construction of, and additions and alterations to, residential and non-residential buildings.[58] The 2022 Title 24 Standards "build on California's technology innovations, encouraging energy efficient approaches to encourage building decarbonization, emphasizing in particular on heat pumps for space heating and water heating. This set of Energy Codes also extends the benefits of photovoltaic and battery storage systems and other demand flexible technology to work in combinations with heat pumps to enable California buildings to be responsive to climate change. This Energy code also strengthens ventilation standards to improve indoor air quality. This update provides crucial steps in the state's progress toward 100 percent clean carbon neutrality by midcentury." The 2022 Energy Code is anticipated to reduce GHG emissions by 10 $MMTCO_2e$ over the next 30 years and result in approximately 1.5 billion dollars in consumer savings.[59] Compliance with Title 24 is enforced through the building permit process.

However, neither a threshold of significance nor any specific mitigation measures are included or provided in the Guidelines Amendments.[60] The Guidelines Amendments require a lead agency to make a good-faith effort, based on the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of GHG emissions resulting from a project. The Guidelines Amendments give discretion to the lead agency whether to: (1) use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use; or (2) rely on a qualitative analysis or performance-based standards. Furthermore, the Guidelines Amendments identify three factors that should be considered in the evaluation of the significance of GHG emissions:

1. The extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.[61]

The administrative record for the Guidelines Amendments also clarifies "that the effects of greenhouse gas emissions are cumulative and should be analyzed in the context of California Environmental Quality Act's requirements for cumulative impact analysis."[62]

[57]*Ibid.*

[58]CEC, 2022 *Building Energy Efficiency Standards.*

[59]CEC, *Energy Commission Adopts Updated Building Standards to Improve Efficiency, Reduce Emissions from Homes and Businesses*, https://www.energy.ca.gov/news/2021-08/energy-commission-adopts-updated-building-standards-improve-efficiency-reduce-0, accessed January 30, 2024.

[60]See 14 Cal. Code Regs. §§ 15064.7 (generally giving discretion to lead agencies to develop and publish thresholds of significance for use in the determination of the significance of environmental effects), 15064.4 (giving discretion to lead agencies to determine the significance of impacts from GHGs).

[61]14 Cal. Code Regs. § 15064.4(b).

[62]Letter from Cynthia Bryant, Director of the Governor's Office of Planning and Research to Mike Chrisman, California Secretary for Natural Resources, dated April 13, 2009.

3.2.3 Regional

3.2.3.1 South Coast Air Quality Management District (SCAQMD)

The City of Los Angeles is located in the South Coast Air Basin (Air Basin), which consists of Orange County, Los Angeles County (excluding the Antelope Valley portion), and the western, non-desert portions of San Bernardino and Riverside Counties, in addition to the San Gorgonio Pass area in Riverside County. SCAQMD is responsible for air quality planning in the Air Basin and developing rules and regulations to bring the area into attainment of the ambient air quality standards. This is accomplished through air quality monitoring, evaluation, education, implementation of control measures to reduce emissions from stationary sources, permitting and inspection of pollution sources, enforcement of air quality regulations, and by supporting and implementing measures to reduce emissions from motor vehicles.

In 2008, SCAQMD released draft guidance regarding interim CEQA GHG significance thresholds.[63] A GHG Significance Threshold Working Group was formed to further evaluate potential GHG significance thresholds.[64] The SCAQMD proposed the use of a percent emission reduction target to determine significance for industrial park/warehouse projects that emit greater than 3,000 $MTCO_2e$ per year. Under this proposal, industrial park/warehouse projects that emit fewer than 3,000 $MTCO_2e$ per year would be assumed to have a less than significant impact on climate change. This threshold was not formally adopted and the SCAQMD has yet to adopt a GHG significance threshold for land use development projects. The Working Group has been inactive since 2011, and SCAQMD has not formally adopted any GHG significance threshold for other jurisdictions.

3.2.3.2 SCAG Regional Transportation Plan/Sustainable Communities Strategy

To implement SB 375 and reduce GHG emissions by correlating land use and transportation planning, SCAG adopted the 2020–2045 RTP/SCS in October 2020. The vision for the region incorporates a range of best practices for increasing transportation choices, reducing dependence on personal automobiles, further improving air quality, and encouraging growth in walkable, mixed-use communities with ready access to transit infrastructure and employment. More and varied housing types and employment opportunities would be located in and near job centers, transit stations and walkable neighborhoods where goods and services are easily accessible via shorter trips. To support shorter trips, people would have the choice of using neighborhood bike networks, car share or micro-mobility services like shared bicycles or scooters. For longer commutes, people would have expanded regional transit services and more employer incentives to carpool or vanpool. Other longer trips would be supported by on-demand services such as microtransit, carshare, and citywide partnerships with ride hailing services. For those that choose to drive, hotspots of congestion would be less difficult to navigate due to cordon pricing and using an electric vehicle will be easier thanks to an expanded regional charging network.

The 2020–2045 RTP/SCS states that the SCAG region was home to about 18.8 million people in 2016 and currently includes approximately 6.0 million homes and 8.4 million jobs.[65] By 2045, the integrated growth forecast projects that these figures will increase by 3.7 million people, with nearly 1.6 million more homes and 1.6 million more jobs. Transit Priority Areas[66] (TPAs) will account for

[63]SCAQMD, *Board Meeting, December 5, 2008, Agenda No. 31*, http://www3.aqmd.gov/hb/2008/December/081231a.htm, accessed July 12, 2022.

[64]SCAQMD, *Greenhouse Gases CEQA Significance Thresholds*, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ghg-significance-thresholds, accessed July 12, 2022.

[65]SCAG, 2020–2045 RTP/SCS population growth forecast methodology includes data for years 2010, 2010, 2016, and 2045.

[66]Defined by the 2020–2045 RTP/SCS as generally walkable transit villages or corridors that are within 0.5 mile of a major transit stop (rail or bus rapid transit station) with 15-minute or less service frequency during peak commute hours.

less than 1 percent of regional total land but are projected to accommodate 30 percent of future household growth between 2016 and 2045. The 2020–2045 RTP/SCS overall land use pattern reinforces the trend of focusing new housing and employment in the region's TPAs.

The 2020–2045 RTP/SCS is expected to reduce per capita transportation emissions by 19 percent by 2035, which is consistent with SB 375 compliance with respect to meeting the State's GHG emission reduction goals.[67] Due to fuel economy and efficiency improvements, GHG emission rates of model year 2017 vehicles have decreased by 15 to 20 percent when compared to model year 2008 and earlier vehicles. However, for purposes of SB 375 emissions reduction targets, the fuel economy improvements have been largely excluded from the reduction calculation. The SB 375 target focuses on the amount of vehicle travel per capita. As discussed above, OPR recommended that achieving 15 percent lower per capita (residential) or per employee (office) VMT than existing development is both generally achievable and is supported by evidence that connects this level of reduction to the State's emissions goals (i.e., SB 375 goal). The reductions generated by fuel economy improvements are already included as part of the State's GHG emissions reduction program and are not double counted in the SB 375 target calculation.

3.2.4 Local

3.2.4.1 LADWP Power Strategic Long-Term Resource Plan

The 2022 Power Strategic Long-Term Resource Plan (SLTRP) serves as a comprehensive roadmap through 2045 that guides LADWP Power System in its efforts to supply reliable electricity in an environmentally responsible and cost-effective manner. The 2022 SLTRP is largely driven by Mayoral directives and City Council motions that instructed LADWP to prepare an SLTRP to achieve 100 percent carbon-free energy by 2035. Previous SLTRPs, including the most recent 2017 SLTRP, only considered incremental updates in clean energy objectives which reflected the general cadence of development within the power utility industry. The 2022 SLTRP includes numerous updates related to new renewable projects, associated transmission upgrade cost and fuel cost assumptions, staffing requirements, and several other critical updates. The SLTRP uses system modeling tools to analyze and determine the long-term economic, environmental, and operational impact of alternative resource portfolios by simulating the integration of new resource alternatives within LADWP's existing mix of assets and providing the analytic results to inform the selection of a recommended case that considers various factors such as minimal adverse rate impacts on customers, prioritizing environmental stewardship and equity, and maintaining reliability and resiliency.

3.2.4.2 Green New Deal

The City of Los Angeles first addressed the issue of global climate change in *GreenLA, An Action Plan to Lead the Nation in Fighting Global Warming* ("LA Green Plan/ClimateLA") in 2007.[68] This document outlines the goals and actions the City has established to reduce the generation and emission of GHGs from both public and private activities.

On April 8, 2015, Mayor Eric Garcetti released Los Angeles' first ever *Sustainable City pLAn* (the *pLAn*).[69] The *pLAn* sets the course for a cleaner environment and stronger economy, with commitment to equity as its foundation. The pLAn is made up of short term (2017 horizon) and long term (2025 and 2035 horizons) targets in various topic areas, including: water, solar power, energy-efficient buildings, carbon and climate leadership, waste and landfills, housing and development,

[67]SCAG, *Final 2020–2045 RTP/SCS, Chapter 0: Making Connections*, p. 5, 2020.
[68]City of Los Angeles, *GreenLA: An Action Plan to Lead the Nation in Fighting Global Warming*, 2007.
[69]City of Los Angeles, *Sustainable City pLAn*, April 2015, http://plan.lamayor.org/wp-content/uploads/2017/03/the-plan.pdf, accessed July 12, 2022.

mobility and transit, and air quality, among others. The pLAn set out an ambitious vision for cutting GHG emissions, reducing the impact of climate change and building support for national and global initiatives. The 2015 *Sustainable City pLAn* sets targets to reduce GHG emissions below the 1990 baseline level by 45 percent by 2025, 60 percent by 2035, and 80 percent by 2050. Specific targets included increasing the proportion of new housing units built within 1,500 feet of transit to 57 percent by 2025, reducing VMT per capita by five percent by 2025, and increasing trips made by walking, biking, or transit by at least 35 percent by 2025.

In April 2019, the *Green New Deal (Sustainable City Plan 2019)*, was released, consisting of a program of actions designed to create sustainability-based performance targets through 2050 designed to advance economic, environmental, and equity objectives.[70] L.A.'s Green New Deal is the first four-year update to the City's first Sustainable City pLAn that was released in 2015.[71] It augments, expands, and elaborates L.A.'s vision for a sustainable future and tackles the climate emergency with accelerated targets and new aggressive goals.

While not a plan adopted solely to reduce GHG emissions, within *L.A.'s Green New Deal*, "Climate Mitigation," or reduction of GHG is one of eight explicit benefits that help define its strategies and goals. These include reducing GHG emissions through the following near-term outcomes:

- Reduce potable water use per capita by 22.5 percent by 2025; 25 percent by 2035; and maintain or reduce 2035 per capita water use through 2050.
- Reduce building energy use per square feet for all building types 22 percent by 2025; 34 percent by 2035; and 44 percent by 2050 (from a baseline of 68 MMBTU/sq-ft in 2015).
- All new buildings will be net zero carbon by 2030 and 100 percent of buildings will be net zero carbon by 2050.
- Increase cumulative new housing unit construction to 150,000 by 2025; and 275,000 units by 2035.
- Ensure 57 percent of new housing units are built within 1,500 feet of transit by 2025; and 75 percent by 2035.
- Increase the percentage of all trips made by walking, biking, micro-mobility/matched rides or transit to at least 35 percent by 2025, 50 percent by 2035, and maintain at least 50 percent by 2050.
- Reduce VMT per capita by at least 13 percent by 2025; 39 percent by 2035; and 45 percent by 2050.
- Increase the percentage of electric and zero emission vehicles in the city to 25 percent by 2025; 80 percent by 2035; and 100 percent by 2050.
- Increase landfill diversion rate to 90 percent by 2025; 95 percent by 2035 and 100 percent by 2050.
- Reduce municipal solid waste generation per capita by at least 15 percent by 2030, including phasing out single-use plastics by 2028 (from a baseline of 17.85 lbs. of waste generated per capita per day in 2011).
- Eliminate organic waste going to landfill by 2028.
- Reduce urban/rural temperature differential by at least 1.7 degrees by 2025; and 3 degrees by 2035.

[70]City of Los Angeles. LA's Green New Deal, 2019.
[71]City of Los Angeles, Sustainable City pLAn, April 2015.

- Ensure proportion of Angelenos living within 1/2 mile of a park or open space is at least 65 percent by 2025; 75 percent by 2035; and 100 percent by 2050.

3.2.4.3 City of Los Angeles Green Building Code

On December 11, 2019, the Los Angeles City Council approved Ordinance No. 186,488, which amended Chapter IX of the Los Angeles Municipal Code (LAMC), referred to as the Los Angeles Green Building Code, by adding a new Article 9 to incorporate various provisions of the 2019 CALGreen Code. Projects filed on or after January 1, 2020, must comply with the provisions of the Los Angeles Green Building Code. Specific mandatory requirements and elective measures are provided for three categories: (1) low-rise residential buildings; (2) nonresidential and high-rise residential buildings; and (3) additions and alterations to nonresidential and high-rise residential buildings. Article 9, Division 5 includes mandatory measures for newly constructed nonresidential and high-rise residential buildings.

3.2.4.4 City of Los Angeles Solid Waste Programs and Ordinances

The recycling of solid waste materials also contributes to reduced energy consumption. Specifically, when products are manufactured using recycled materials, the amount of energy that would have otherwise been consumed to extract and process virgin source materials is reduced as well as disposal energy averted. In 1989, California enacted AB 939, the California Integrated Waste Management Act, which establishes a hierarchy for waste management practices such as source reduction, recycling, and environmentally safe land disposal.

The City has developed and is in the process of implementing the Solid Waste Integrated Resources Plan, also referred to as the Zero Waste Plan, whose goal is to lead the City towards being a "zero waste" City by 2030. These waste reduction plans, policies, and regulations, along with Mayoral and City Council directives, have increased the level of waste diversion for the City to 76 percent as of 2013.[72] The RENEW LA Plan, aims to achieve a zero waste goal through reducing, reusing, recycling, or converting the resources not going to disposal and achieving a diversion rate of 90 percent or more by 2025.[73] The City has also approved the Waste Hauler Permit Program (Ordinance No. 181,519, LAMC Chapter VI, Article 6, Section 66.32-66.32.5), which requires private waste haulers to obtain AB 939 Compliance Permits to transport construction and demolition waste to City-certified construction and demolition waste processors. The City's Exclusive Franchise System Ordinance (Ordinance No. 182,986), among other requirements, sets a maximum annual disposal level and diversion requirements for franchised waste haulers to promote waste diversion from landfills and support the City's zero waste goals. These programs reduce the number of trips to haul solid waste and therefore reduce the amount of petroleum-based fuels and energy used to process solid waste.

3.2.4.5 City of Los Angeles General Plan

The City does not have a General Plan Element specific to climate change and GHG emissions, and its General Plan does not have any stated goals, objectives, or policies specifically addressing climate change and GHG emissions. However, the following five goals from the City's General Plan Air Quality Element would also lead to GHG emission reductions:[74]

[72]City of Los Angeles, Department of Public Works, LA Sanitation, *Recycling. https://www.lacitysan.org/san/faces/home/portal/s-lsh-wwd/s-lsh-wwd-s/s-lsh-wwd-s-r?_adf.ctrl-state=kq9mn3h5a_188, a*ccessed July 12, 2022.

[73]City of Los Angeles, *RENEW LA, Five-Year Milestone Report, 2011.*

[74]City of Los Angeles, *Air Quality Element,* June 1991, pages IV-1 to IV-4, https://planning.lacity.org/cwd/gnlpln/aqltyelt.pdf, accessed July 12, 2022.

- Less reliance on single-occupancy vehicles with fewer commute and non-work trips;
- Efficient management of transportation facilities and system infrastructure using cost-effective system management and innovative demand-management techniques;
- Minimal impacts of existing land use patterns and future land use development on air quality by addressing the relationship between land use, transportation, and air quality;
- Energy efficiency through land use and transportation planning, the use of renewable resources and less-polluting fuels, and the implement of conservation measures, including passive measures, such as site orientation and tree planting; and
- Citizen awareness of the linkages between personal behavior and air pollution and participation in efforts to reduce air pollution.

3.2.4.6 Mobility Plan 2035

In August 2015, the City Council adopted Mobility Plan 2035 (Mobility Plan), which serves as the City's General Plan circulation element. The City Council has adopted several amendments to the Mobility Plan since its initial adoption, including the most recent amendment on September 7, 2016.[75] The Mobility Plan incorporates "complete streets" principles and lays the policy foundation for how the City's residents interact with their streets. While the Mobility Plan 2035 mainly relates to transportation, certain components would serve to reduce VMT and mobile source GHG emissions. One component of the Mobility Plan is a GHG emission tracking program to establish compliance with SB 375, AB 32 and the region's Sustainable Community Strategy.

3.2.4.7 Los Angeles Transportation Study Policies and Procedures

The City of Los Angeles Department of Transportation (LADOT) has developed the City Transportation Assessment Guidelines (TAG) (July 2019, updated July 2020 and August 2022) to provide the public, private consultants, and City staff with standards, guidelines, objectives, and criteria to be used in the preparation of a transportation assessment. The TAG establishes the reduction of vehicle trips and VMT as the threshold for determining transportation impacts and thus is an implementing mechanism of the City's strategy to reduce land use transportation-related GHG emissions consistent with AB 32, SB 32, and SB 375.

3.3 EXISTING SETTING

3.3.1 Statewide GHG Emissions Inventory

The CARB is responsible for preparing, adopting, and updating California's GHG emissions inventory under Assembly Bill 1803 (2006). The State's annual GHG emissions inventory provides an important tool for establishing historical emissions trends and tracking California's progress in reducing GHGs. The 2021 edition of the CARB GHG inventory includes emissions of seven GHGs identified in AB 32 for the years 2000–2019. **Table 3-5** displays the statewide GHG emissions from 2010 to 2019 by economic sector as defined in the 2008 Scoping Plan. Generally, California's GHG emissions have followed a declining trend over the past decade. In 2021, emissions from routine emitting activities statewide were approximately 54.2 $MMTCO_2e$ (12 percent) lower than 2012 levels, and approximately 50 $MMTCO_2e$ below the 1990 level (431 $MMTCO_2e$), which was the State's 2020 GHG target.

[75] *Los Angeles Department of City Planning, Mobility Plan 2035: An Element of the General Plan, approved by City Planning Commission on June 23, 2016, and adopted by City Council on September 7, 2016.*

TABLE 3-5: CALIFORNIA GREENHOUSE GAS EMISSIONS INVENTORY TREND

Sector	CO_2e Emissions (Million Metric Tons)									
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Transportation	156.9	156.9	157.6	161.2	165.0	166.4	165.2	162.3	135.6	145.6
Electric Power	99.4	94.0	90.3	86.3	70.8	64.4	65.0	60.2	59.5	62.4
Industrial	80.7	82.7	85.0	82.7	81.2	81.4	82.0	80.8	73.3	73.9
Commercial and Residential	39.1	39.0	35.5	37.2	37.7	38.3	37.5	40.6	38.9	38.8
Agriculture	35.2	33.7	33.7	32.6	32.1	31.6	32.1	31.3	31.5	30.9
High Global Warming Potential	15.8	17.0	17.9	18.8	19.4	20.1	20.5	20.7	21.3	21.3
Recycling and Waste	8.4	8.3	8.1	8.1	7.9	8.2	8.3	8.4	8.6	8.4
Emissions Total	**435.5**	**431.6**	**428.2**	**426.9**	**414.2**	**410.4**	**410.7**	**404.4**	**368.7**	**381.3**

SOURCE: CARB, *2000–2021 GHG Inventory (2023 Edition)*, available at https://ww2.arb.ca.gov/ghg-inventory-data.

The transportation sector remains the largest source of statewide GHG emissions. The CARB data indicates that direct emissions from vehicle exhaust, off-road transportation mobile sources, intrastate aviation, rail, and watercraft account for approximately 38 percent of California's emissions in 2021. Emissions from the electricity sector account for approximately 16 percent of the inventory. The industrial sector has been relatively flat in recent years, representing approximately 19 percent of the total inventory. Emissions from other sectors have remained relatively constant in recent years, despite statewide population growth.

Of note, between October 23, 2015, and February 18, 2016, an exceptional natural gas leak event occurred at the Aliso Canyon natural gas storage facility that resulted in unexpected GHG emissions of considerable magnitude. The exceptional incident released approximately 109,000 metric tons of CH_4, which equated to approximately 1.96 $MMTCO_2e$ of unanticipated emissions in 2015 and an additional 0.52 $MMTCO_2e$ in 2016. Emissions associated with the transportation sector in 2017 were similar to those in 2009 despite substantial statewide growth, demonstrating improvements made in fuel economy to reduce average vehicle emissions.

3.3.1 LADWP Power Resource Mix

In 2016, LADWP achieved California's SB 32 target to reduce GHG emissions to 40 percent below 1990 levels by 2030, which was 14 years ahead of the deadline.[76] By the end of 2018, LADWP systemwide emissions were reduced to 49 percent below 1990 levels, and the 2017 SLTRP forecasts that LADWP GHG emissions will be reduced to 79 percent below 1990 levels by 2037, nearly achieving the 2050 E.O. B-30-15 target. According to information submitted to the State, LADWP's power mix in 2021 was comprised of 35 percent derived from renewable resources.[77]

[76]LADWP, *Briefing Book 2019-20*, March 2020, https://www.ladwpnews.com/2019-20-briefing-book/.
[77]LADWP, *2021 Power Content Label*, https://www.ladwp.com/powercontent.

3.4 IMPACT ANALYSIS

This section describes the applicable thresholds of significance and the methodological approach and analyzes potential impacts related to GHG emissions.

3.4.1 Thresholds of Significance

This Assessment was undertaken to determine whether construction or operation of the proposed project would have the potential to result in significant environmental impacts related to GHG emissions in the context of the Appendix G Environmental Checklist criteria of the CEQA Statute and Guidelines. Implementation of the proposed project may result in a significant environmental impact related to GHG emissions if the proposed project would:

[a] Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; and/or

[b] Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

Section 15064.4 of the CEQA Guidelines states that a lead agency should make a good-faith effort to describe, calculate, or estimate the amount of GHG emissions resulting from a project. The lead agency has the discretion to elect whether to quantify GHG emissions resulting from a project or rely on a qualitative analysis or performance-based standards. If a quantitative approach is chosen, the CEQA Guidelines promulgate that the lead agency should consider the following factors when assessing the significance of impacts from GHG emissions on the environment:

1. The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and,
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The CEQA Guidelines encourage lead agencies to develop and publish thresholds of significance that the agency uses to standardize the determination of the significance of potential environmental effects of proposed projects. When adopting or using particular thresholds, the amended Guidelines allows lead agencies to consider thresholds of significance adopted or recommended by other public agencies, or recommended by experts, provided that use of the thresholds are supported by substantial evidence, and/or to develop their own significance threshold.

Neither the City of Los Angeles/LADWP nor the South Coast Air Quality Management District (SCAQMD) has officially adopted a quantitative threshold screening value for determining the significance of GHG emissions that will be generated by projects under CEQA. However, the SCAQMD published a *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* in October 2008, which contained several recommendations developed by SCAQMD staff for quantitatively assessing GHG emissions subject to CEQA.[78] Over the course of two and a half years between 2008 and 2010, the SCAQMD convened a GHG CEQA Significance Threshold Stakeholder Working Group that met 15 times beginning in April of 2008 to examine alternatives for establishing quantitative GHG thresholds. Ultimately, the SCAQMD staff proposed a tiered approach to analyzing

[78]SCAQMD, *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*, October 2008.

the potential significance of GHG emissions from CEQA projects that was developed through collaboration with the Stakeholder Working Group:

- **Tier 1** – Evaluate whether or not the project qualifies for any applicable exemption under CEQA.
- **Tier 2** – Determine whether the project is consistent with a GHG reduction plan (that may be part of a local general plan, for example). The concept embodied in this tier is equivalent to the existing concept of consistency in CEQA Guidelines §§15064(h)(3), 15125(d), or 15152(a). The GHG reduction plan must, at a minimum, comply with AB 32 GHG reduction goals; include emissions estimates agreed upon by either CARB or the SCAQMD, have been analyzed under CEQA, and have a certified Final CEQA document.
- **Tier 3** – Numerical Attempt to identify small projects that would not likely contribute to significant cumulative GHG impacts. SCAQMD recommended a bifurcated screening level approach to address industrial projects and residential/commercial projects (which are largely indirect sources). SCAQMD staff officially adopted a 10,000 $MTCO_2e$/year threshold for industrial projects for which the district is the lead agency in December 2008.[79] For non-industrial projects, the SCAQMD staff recommended either a singular bright line threshold of 3,000 $MTCO_2e$, or separate thresholds for residential projects (3,500 $MTCO_2e$), commercial projects (1,400 $MTCO_2e$), and mixed-use projects (3,000 $MTCO_2e$). The 3,000 $MTCO_2e$ threshold was also considered for industrial park/warehouse projects. These values were derived based on capturing approximately 90 percent of GHG emissions within the SCAQMD jurisdiction above the threshold so that mitigation measures to reduce emissions could be identified and enforced.
- **Tier 4** – Performance Standards such as percent emission reduction targets or sector-based standards.
- **Tier 5** – Pursue mitigation through CEQA Offsets (i.e., off-site GHG reduction credits).

The mitigation measures evaluated by SCAQMD staff were applicable to long-term, operational emissions. As the proposed project would generate GHG emissions predominantly during temporary construction activities and changes to long-term regional GHG emissions would be negligible, the GHG emissions analysis was prepared to address the threshold of 3,000 $MTCO_2e$ per year.

3.4.2 Methodology

In accordance with Section 15064.4(c), GHG emissions that will be generated by the proposed project were estimated using CalEEMod, Version 2022.1.1.21, which is the preferred regulatory tool recommended by SCAQMD for estimating GHG emissions from proposed land use development projects. CalEEMod relies on an emissions factors database compiled from the CARB EMission FACtor (EMFAC) on-road mobile source emissions inventory model and the CARB OFFROAD off-road equipment model, as well as regional survey data for energy resource consumption, water use, and solid waste generation. The following discussions describe sources of GHG emissions during temporary construction activities and future long-term operations.

[79] SCAQMD, *Minutes for the GHG CEQA Significance Working Group Meeting #15,* September 2010.

Construction

Sources of GHG emissions during construction will include heavy-duty off-road diesel equipment and vehicular travel to and from the project site. GHG emissions that would be generated during construction were estimated using CalEEMod. In accordance with SCAQMD guidance, GHG emissions that would be generated by construction of the proposed project were estimated and amortized over a 30-year operational lifetime.[80]

Construction Equipment Exhaust Emissions

Construction would result in short-term GHG emissions produced by construction equipment exhaust. CalEEMod calculates emissions of CO_2, CH_4, and N_2O from construction equipment using the following equation, where the emission factors (EFs) for CO_2, CH_4, and N_2O are populated from the CARB OFFROAD model and incorporated into CalEEMod for each type of equipment:

$$Emission_{DieselEx}[MTCO_2e] = \frac{\sum_i (EF_i \times GWP \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)}{10^6}$$

Where:

EF_i	=	Emission factor in grams per horsepower-hour [g/hp-hr] from OFFROAD2017
GWP	=	Global Warming Potential Value (CO_2 = 1, CH_4 = 25, N_2O = 298)
Pop_i	=	Population, or number of pieces of equipment
$AvgHP_i$	=	Maximum rated average horsepower [HP]
$Load_i$	=	Load factor (average ratio of actual output to the maximum output, unitless)
$Activity_i$	=	Hours of operation
I	=	Equipment type
10^{-6}	=	Conversion factor [g/MT]

The OFFROAD model is the statewide emissions inventory for off-road equipment compiled by the CARB; factors from OFFROAD are built into the CalEEMod software based on the Project location. CalEEMod provides options for specifying equipment types, horsepower ratings, load factors, and operational hours per day during each activity. Construction equipment inventories were provided by the Applicant for each phase of construction, and default average equipment horsepower and default load factors derived from the statewide inventory for each type of equipment were relied upon to estimate daily emissions. Daily emissions from construction equipment during each phase were estimated using the equation above and converted from grams to pounds.

[80]SCAQMD, *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*, October 2008.

On-Road Vehicle Trips Mobile Source Emissions

Additionally, construction activities generate GHG emissions from on-road vehicle trips from personal vehicles for worker commuting, vendor deliveries of equipment and materials, and trucks for soil and debris hauling. These GHG emissions are based on the number of trips and the VMT, along with emission factors from EMFAC for CO_2, CH_4, and N_2O. CalEEMod accounts for running exhaust and evaporative emissions, as well as vehicle starts. Running exhaust GHG emissions are estimated in CalEEMod using the following equation:

$$Emissions_{Pollutant}[MTCO_2e] = \frac{VMT \times EF_{running,pollutant} \times GWP}{10^6}$$

Where:

VMT	=	Vehicle miles traveled [miles]
$Emissions_{pollutant}$	=	Emissions from vehicle running for each pollutant [grams]
$EF_{running,pollutant}$	=	Emission factor for running exhaust emissions in grams per mile [g/mi]
GWP	=	Global Warming Potential Value (CO_2 = 1, CH_4 = 25, N_2O = 298)
10^{-6}	=	Conversion factor [g/MT]

The CalEEMod program contains default trip lengths for workers, vendors, and material hauling based on regional survey data. The default values were replaced with project-specific information provided by the project design team. Detailed calculation inputs can be found in the **Appendix**.

Operations

Sources of GHG emissions during project operation include automobile trips, landscaping equipment, water use, and waste generation. Mobile source emissions were estimated using EMFAC emission rates in CalEEMod. The VMT for the proposed project is anticipated to be 2,133 miles for 172 employees. Emissions related to solid waste were calculated using the CalEEMod emissions inventory model, which multiplies an estimate of the waste generated by applicable emissions factors, provided in Section 2.4 of USEPA's AP-42, Compilation of Air Pollutant Emission Factors. CalEEMod solid waste generation rates for each applicable land use were selected for this analysis. Emissions related to water usage and wastewater generation were calculated using CalEEMod emission inventory model which multiplies an estimate of the water usage by the applicable energy intensity factor to determine the embodied energy necessary to supply potable water. GHG emissions are related to the energy used to convey, treat, and distribute water and wastewater. Thus, the emissions are generally indirect emissions from the production of electricity to power these systems. GHG emissions are then calculated based on the amount of electricity consumed multiplied by the GHG intensity factors for the utility provider. In this case, embodied energy for southern California supplied water and GHG intensity factors for LADWP were selected in CalEEMod.

3.4.3 Analysis of Proposed Project Impacts

[a] Would the proposed project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? (*Less-Than-Significant Impact*)

Impact Analysis

The proposed project would generate GHG emissions during temporary construction activities and future long-term operations. Construction of the proposed project would generate a total of approximately 4,400 $MTCO_2e$, which equates to approximately 147 $MTCO_2e$ annually over a 30-year amortization schedule. **Table 3-6** presents the estimated annual GHG emissions that would be generated by operation of the proposed project from area, energy, mobile, water, and waste sources, as well as the amortized construction emissions. Annual GHG emissions would be approximately 1,399 $MTCO_2e$ during the first full year of operations, which is below the SCAQMD threshold value of 3,000 $MTCO_2e$. Therefore, implementation of the proposed project would result in a less-than-significant impact related to the magnitude of GHG emissions.

TABLE 3-6: PROPOSED PROJECT ANNUAL GREENHOUSE GAS EMISSIONS

Emissions Source	CO_2e Emissions (Metric Tons per Year)
Construction Emissions Amortized (Direct)	147
Operational Area Source Emissions (Direct)	3
Operational Energy Source Emissions (Indirect)	832
Operational Mobile Source Emissions (Direct)	169
Operational Waste Disposal Emissions (Indirect)	4
Operational Water Processes Emissions (Indirect)	244
TOTAL	**1,399**
SCAQMD Draft Interim Significance Threshold	3,000
Exceed Threshold?	**No**

SOURCE: TAHA, 2024.

Mitigation Measures

Impacts would be less than significant; no mitigation measures are required.

[b] Would the proposed project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs? (*Less-Than-Significant Impact*)

Impact Analysis

The proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. The WQL would also be designed to meet Mayor Garcetti's Resilience by Design Directive by obtaining LEED gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The facility would also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater. The conceptual design for the WQL incorporates best management practices and high-performance strategies in several of the major Sustainable City pLAn target areas. The facility would have a photovoltaic array on the roof tops of the building. It would also include an internal landscaped courtyard and green roof to conserve water through stormwater capture and treatment. Recycled water from LAGWRP would provide irrigation water for the proposed project landscaping, which would be drought-tolerant in the types and use of plant material. The building would achieve energy efficiency by implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency HVAC systems.

The proposed project would include EV charging stations in compliance with LADBS EVCS requirements. It would incorporate recycled material in all aspects of the building construction to promote a sustainable supply chain. All lighting and lighting controls for the facility would comply with the latest version of the Building Energy Efficiency Standard (Title 24) and the California Green Building Standard Code. In addition, the DPR Demonstration Facility would help prove technologies that may eventually allow for the reuse of locally generated wastewater, thus limiting the use of imported water, which consumes the majority of the energy used by the water sector in the state. The Headworks Park component of the proposed project would incorporate landscaping reflective of native plant communities and provide educational opportunities regarding local ecosystems and the Los Angeles River, as well as passive open-space recreation uses, including a segment of the Los Angeles River Trail system linking to adjacent recreation areas and trails.

Furthermore, the following detailed analysis describes the extent to which the proposed project complies with or does not conflict with adopted plans and policies to reduce GHG emissions, including Executive Orders S-3-05 and B-30-15, the AB 32 *Climate Change Scoping Plan*, and SCAG's 2020–2045 RTP/SCS. As shown below, the proposed project would be consistent with and would not conflict with the applicable GHG reduction plans, policies and regulations.

Executive Orders S-3-05 and B-30-15. The Executive Orders established goals to reduce GHG emissions to 80 percent below 1990 levels by 2050. This goal has not been codified by the State Legislature and CARB has not adopted a strategy or regulations to meet the 2050 goal. However, studies have shown that in order to meet the 2050 goal, aggressive technologies in the transportation and energy sectors—including electrification and the decarbonization of fuel—will be required. In its original *Climate Change Scoping Plan*, CARB acknowledged that the "measures needed to meet the 2050 goal are too far in the future to define in detail."[81] In the *First Update to the Climate Change Scoping Plan*, CARB generally described the types of activities required to achieve the 2050 target: "energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts

[81]CARB, *Climate Change Scoping Plan*, December 2008, p. 117.

to deploy and scale markets for the cleanest technologies immediately."[82] The multifaceted approach broadly characterized in the *First Update to the Climate Change Scoping Plan* set the course for more robust strategies to follow in subsequent iterations.

The *2017 Scoping Plan* recognized that additional work is needed to achieve the more stringent GHG emissions reduction target for 2050:

> *"[w]hile the Scoping Plan charts the path to achieving the 2030 GHG emissions reduction target, we also need momentum to propel us to the 2050 statewide GHG target (80 percent below 1990 levels). In developing this Scoping Plan, we considered what policies are needed to meet our mid-term and long-term goals. For example, though Zero Net Carbon Buildings are not feasible at this time and more work needs to be done in this area, they will be necessary to achieve the 2050 target. To that end, work must begin now to review and evaluate research in this area, establish a planning horizon for targets, and identify implementation mechanisms."*[83]

CARB continues to develop the *Scoping Plan* as a map for achieving California's GHG emissions reduction targets that evolves with the contemporary knowledge base and available technologies that can be feasibly implemented at scale. The *2017 Scoping Plan* identifies the following considerations for various sectors that will need to reduce GHG emissions to meet the statewide targets:

- Energy Sector: Continued improvements in California's lighting, appliance, and building energy efficiency programs and initiatives, such as the State's building energy efficiency standards and zero net energy building goals, would serve to reduce the proposed project emissions level in the future.[84] Additionally, further technological improvements and additions to California's renewable resource portfolio would favorably influence the proposed project indirect emissions associated with electricity generation.[85]
- Transportation Sector: Anticipated deployment of vehicle fleets with enhanced fuel efficiency, zero emission technologies, lower carbon fuels, and improvement of existing transportation systems will all serve to reduce the proposed project mobile source emissions in future years.[86]
- Water Sector: GHG emissions associated with water conveyance, treatment, and distribution for the proposed project will be reduced in the future as a result of further improvements in water conservation technologies, as well as expansion of the renewables portfolio.[87]
- Waste Management Sector: Plans to further expand recycling, reuse, and diversion of wastes away from landfills will beneficially reduce indirect GHG emissions from the proposed project.[88]

The assessment of GHG emissions for the proposed project thoroughly examined opportunities to feasibly determine consistency with the 2050 emissions reduction target. Due to the technological shifts required at the utility sector level and the unknown nature of parameters influenced by the contemporary regulatory framework between existing conditions and 2050, quantitatively analyzing

[82]CARB, *First Update to the Climate Change Scoping Plan*, May 2014.
[83]CARB, *California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target*, November 2017.
[84]CARB, *First Update to the Climate Change Scoping Plan*, May 2014, pp. 37–39, 85.
[85]*Ibid*, p. 40-41.
[86]*Ibid*, p. 55-56.
[87]*Ibid*, p. 65.
[88]*Ibid*, p. 69.

the proposed project's impacts relative to the 2050 goal would be speculative for the purposes of satisfying the CEQA requirements. Statewide efforts are underway to facilitate the State's achievement of those goals and it is reasonable to expect the proposed project's emission level to decline as the regulatory initiatives identified by CARB in the *2017 Scoping Plan* are implemented, and as other technological innovations occur. Implementation of the proposed project would not interfere with regulatory actions under these Executive Orders that address the statewide 2050 target.

At the State level, Executive Orders S-3-05 and B-30-15 are orders from the State's executive Branch designed to reduce GHG emissions. The goal of Executive Order S-3-05 to reduce GHG emissions to 1990 levels by 2020 was adopted by the Legislature as the 2006 Global Warming Solutions Act (AB 32) and codified into law in HSC division 25.5. The goal of Executive Order B-30-15 to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030 was adopted by the Legislature in SB 32 and also codified into law in HSC Division 25.5. In support of HSC Division 25.5, the State has promulgated a robust framework of laws and strategies to reduce GHG emissions in the *Climate Change Scoping Plan*. Many of the emission reduction strategies recommend by CARB would serve to reduce the proposed project's post-2024 emissions level to the extent applicable by law. The proposed project's consistency with the *Climate Change Scoping Plan* is assessed below.

Climate Change Scoping Plan. As discussed above, the goal to reduce GHG emissions to 1990 levels by 2020 (Executive Order S-3-05) was codified by the Legislature as the 2006 Global Warming Solutions Act. In 2008, CARB approved a *Climate Change Scoping Plan* as required by Assembly Bill 32. The *Climate Change Scoping Plan* and subsequent updates in 2014 and 2017 contain a range of GHG reduction actions that include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an Assembly Bill 32 implementation fee to fund the program. **Table 3-7** provides an evaluation of whether the proposed project is consistent with or may conflict with applicable reduction actions/strategies by emissions source category. As evidenced by the elements described below, the proposed project would be consistent with the *Climate Change Scoping Plan* GHG Reduction Strategies and would not conflict with initiatives to reduce emissions.

TABLE 3-7: PROJECT CONSISTENCY WITH CLIMATE CHANGE SCOPING PLAN

Strategy	Proposed Project Consistency
2008 CLIMATE CHANGE SCOPING PLAN MEASURES	
California Light-Duty Vehicle GHG Standards. Implement adopted Pavley standards and planned second phase of program. Align zero-emission vehicle, alternative and renewable fuel, and vehicle technology initiatives with long-term climate change goals.	**No Conflict.** The implementation of Pavley vehicle standards is managed at the State level and applies to vehicle and engine manufacturers. The proposed project would not conflict with vehicle emissions standards and would include EV charging stations in compliance with LADBS EVCS requirements.

TABLE 3-7: PROJECT CONSISTENCY WITH CLIMATE CHANGE SCOPING PLAN

Strategy	Proposed Project Consistency
Energy Efficiency. Maximize energy efficiency building and appliance standards and pursue additional efficiency efforts including new technologies, and new policy and mechanisms.	**No Conflict**. The proposed project would be designed and constructed to meet 2019 Title 24 standards. The facility would also be designed to meet Mayor Garcetti's Resilience by Design Directive by obtaining LEED gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The facility would also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater. The facility would have a photovoltaic array on the roof tops of the building. It would also include an internal landscaped courtyard and green roof to conserve water through stormwater capture and treatment. Implementation of the proposed project would not require new energy infrastructure and would not place an undue burden on existing resource availability. Project electricity would be supplied by LADWP, which is required to achieve 40 percent RPS by the end of 2024, 52 percent by the end of 2027, and 60 percent by the end of 2030 under SB 100.
Renewables Portfolio Standard: Achieve 33 percent renewable energy mix statewide by 2020 from the current level of 12 percent in 2008.	**No Conflict**. LADWP would supply energy to the proposed project site. The LADWP's portfolio consists of approximately 32 percent renewable energy in 2018 and plans to increase its amount of renewable energy to 35 percent by 2020 and 44 percent by the end of 2024. Thus, LADWP is on track to meet and exceed the RPS goals established in the *Climate Change Scoping Plan*. Additionally, the proposed project would have a photovoltaic array on the roof tops of the building to supply on-site renewable energy and reduce demand.
Low-Carbon Fuel Standard. Develop and adopt the Low Carbon Fuel Standard.	**No Conflict.** The proposed project would not conflict with implementation of the transportation fuel standards. Future users of the proposed project would utilize fuels available to the public through commercial sellers, which would be regulated by the Low Carbon Fuel Standard administered by CARB.
Vehicle Efficiency Measures. Implement light-duty vehicle efficiency measures.	**No Conflict.** Only CARB has the authority to promulgate and enforce light-duty vehicle efficiency measures. The proposed project would not interfere with implementation of light-duty vehicle efficiency measures and vehicles associated with the proposed project that are subject to the regulations would comply with these measures.
Medium/Heavy-Duty Vehicle Standards. Adopt medium- and heavy-duty vehicle efficiency measures.	**No Conflict.** Only CARB has the authority to promulgate and enforce medium- and heavy-duty vehicle efficiency measures. The proposed project would not interfere with implementation of vehicle efficiency measures and vehicles associated with the proposed project that are subject to the regulations would comply with these measures.

TABLE 3-7: PROJECT CONSISTENCY WITH CLIMATE CHANGE SCOPING PLAN	
Strategy	**Proposed Project Consistency**
Green Building Strategy: Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	**No Conflict**. The proposed project would be designed and constructed to meet 2019 Title 24 standards. The facility would also be designed to meet Mayor Garcetti's Resilience by Design Directive by obtaining LEED gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The facility would also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater. The facility would have a photovoltaic array on the roof tops of the building. It would also include an internal landscaped courtyard and green roof to conserve water through stormwater capture and treatment. The building would achieve energy efficiency by implementing strategies including building orientation, high-performance building envelope, and effective daylighting complemented by high performance lighting and high efficiency HVAC systems.
High GWP Gases Emissions. Adopt measures to reduce emissions of high GWP gases.	**No Conflict.** Implementation of the proposed project would not introduce a new source of high GWP gases to the area, and vehicles and consumer products associated with the proposed project would be subject to CARB regulations.
Recycling and Waste: Reduce methane emissions at landfills. Increase waste diversion, composting and other beneficial uses of organic materials and mandate commercial recycling. Move toward zero waste.	**No Conflict**. Waste associated with the proposed project would be received and managed by the City Bureau of Sanitation. The City has committed to an extensive waste recycling program through the *Sustainable City pLAn*.
Water: Continue efficiency programs and use cleaner energy sources to move and treat water.	**No Conflict**. The conceptual design for the WQL incorporates best management practices and high-performance strategies in several of the major Sustainable City pLAn target areas. The facility would have a photovoltaic array on the roof tops of the building. It would also include an internal landscaped courtyard and green roof to conserve water through stormwater capture and treatment. Recycled water from LAGWRP would provide irrigation water for the proposed project landscaping, which would be drought-tolerant in the types and use of plant material. All plumbing features would comply with provisions of the LAGBC.
2017 CLIMATE CHANGE SCOPING PLAN MEASURES	
Mobile Source Strategy – Advanced Clean Cars. Further increase GHG stringency on all light-duty vehicles beyond existing Advanced Clean Car regulations (through model year 2025).	**No Conflict.** Light-duty vehicle standards are administered and enforced by CARB. Vehicles associated with the proposed project that are subject to the regulations would be required to comply.
Mobile Source Strategy – Zero Emission Fleet. Achieve a statewide vehicle fleet of at least 1.5 million zero-emission and plug-in hybrid light-duty electric vehicles by 2025 and at least 4.2 million zero-emission vehicles (ZEV) by 2030.	**No Conflict.** Implementation of zero-emission and plug-in vehicles is administered and enforced by CARB in coordination with automobile manufacturers. Vehicles that access the proposed project site would be part of the statewide fleet and those vehicles that are subject to the regulations would comply. Furthermore, the proposed project would provide EV parking spaces and charging infrastructure in accordance with the CALGreen code and LAGBC.

TABLE 3-7: PROJECT CONSISTENCY WITH CLIMATE CHANGE SCOPING PLAN

Strategy	Proposed Project Consistency
Mobile Source Strategy – Innovative Clean Transit. Transition to a suite of innovative clean transit options; CARB Scoping Plan Scenario assumed 20 percent of new urban buses purchased beginning in 2018 will be zero-emission buses with the proliferation of zero-emission technology expanded to 100 percent of new sales by 2030. Additionally, new natural gas buses (in 2018) and new diesel buses (in 2020) shall meet the optional heavy-duty low-NO_X standard.	**No Conflict.** The clean transit fleet regulations are promulgated and enforced by CARB. The proposed project would not interfere with implementation of a zero-emission bus fleet.
Mobile Source Strategy – Last Mile Delivery. New regulation that would result in the use of low NO_X or cleaner engines and the deployment of increasing numbers of zero-emission trucks, primarily for Class 3–7 last mile delivery trucks in California. This measure assumes ZEVs comprise 2.5 percent of new Class 3–7 truck sales in local fleets starting in 2020, increasing to 10 percent in 2025 and remaining flat through 2030.	**No Conflict.** The enhanced regulations pertaining to last mile delivery trucks are administered and enforced by CARB. The proposed project would not interfere with implementation of new truck fleets meeting more stringent NO_X standards.
Mobile Source Strategy – Reduction in VMT. Further reduce VMT through continued implementation of SB 375 and regional SCSs; forthcoming statewide implementation of SB 743; explore additional VMT reduction strategies.	**No Conflict.** The proposed project represents an infill development project within an existing urbanized area that would concentrate multiple LADWP facilities in one location. The proposed project would also provide active transportation options. Surrounding the reservoir garden and extending into other portions of the HWSG property would be a series of pedestrian, bicycle, and equestrian pathways, which would interconnect with Griffith Park and the existing river trail system.
Implement SB 350 by 2030 – Renewables. Increase the RPS to 50 percent of retail sales by 2030 and ensure grid reliability.	**No Conflict.** The proposed project would use electricity from the LADWP, which has committed to diversify its portfolio of energy sources to achieve 50 percent renewables by 2030. The proposed project would not interfere with LADWP's ability to procure additional renewable resources and expand its renewable infrastructure. Furthermore, the proposed project would implement solar installations to generate on-site renewable electricity and reduce demand on the LADWP grid.
Implement SB 350 by 2030 – Efficiency Targets. Establish annual targets for statewide energy efficiency savings and demand reductions that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses by 2030.	**No Conflict.** The proposed project would be designed and constructed in accordance with provisions of the CALGreen Code and LAGBC for renovation and new construction and will implement an array of measures designed to reduce energy consumption, including high efficiency lighting, meeting or exceeding the 2019 Title 24 energy efficiency standards, and on-site installation of renewable energy facilities.
2022 SCOPING PLAN OBJECTIVES	
GHG Emissions Reductions Relative to SB 32 Target. Reduce statewide GHG emissions to 40 percent below 1990 levels by 2030.	**No Conflict.** The proposed project would use electricity from the LADWP, which has committed to diversify its portfolio of energy sources to achieve 50 percent renewables by 2030. Additionally, the proposed project will increase urban green space and will provide community education on DPR technologies that will reduce statewide dependence on non-renewable potable water resources.
Smart Growth/VMT. Reduce VMT per capita to 25 percent below 2019 levels by 2030, and 30 percent below 2019 levels by 2045.	**No Conflict.** The proposed project would not interfere with regional planning initiatives to reduce VMT per capita. The proposed project would not increase LADWP employee VMT per capita relative to existing commuting patterns.

TABLE 3-7: PROJECT CONSISTENCY WITH CLIMATE CHANGE SCOPING PLAN

Strategy	Proposed Project Consistency
Light-duty Vehicle (LDV) Zero Emission Vehicles. By 2035, 100 percent of new LDV sales will be ZEVs.	**No Conflict.** The proposed project would not interfere with vehicle manufacturing and sales transitioning to exclusively ZEVs by 2035.
Truck ZEVs. By 2040, 100 percent of medium-duty and heavy-duty sales shall be ZEVs.	**No Conflict.** The proposed project would not interfere with truck manufacturing and sales transitioning to exclusively ZEVs by 2040.
Electricity Generation. Reduce statewide electricity generation sector emissions to 38 $MMTCO_2e$ by 2030 and to 30 $MMTCO_2e$ by 2035.	**No Conflict.** The proposed project would use electricity from the LADWP, which has committed to diversify its portfolio of energy sources to achieve 50 percent renewables by 2030. Additionally, the proposed project will increase urban green space and will provide community education on DPR technologies that will reduce statewide dependence on non-renewable potable water resources.

SOURCE: CARB, *Climate Change Scoping Plan*, 2008; CARB, *California's 2017 Climate Change Scoping Plan*, November 2017; CARB, *2022 Scoping Plan for Achieving Carbon Neutrality*, December 2022; TAHA, 2024.

Furthermore, in addition to the proposed project's consistency with applicable GHG reduction regulations and strategies, the proposed project would not conflict with the future anticipated statewide GHG reduction goals. CARB has evaluated a number of potential strategies for achieving the 2030 reduction target of 40 percent below 1990 levels, as mandated by SB 32. These potential strategies include renewable resources constituting half of the State's electricity generation by 2030, increasing the fuel economy of vehicles and the number of zero-emission and hybrid vehicles, reducing the rate of growth in VMT, supporting high-speed rail and other alternative transportation options, and use of high-efficiency appliances, water heaters, and HVAC systems.[89]

The proposed project would be consistent with applicable GHG reduction strategies outlined in the *2008*, *2017, and 2022 Scoping Plans*. The proposed project would incorporate design features to comply with CALGreen and the LAGBC that would reduce energy demands, including high efficiency lighting features, low flow plumbing fixtures, Energy Star appliances, energy efficient windows and building envelope designs, sustainable construction materials, drought tolerant landscaping and water-conserving irrigation systems, and the provision of EV parking spaces and EV-ready installations. The proposed project would also feature on-site renewable energy facilities through the installation of photovoltaic solar panels. Vehicles associated with the proposed project would be subject to applicable CARB regulations such as the Low Carbon Fuel Standard and enhanced fuel efficiency regulations. While CARB is in the process of expanding the regulatory framework to meet the 2030 reduction target based on the existing laws and strategies in the *Scoping Plans*, the proposed project would not interfere with implementation of any further GHG reduction strategies identified by CARB.

Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The California legislature passed SB 375 to connect regional transportation planning to land use decisions made at a local level by integrating land use planning with the goal of reducing VMT for cars and light duty trucks. SB 375 requires the metropolitan planning organizations to prepare an SCS in their regional transportation plans to achieve the regional per capita GHG reduction targets established by CARB. Under SB 375, the primary goal of the RTP/SCS is to provide a framework for future growth that will decrease per capita GHG emissions from cars and light-duty trucks.

[89]Energy+Environmental Economics, *Summary of the California State Agencies' PATHWAYS Project: Long-term Greenhouse Gas Reduction Strategies*, April 6, 2015.

In March 2018, CARB updated the SB 375 targets for the SCAG region to require a per capita passenger vehicle GHG emissions reduction of 8 percent by 2020 and 19 percent by 2035 compared to baseline (2005) GHG emissions.[90] For the SCAG region, the most recent SCS is contained in *Connect SoCal*, SCAG's 2020–2045 RTP/SCS that was formally adopted by the SCAG Regional Council on September 3, 2020 after receiving transportation conformity verification from the Federal Highway Administration on June 5, 2020.[91,92] Connect SoCal was developed in collaboration with CARB and set regional GHG emission reduction targets for on-road automobiles and light duty trucks of eight percent by 2020 and 19 percent by 2035 relative to 2005 emissions levels, consistent with the SB 375 targets. On October 30, 2020, CARB issued *Executive Order G-20-239* confirming that the *Connect SoCal* RTP/SCS satisfied the requirements of SB 375 and approving the GHG quantification method, thereby validating that *Connect SoCal* would achieve the required regional reduction targets established in 2018 for cars and light duty trucks.

In addition to demonstrating the region's ability to attain the regional GHG emission reduction targets, *Connect SoCal* outlines a Core Vision focused on maintaining and enhancing management of the transportation network while also expanding mobility choices by creating hubs that connect housing, jobs, and transit accessibility. *Connect SoCal* is rooted in the themes established in the 2008 and 2012 RTP/SCS plans and builds upon the framework of the 2016–2040 RTP/SCS with a robust array of initiatives and strategies for integrating the transportation network with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands. Connect SoCal prioritizes the majority of new housing and job growth HQTAs and other opportunity areas on existing main streets, in downtowns, and commercial corridors, resulting in an improved jobs-housing balance and more opportunity for transit-oriented development. Thus, successful implementation of *Connect SoCal* would result in more complete neighborhoods with a variety of transportation and housing choices suited to the needs of the community, while reducing automobile use. With regard to individual land use developments, proposed project consistency with strategies and policies set forth in *Connect SoCal* can generally be evaluated through consistency with the integrated growth forecast, consistency with VMT reduction strategies and policies, consistency with increased use of alternative fueled vehicles, and consistency with enhanced energy efficiency. The proposed project is assessed in the context of these fundamental strategies below.

Consistency with the Integrated Growth Forecast

The *Connect SoCal* RTP/SCS provides socioeconomic forecast projections of regional growth in population, housing, and employment. The growth forecasts, which are adopted by SCAG's Regional Council as part of the RTP/SCS, are based on the local plans and policies applicable to the specific area and are established at the municipality level. SCAG relies on the subregional growth projections in all phases of implementation and review. Implementation of the proposed project would not significantly increase regional population, housing, or employment in the long term. Therefore, the proposed project would not render assumptions of the integrated growth forecast to be invalid.

Consistency with VMT Reduction Strategies and Policies

A detailed VMT analysis was completed for the proposed project.[93] The City's guidelines state that public services (e.g., police, fire stations, public utilities, public parks) do not generally generate substantial VMT. Instead, these land uses are often built-in response to development from other land uses (e.g., office and residential). Therefore, these land uses can be presumed to have less-than-

[90]CARB, *SB 375 Regional Greenhouse Gas Emissions Reduction Targets*, March 2018.
[91]SCAG, *News Release: SCAG Regional Council formally adopts Connect SoCal*, September 3, 2020.
[92]FHWA, *Southern California Association of Governments Connect SoCal Regional Transportation Plan/Sustainable Communities Strategy, 2019 Federal Transportation Improvement Program Amendment No. 19-12 and associated conformity determination*, June 5, 2020.
[93]Translutions, *Headworks-VMT Memorandum*, June 13, 2022.

significant impacts on VMT. The proposed project includes a public park and a drinking water treatment facility, which are public services that are presumed to have a less than significant VMT impact. Therefore, these components of the project are screened out from analysis. The WQL, although an LADWP function, would not meet the definition of a public service since it would serve as a laboratory and administrative facility that would generate daily employee trips in excess of the VMT daily threshold. Therefore, the WQL is subject to a VMT analysis.

In order to evaluate the VMT per employee for the WQL, the net change per employee was calculated. The proposed project will replace the Pasadena and Rinaldi facilities. For this evaluation, the net VMT for the project was calculated by subtracting the total VMT per employee for the Pasadena and Rinaldi facilities from the VMT for the proposed project. The VMT per employee for employees that are expected to transfer to the WQL from LADWP facilities in downtown Los Angeles were not subtracted because it is anticipated that those positions would be backfilled at the current locations in the future, unlike the positions in Pasadena and Rinaldi. The Pasadena facility is in Traffic Analysis Zone (TAZ) 22121400 of the SCAG RTP Model. The VMT per employee for the TAZ is 16.3 miles per employee. The Rinaldi facility is included in the City of Los Angeles VMT Calculator, which shows a VMT per employee of 14.1 miles per employee. The VMT/Employee for the proposed project site is 12.4 miles/employee based on the VMT Calculator.

The total VMT for existing and proposed facilities were calculated by multiplying the VMT per employee for the existing and proposed facilities. The reduction of 62 employees at the Pasadena location will result in a VMT reduction of 1,011 miles, and that of the Rinaldi facility will result in a reduction of 71 miles. The VMT for the proposed project is anticipated to be 2,133 miles for 172 employees. The net change in VMT is 1,051 miles, which results in a net VMT of 6.11 miles per employee. The proposed project is located in the Central Area Planning Commission (APC), which has a VMT Impact Criteria (15 percent below APC Average) of 7.6 miles per employee. The proposed project results in less than significant impacts as the VMT per employee would be less than the average for the Central APC.

Consistency with Energy Efficiency Strategies and Policies

Connect SoCal also addresses strategies to improve energy efficiency as a method of reducing GHG emissions. The proposed project would reduce reliance on available groundwater resources and would provide supplemental recycled water resources to the LADWP service area. The WQL facility would also be designed to meet Mayor Garcetti's Resilience by Design Directive by obtaining LEED gold certification, with the objective to achieve LEED Platinum certification and Envision Sustainable Infrastructure certification. The facility would also include a green roof, which would be covered with vegetation to reduce heat and capture stormwater.

Consistency with Land Use Characteristics

The ultimate goal of the SCS component of *Connect SoCal* is to achieve the regional per capita GHG reduction targets for passenger vehicles and light duty trucks established by CARB pursuant to SB 375. *Connect SoCal* builds upon and expands land use and transportation strategies established over several prior planning cycles to increase mobility options and achieve a more sustainable growth pattern. *Connect SoCal* includes strategies and tools consistent with local jurisdictions' land use policies that incorporate best practices for achieving the state-mandated reductions in GHG emissions at the regional level through reduced VMT. The proposed project would be consistent with the following land use strategies that were developed to support the SCS: Emphasize land use patterns that facilitate multimodal access to work, educational and other destinations; Focus on a regional jobs/housing balance to reduce commute times and distances; and Prioritize infill and redevelopment of underutilized land to accommodate new growth, increase amenities and connectivity in existing neighborhoods.

Sustainable City pLAn. Although it was not developed and adopted primarily as a GHG emissions reduction plan, the *Sustainable City pLAn 2019 (L.A.'s Green New Deal)* sets ambitious local goals for reducing GHG emissions and embraces a multifaceted, robust approach to achieve the stated objectives. Targets identified in *L.A.'s Green New Deal* that are most relevant to the proposed project are presented in **Table 3-8**, with corresponding discussions for the consistency of the proposed project. The proposed project would not conflict with local plans to reduce GHG emissions and would feature design elements that improve energy efficiency and mobility. Impacts related to conflicting with local planning initiatives to reduce GHG emissions would be less than significant.

Mitigation Measures

Impacts would be less than significant; no mitigation measures are required.

3.5 CUMULATVE IMPACTS

The primary focus of many of the statewide and regional plans, policies, and regulations is to address issues related to global climate change. Due to the complex physical and chemical mechanisms involved in how GHG emissions influence climate change at the global scale, there is no contextual basis for determining the extent to which the proposed project's net increase in GHG emissions would affect climate patterns. The emission of GHGs by a single project into the atmosphere is not itself necessarily an adverse environmental effect. Rather, it is the increased accumulation of GHG emissions from more than one project and many sources in the atmosphere that may result in global climate change. The consequences of that climate change can cause adverse environmental effects. A project's GHG emissions typically would be miniscule in comparison to State or global GHG emissions and, consequently, they would, in isolation, have no significant direct impact on climate change.

Pursuant to CEQA Guidelines Section 15064(h)(3) a project's incremental contribution to cumulative impacts can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that would avoid or substantially lessen the cumulative problem with the geographic area of the project. The State has mandated a goal of reducing statewide emissions to 1990 levels by 2020, even though statewide population and commerce is predicted to continue to expand. AB 32 has acknowledged that GHG emissions are a statewide impact. Emissions generated by the proposed project in combination with past, present, and reasonably probable future related projects could contribute to this impact. The CEQA Guidelines emphasize that the effects of GHG emissions are cumulative in nature and should be analyzed in the context of CEQA's existing cumulative impacts analysis. The Office of Planning and Research acknowledges that although climate change is cumulative in nature, not every individual proposed project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment. As discussed above, the proposed project's incremental contribution to the statewide cumulative impact would not be cumulatively considerable.

TABLE 3-8: PROJECT CONSISTENCY WITH LOCAL PLAN TARGETS

Target/Strategy	Project Consistency
Renewable Energy: • LADWP will supply 55 percent renewable energy by 2025, 80 percent by 2036, and 100 percent by 2045.	**No Conflict.** Implementation of the proposed project would not interfere with LADWP's agreement with the City to rely on 55 percent renewable energy by 2025, 80 percent renewable energy by 2036, and 100 percent renewable energy by 2045. Implementation of the proposed project would not require the acquisition or development of addition energy resources or infrastructure that would obstruct attainment of the target renewable portfolio standard set by L.A.'s Green New Deal.
Local Water: • Source 70 percent of L.A.'s water locally and capture 150,000-acre ft per year of stormwater by 2035. • Reduce potable water use per capita by 22.5 percent by 2025 and 25 percent by 2035 and maintain or reduce 2035 per capita water use through 2050.	**No Conflict.** Implementation of the proposed project would not interfere with the City's initiatives to expand its stormwater capture capabilities by 2035. Proposed project development would not result in a change of land use that would inhibit the expansion of stormwater infrastructure in the future. Implementation of the proposed project would also not conflict with the per capita potable water use targets, as design of the proposed project would comply with the Los Angeles Green Building Code and all provisions related to reducing end use contained therein.
Clean and Healthy Buildings: • All new buildings will be net zero carbon by 2030; and 100 percent of buildings will be net zero carbon by 2050. • Reduce average building energy use per square foot. for all building types by 22 percent by 2025, 34 percent by 2035, and 44 percent by 2050.	**No Conflict.** The proposed project would be designed and constructed to meet 2019 Title 24 standards and the LAGBC standards designed to reduce energy consumption, as well as provide on-site renewable energy. Implementation of the proposed project would not require new energy infrastructure and would not place an undue burden on existing resource availability. Project electricity would be supplied by LADWP, which is required to achieve 40 percent RPS by the end of 2024, 52 percent by the end of 2027, and 60 percent by the end of 2030 under SB 100.
Housing and Development • Increase cumulative new housing unit construction to 150,000 by 2025 and 275,000 units by 2035. • Ensure 57 percent of new housing units are built within 1,500 feet of transit by 2025, and 75 percent by 2035. • Create or preserve 50,000 income-restricted affordable housing units by 2035 and increase stability for renters.	**No Conflict.** The proposed project does include housing.
Mobility and Public Transit • Increase the percentage of all trips made by walking, biking, micro-mobility/matched rides or transit to at least 35 percent by 2025, 50 percent by 2035 and maintaining at least 50 percent to 2050. • Reduce VMT per capita by at least 13 percent by 2025, 39 percent by 2035, and 45 percent by 2050.	**No Conflict.** As previously discussed, the proposed project would not result in a significant impact related to VMT. Therefore, the Project would not interfere with the City achieving these targets.
Zero Emission Vehicles • Increase the percentage of electric and zero emission vehicles in the City to 25 percent by 2025, 80 percent by 2035, and 100 percent by 2050	**No Conflict.** Implementation of the proposed project would provide electric vehicle charging stations consistent with City regulations and would not interfere with Sustainable City pLAn targets.

SOURCE: CAPCOA, 2010 (Applicable Strategies Only); TAHA, 2024.

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APPENDIX

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - Park Construction
Construction Start Date	11/14/2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.153231832974924, -118.31594338641173
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Parking Lot	3.00	Acre	3.00	0.00	13,000	13,000	—	Parking lot and paved access roads.

City Park	17.5	Acre	17.5	0.00	387,830	387,830	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-4*	Use Local and Sustainable Building Materials

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136
Mit.	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
Mit.	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
Mit.	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
Mit.	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136

2026	1.59	11.5	22.3	0.03	0.45	10.6	11.1	0.41	1.26	1.66	—	4,222	4,222	0.18	0.14	5.76	4,273
2027	1.52	10.8	21.8	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,187	4,187	0.18	0.13	5.24	4,237
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.67	14.2	21.8	0.03	0.47	4.38	4.86	0.44	0.57	1.01	—	4,351	4,351	0.19	0.14	0.13	4,396
2025	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
2026	2.87	20.1	39.9	0.05	0.83	11.7	12.5	0.76	1.49	2.25	—	8,098	8,098	0.34	0.25	0.25	8,181
2027	1.51	11.0	20.9	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,119	4,119	0.14	0.13	0.14	4,162
2028	1.45	10.4	20.6	0.03	0.35	10.6	11.0	0.32	1.26	1.58	—	4,087	4,087	0.13	0.13	0.12	4,130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.16	1.34	2.07	< 0.005	0.04	0.39	0.44	0.04	0.05	0.09	—	410	410	0.02	0.01	0.20	414
2025	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
2026	1.15	8.40	15.7	0.02	0.32	7.23	7.56	0.30	0.86	1.16	—	3,033	3,033	0.13	0.10	1.80	3,068
2027	1.08	7.82	15.1	0.02	0.28	7.22	7.50	0.26	0.86	1.12	—	2,955	2,955	0.10	0.10	1.61	2,988
2028	0.13	0.96	1.92	< 0.005	0.03	0.93	0.96	0.03	0.11	0.14	—	378	378	0.01	0.01	0.19	382
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.03	0.24	0.38	< 0.005	0.01	0.07	0.08	0.01	0.01	0.02	—	67.9	67.9	< 0.005	< 0.005	0.03	68.6
2025	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
2026	0.21	1.53	2.87	< 0.005	0.06	1.32	1.38	0.05	0.16	0.21	—	502	502	0.02	0.02	0.30	508
2027	0.20	1.43	2.76	< 0.005	0.05	1.32	1.37	0.05	0.16	0.20	—	489	489	0.02	0.02	0.27	495
2028	0.02	0.17	0.35	< 0.005	0.01	0.17	0.18	0.01	0.02	0.03	—	62.5	62.5	< 0.005	< 0.005	0.03	63.2

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.79	39.4	60.8	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	11,049	11,049	0.46	0.25	10.5	11,136
2026	1.59	11.5	22.3	0.03	0.45	10.6	11.1	0.41	1.26	1.66	—	4,222	4,222	0.18	0.14	5.76	4,273
2027	1.52	10.8	21.8	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,187	4,187	0.18	0.13	5.24	4,237
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.67	14.2	21.8	0.03	0.47	4.38	4.86	0.44	0.57	1.01	—	4,351	4,351	0.19	0.14	0.13	4,396
2025	4.79	39.5	59.7	0.09	1.53	11.7	12.7	1.41	1.49	2.59	—	10,970	10,970	0.46	0.25	0.27	11,050
2026	2.87	20.1	39.9	0.05	0.83	11.7	12.5	0.76	1.49	2.25	—	8,098	8,098	0.34	0.25	0.25	8,181
2027	1.51	11.0	20.9	0.03	0.40	10.6	11.0	0.36	1.26	1.62	—	4,119	4,119	0.14	0.13	0.14	4,162
2028	1.45	10.4	20.6	0.03	0.35	10.6	11.0	0.32	1.26	1.58	—	4,087	4,087	0.13	0.13	0.12	4,130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.16	1.34	2.07	< 0.005	0.04	0.39	0.44	0.04	0.05	0.09	—	410	410	0.02	0.01	0.20	414
2025	2.52	18.8	32.6	0.05	0.78	7.60	8.38	0.72	0.97	1.69	—	6,339	6,339	0.27	0.17	3.00	6,400
2026	1.15	8.40	15.7	0.02	0.32	7.23	7.56	0.30	0.86	1.16	—	3,033	3,033	0.13	0.10	1.80	3,068
2027	1.08	7.82	15.1	0.02	0.28	7.22	7.50	0.26	0.86	1.12	—	2,955	2,955	0.10	0.10	1.61	2,988
2028	0.13	0.96	1.92	< 0.005	0.03	0.93	0.96	0.03	0.11	0.14	—	378	378	0.01	0.01	0.19	382
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.03	0.24	0.38	< 0.005	0.01	0.07	0.08	0.01	0.01	0.02	—	67.9	67.9	< 0.005	< 0.005	0.03	68.6
2025	0.46	3.44	5.96	0.01	0.14	1.39	1.53	0.13	0.18	0.31	—	1,049	1,049	0.04	0.03	0.50	1,060
2026	0.21	1.53	2.87	< 0.005	0.06	1.32	1.38	0.05	0.16	0.21	—	502	502	0.02	0.02	0.30	508
2027	0.20	1.43	2.76	< 0.005	0.05	1.32	1.37	0.05	0.16	0.20	—	489	489	0.02	0.02	0.27	495
2028	0.02	0.17	0.35	< 0.005	0.01	0.17	0.18	0.01	0.02	0.03	—	62.5	62.5	< 0.005	< 0.005	0.03	63.2

3. Construction Emissions Details

3.1. Site Preparation (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.37	13.2	17.4	0.03	0.47	—	0.47	0.43	—	0.43	—	2,965	2,965	0.12	0.02	—	2,975
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	53.3	53.3	< 0.005	0.01	< 0.005	55.6
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.24	1.64	< 0.005	0.04	—	0.04	0.04	—	0.04	—	279	279	0.01	< 0.005	—	279
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.30	0.30	< 0.005	0.03	0.03	—	5.00	5.00	< 0.005	< 0.005	0.01	5.22
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.23	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.1	46.1	< 0.005	< 0.005	—	46.3

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.86
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.36	4.08	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	856	856	0.04	0.03	0.09	867
Vendor	0.01	0.24	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	194	194	0.01	0.03	0.01	202
Hauling	0.01	0.37	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	282	282	0.02	0.05	0.02	296
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.40	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	81.6	81.6	< 0.005	< 0.005	0.14	82.8
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	18.2	18.2	< 0.005	< 0.005	0.02	19.0
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	26.5	26.5	< 0.005	< 0.005	0.03	27.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.5	13.5	< 0.005	< 0.005	0.02	13.7
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.01	3.01	< 0.005	< 0.005	< 0.005	3.14
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.39	4.39	< 0.005	< 0.005	< 0.005	4.61

3.2. Site Preparation (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.37	13.2	17.4	0.03	0.47	—	0.47	0.43	—	0.43	—	2,965	2,965	0.12	0.02	—	2,975
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	53.3	53.3	< 0.005	0.01	< 0.005	55.6
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.24	1.64	< 0.005	0.04	—	0.04	0.04	—	0.04	—	279	279	0.01	< 0.005	—	279
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.30	0.30	< 0.005	0.03	0.03	—	5.00	5.00	< 0.005	< 0.005	0.01	5.22
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.23	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.1	46.1	< 0.005	< 0.005	—	46.3
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.86
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.36	4.08	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	856	856	0.04	0.03	0.09	867
Vendor	0.01	0.24	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	194	194	0.01	0.03	0.01	202
Hauling	0.01	0.37	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	282	282	0.02	0.05	0.02	296
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.40	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	81.6	81.6	< 0.005	< 0.005	0.14	82.8
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	18.2	18.2	< 0.005	< 0.005	0.02	19.0
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	26.5	26.5	< 0.005	< 0.005	0.03	27.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.5	13.5	< 0.005	< 0.005	0.02	13.7
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.01	3.01	< 0.005	< 0.005	< 0.005	3.14
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.39	4.39	< 0.005	< 0.005	< 0.005	4.61

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	12.3	17.3	0.03	0.40	—	0.40	0.37	—	0.37	—	2,965	2,965	0.12	0.02	—	2,975

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	52.4	52.4	< 0.005	0.01	< 0.005	54.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.80	5.80	< 0.005	< 0.005	—	5.82
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.11
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.96	0.96	< 0.005	< 0.005	—	0.96
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.02	0.02	< 0.005	< 0.005	< 0.005	0.02
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.31	3.78	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	839	839	0.04	0.03	0.08	849
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	190	190	0.01	0.03	0.01	199
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.67	1.67	< 0.005	< 0.005	< 0.005	1.69
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.37	0.37	< 0.005	< 0.005	< 0.005	0.39
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.54	0.54	< 0.005	< 0.005	< 0.005	0.57
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.28	0.28	< 0.005	< 0.005	< 0.005	0.28
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.09	0.09	< 0.005	< 0.005	< 0.005	0.09

3.4. Site Preparation (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	12.3	17.3	0.03	0.40	—	0.40	0.37	—	0.37	—	2,965	2,965	0.12	0.02	—	2,975
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.42	3.42	< 0.005	0.34	0.34	—	52.4	52.4	< 0.005	0.01	< 0.005	54.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.80	5.80	< 0.005	< 0.005	—	5.82

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.11
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.96	0.96	< 0.005	< 0.005	—	0.96
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.02	0.02	< 0.005	< 0.005	< 0.005	0.02
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.31	3.78	0.00	0.00	0.84	0.84	0.00	0.20	0.20	—	839	839	0.04	0.03	0.08	849
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	190	190	0.01	0.03	0.01	199
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.67	1.67	< 0.005	< 0.005	< 0.005	1.69
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.37	0.37	< 0.005	< 0.005	< 0.005	0.39
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.54	0.54	< 0.005	< 0.005	< 0.005	0.57
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.28	0.28	< 0.005	< 0.005	< 0.005	0.28
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06

Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.09	0.09	< 0.005	< 0.005	< 0.005	0.09

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.31	123
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.01	123
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.77	6.78	9.40	0.02	0.27	—	0.27	0.25	—	0.25	—	1,570	1,570	0.06	0.01	—	1,575

Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.03	0.02	< 0.005	< 0.005	1.30	1.30	< 0.005	0.13	0.13	—	21.0	21.0	< 0.005	< 0.005	0.02	21.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	1.24	1.71	< 0.005	0.05	—	0.05	0.05	—	0.05	—	260	260	0.01	< 0.005	—	261
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	3.47	3.47	< 0.005	< 0.005	< 0.005	3.63
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.48	7.65	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,521	1,521	0.06	0.05	5.57	1,544
Vendor	0.01	0.36	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.87	332
Hauling	< 0.005	0.34	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.64	291
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.53	6.49	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,442	1,442	0.07	0.05	0.14	1,460
Vendor	0.01	0.38	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.02	331
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.10	1.21	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	261	261	0.01	0.01	0.43	264
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	56.5	56.5	< 0.005	0.01	0.07	59.0
Hauling	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	49.4	49.4	< 0.005	0.01	0.05	51.8

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	43.1	43.1	< 0.005	< 0.005	0.07	43.7
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.36	9.36	< 0.005	< 0.005	0.01	9.77
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.17	8.17	< 0.005	< 0.005	0.01	8.57

3.6. Grading (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.31	123
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.30	38.1	52.8	0.09	1.52	—	1.52	1.40	—	1.40	—	8,816	8,816	0.36	0.07	—	8,846
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	7.70	7.70	< 0.005	0.77	0.77	—	118	118	0.01	0.02	0.01	123
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.77	6.78	9.40	0.02	0.27	—	0.27	0.25	—	0.25	—	1,570	1,570	0.06	0.01	—	1,575
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.03	0.02	< 0.005	< 0.005	1.30	1.30	< 0.005	0.13	0.13	—	21.0	21.0	< 0.005	< 0.005	0.02	21.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	1.24	1.71	< 0.005	0.05	—	0.05	0.05	—	0.05	—	260	260	0.01	< 0.005	—	261
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	3.47	3.47	< 0.005	< 0.005	< 0.005	3.63
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.48	7.65	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,521	1,521	0.06	0.05	5.57	1,544
Vendor	0.01	0.36	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.87	332
Hauling	< 0.005	0.34	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.64	291
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.47	0.53	6.49	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,442	1,442	0.07	0.05	0.14	1,460
Vendor	0.01	0.38	0.18	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	317	317	0.01	0.04	0.02	331
Hauling	< 0.005	0.35	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	277	277	0.02	0.04	0.02	291
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.10	1.21	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	261	261	0.01	0.01	0.43	264

Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	56.5	56.5	< 0.005	0.01	0.07	59.0
Hauling	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	49.4	49.4	< 0.005	0.01	0.05	51.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	43.1	43.1	< 0.005	< 0.005	0.07	43.7
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.36	9.36	< 0.005	< 0.005	0.01	9.77
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.17	8.17	< 0.005	< 0.005	0.01	8.57

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.37	151
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.23	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.01	150
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.29	10.7	16.3	0.03	0.50	—	0.50	0.46	—	0.46	—	2,746	2,746	0.11	0.02	—	2,756
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	4.75	4.75	< 0.005	0.48	0.48	—	76.9	76.9	< 0.005	0.01	0.09	80.4

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	1.95	2.98	< 0.005	0.09	—	0.09	0.08	—	0.08	—	455	455	0.02	< 0.005	—	456
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.87	0.87	< 0.005	0.09	0.09	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.69	0.69	11.1	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,212	2,212	0.09	0.08	8.10	2,245
Vendor	0.02	0.72	0.35	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	1.74	663
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.32	146
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.68	0.77	9.44	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,097	2,097	0.10	0.08	0.21	2,123
Vendor	0.02	0.75	0.36	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	0.05	662
Hauling	< 0.005	0.18	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.01	145
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.36	0.44	5.30	0.00	0.00	1.10	1.10	0.00	0.26	0.26	—	1,137	1,137	0.05	0.04	1.87	1,152
Vendor	0.01	0.40	0.19	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	339	339	0.01	0.05	0.40	354
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	74.0	74.0	< 0.005	0.01	0.07	77.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.97	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	188	188	0.01	0.01	0.31	191
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	56.1	56.1	< 0.005	0.01	0.07	58.6
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.3	12.3	< 0.005	< 0.005	0.01	12.9

3.8. Building Construction (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.37	151
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.41	20.0	30.6	0.05	0.94	—	0.94	0.87	—	0.87	—	5,140	5,140	0.21	0.04	—	5,158
Onsite truck	0.01	0.23	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	144	144	0.01	0.02	0.01	150
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.29	10.7	16.3	0.03	0.50	—	0.50	0.46	—	0.46	—	2,746	2,746	0.11	0.02	—	2,756
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	4.75	4.75	< 0.005	0.48	0.48	—	76.9	76.9	< 0.005	0.01	0.09	80.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	1.95	2.98	< 0.005	0.09	—	0.09	0.08	—	0.08	—	455	455	0.02	< 0.005	—	456
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.87	0.87	< 0.005	0.09	0.09	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.69	0.69	11.1	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,212	2,212	0.09	0.08	8.10	2,245
Vendor	0.02	0.72	0.35	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	1.74	663

Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.32	146
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.68	0.77	9.44	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,097	2,097	0.10	0.08	0.21	2,123
Vendor	0.02	0.75	0.36	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	635	635	0.03	0.09	0.05	662
Hauling	< 0.005	0.18	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.01	145
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.36	0.44	5.30	0.00	0.00	1.10	1.10	0.00	0.26	0.26	—	1,137	1,137	0.05	0.04	1.87	1,152
Vendor	0.01	0.40	0.19	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	339	339	0.01	0.05	0.40	354
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	74.0	74.0	< 0.005	0.01	0.07	77.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.97	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	188	188	0.01	0.01	0.31	191
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	56.1	56.1	< 0.005	0.01	0.07	58.6
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.3	12.3	< 0.005	< 0.005	0.01	12.9

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.26	18.2	30.5	0.05	0.82	—	0.82	0.76	—	0.76	—	5,141	5,141	0.21	0.04	—	5,159

Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	142	142	0.01	0.02	0.01	148
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.25	0.42	< 0.005	0.01	—	0.01	0.01	—	0.01	—	70.4	70.4	< 0.005	< 0.005	—	70.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.94	1.94	< 0.005	< 0.005	< 0.005	2.03
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.7	11.7	< 0.005	< 0.005	—	11.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.59	0.70	8.82	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,055	2,055	0.09	0.08	0.19	2,080
Vendor	0.02	0.72	0.34	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	624	624	0.03	0.09	0.04	651
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	28.6	28.6	< 0.005	< 0.005	0.04	29.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.54	8.54	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.86	1.86	< 0.005	< 0.005	< 0.005	1.96
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.73	4.73	< 0.005	< 0.005	0.01	4.79
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.41	1.41	< 0.005	< 0.005	< 0.005	1.48
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.31	0.31	< 0.005	< 0.005	< 0.005	0.32

3.10. Building Construction (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.26	18.2	30.5	0.05	0.82	—	0.82	0.76	—	0.76	—	5,141	5,141	0.21	0.04	—	5,159
Onsite truck	0.01	0.22	0.13	< 0.005	< 0.005	9.41	9.41	< 0.005	0.94	0.94	—	142	142	0.01	0.02	0.01	148
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.25	0.42	< 0.005	0.01	—	0.01	0.01	—	0.01	—	70.4	70.4	< 0.005	< 0.005	—	70.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.94	1.94	< 0.005	< 0.005	< 0.005	2.03
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.7	11.7	< 0.005	< 0.005	—	11.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.59	0.70	8.82	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,055	2,055	0.09	0.08	0.19	2,080
Vendor	0.02	0.72	0.34	< 0.005	0.01	0.17	0.18	< 0.005	0.05	0.05	—	624	624	0.03	0.09	0.04	651
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	28.6	28.6	< 0.005	< 0.005	0.04	29.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.54	8.54	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.86	1.86	< 0.005	< 0.005	< 0.005	1.96
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.73	4.73	< 0.005	< 0.005	0.01	4.79
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.41	1.41	< 0.005	< 0.005	< 0.005	1.48
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.31	0.31	< 0.005	< 0.005	< 0.005	0.32

3.11. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.30	121

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.01	121
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.57	4.64	0.01	0.17	—	0.17	0.15	—	0.15	—	688	688	0.03	0.01	—	690
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	3.41	3.41	< 0.005	0.34	0.34	—	81.1	81.1	< 0.005	0.01	0.09	84.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.65	0.85	< 0.005	0.03	—	0.03	0.03	—	0.03	—	114	114	< 0.005	< 0.005	—	114
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.62	0.62	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.31	5.17	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,084	1,084	0.04	0.04	3.67	1,100
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.34	130
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.35	4.41	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,028	1,028	0.05	0.04	0.10	1,040
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.01	130
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.27	3.23	0.00	0.00	0.72	0.72	0.00	0.17	0.17	—	731	731	0.03	0.03	1.11	740
Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.3
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.59	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	0.01	< 0.005	0.18	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.12. Paving (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.30	121
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	5.10	6.62	0.01	0.24	—	0.24	0.22	—	0.22	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.18	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	116	116	0.01	0.02	0.01	121
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.57	4.64	0.01	0.17	—	0.17	0.15	—	0.15	—	688	688	0.03	0.01	—	690
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	3.41	3.41	< 0.005	0.34	0.34	—	81.1	81.1	< 0.005	0.01	0.09	84.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.65	0.85	< 0.005	0.03	—	0.03	0.03	—	0.03	—	114	114	< 0.005	< 0.005	—	114

Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.62	0.62	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.31	5.17	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,084	1,084	0.04	0.04	3.67	1,100
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.34	130
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.35	4.41	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,028	1,028	0.05	0.04	0.10	1,040
Vendor	< 0.005	0.14	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.01	130
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.27	3.23	0.00	0.00	0.72	0.72	0.00	0.17	0.17	—	731	731	0.03	0.03	1.11	740
Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.3
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.59	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	0.01	< 0.005	0.18	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.13. Paving (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.28	119
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.01	119
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	3.45	4.73	0.01	0.16	—	0.16	0.14	—	0.14	—	701	701	0.03	0.01	—	704

Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	3.47	3.47	< 0.005	0.35	0.35	—	81.1	81.1	< 0.005	0.01	0.09	84.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.63	0.86	< 0.005	0.03	—	0.03	0.03	—	0.03	—	116	116	< 0.005	< 0.005	—	117
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.63	0.63	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.28	4.81	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,063	1,063	0.04	0.04	3.31	1,079
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.32	128
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.34	4.07	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,008	1,008	0.01	0.04	0.09	1,020
Vendor	< 0.005	0.14	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.01	128
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.25	3.06	0.00	0.00	0.74	0.74	0.00	0.17	0.17	—	731	731	0.01	0.03	1.02	740

Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.2
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.56	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	< 0.005	< 0.005	0.17	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.14. Paving (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.28	119
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	4.82	6.63	0.01	0.22	—	0.22	0.20	—	0.20	—	982	982	0.04	0.01	—	985
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—

Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	114	114	0.01	0.02	0.01	119
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	3.45	4.73	0.01	0.16	—	0.16	0.14	—	0.14	—	701	701	0.03	0.01	—	704
Dust From Material Movement	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	3.47	3.47	< 0.005	0.35	0.35	—	81.1	81.1	< 0.005	0.01	0.09	84.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.63	0.86	< 0.005	0.03	—	0.03	0.03	—	0.03	—	116	116	< 0.005	< 0.005	—	117
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.63	0.63	< 0.005	0.06	0.06	—	13.4	13.4	< 0.005	< 0.005	0.01	14.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.28	4.81	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,063	1,063	0.04	0.04	3.31	1,079
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.32	128
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.34	4.07	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,008	1,008	0.01	0.04	0.09	1,020
Vendor	< 0.005	0.14	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	122	122	0.01	0.02	0.01	128
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.25	3.06	0.00	0.00	0.74	0.74	0.00	0.17	0.17	—	731	731	0.01	0.03	1.02	740
Vendor	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	87.4	87.4	< 0.005	0.01	0.10	91.2
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.56	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	121	121	< 0.005	< 0.005	0.17	123
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.5	14.5	< 0.005	< 0.005	0.02	15.1
Hauling	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

3.15. Paving (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56	4.57	6.62	0.01	0.19	—	0.19	0.18	—	0.18	—	982	982	0.04	0.01	—	986

Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	111	111	0.01	0.02	0.01	116
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.42	0.61	< 0.005	0.02	—	0.02	0.02	—	0.02	—	90.3	90.3	< 0.005	< 0.005	—	90.6
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.05	—	10.2	10.2	< 0.005	< 0.005	0.01	10.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.0	15.0	< 0.005	< 0.005	—	15.0
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.69	1.69	< 0.005	< 0.005	< 0.005	1.77
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.27	0.31	3.84	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	990	990	0.01	0.04	0.08	1,002
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.37	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	92.4	92.4	< 0.005	< 0.005	0.12	93.6
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.0	11.0	< 0.005	< 0.005	0.01	11.5
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.02	15.5
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.82	1.82	< 0.005	< 0.005	< 0.005	1.90
Hauling	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

3.16. Paving (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56	4.57	6.62	0.01	0.19	—	0.19	0.18	—	0.18	—	982	982	0.04	0.01	—	986
Dust From Material Movement	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	< 0.005	0.17	0.10	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	111	111	0.01	0.02	0.01	116
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.42	0.61	< 0.005	0.02	—	0.02	0.02	—	0.02	—	90.3	90.3	< 0.005	< 0.005	—	90.6
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.05	—	10.2	10.2	< 0.005	< 0.005	0.01	10.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.0	15.0	< 0.005	< 0.005	—	15.0
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.69	1.69	< 0.005	< 0.005	< 0.005	1.77
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.31	3.84	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	990	990	0.01	0.04	0.08	1,002
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.37	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	92.4	92.4	< 0.005	< 0.005	0.12	93.6
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.0	11.0	< 0.005	< 0.005	0.01	11.5
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.02	15.5
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.82	1.82	< 0.005	< 0.005	< 0.005	1.90
Hauling	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

3.17. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.0	90.0	0.01	0.01	0.23	94.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.1	90.1	0.01	0.01	0.01	94.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.40	3.77	6.26	0.01	0.14	—	0.14	0.13	—	0.13	—	994	994	0.04	0.01	—	997
Onsite truck	< 0.005	0.10	0.06	< 0.005	< 0.005	2.65	2.65	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	66.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.69	1.14	< 0.005	0.03	—	0.03	0.02	—	0.02	—	165	165	0.01	< 0.005	—	165
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.48	0.48	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.29	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	271	271	0.01	0.01	0.92	275
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.31	143
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.10	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	257	257	0.01	0.01	0.02	260
Vendor	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
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.07	0.81	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	0.01	0.01	0.28	185
Vendor	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
Hauling	< 0.005	0.12	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	0.01	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.05	30.6
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.02	16.6

3.18. Architectural Coating (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.0	90.0	0.01	0.01	0.23	94.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.38	8.93	0.01	0.20	—	0.20	0.18	—	0.18	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	90.1	90.1	0.01	0.01	0.01	94.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.40	3.77	6.26	0.01	0.14	—	0.14	0.13	—	0.13	—	994	994	0.04	0.01	—	997
Onsite truck	< 0.005	0.10	0.06	< 0.005	< 0.005	2.65	2.65	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	66.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.69	1.14	< 0.005	0.03	—	0.03	0.02	—	0.02	—	165	165	0.01	< 0.005	—	165
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.48	0.48	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.29	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	271	271	0.01	0.01	0.92	275
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.31	143
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.10	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	257	257	0.01	0.01	0.02	260
Vendor	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
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	136	136	0.01	0.02	0.01	143
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.07	0.81	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	0.01	0.01	0.28	185
Vendor	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
Hauling	< 0.005	0.12	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	0.01	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.05	30.6
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.02	16.6

3.19. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.3	88.3	0.01	0.01	0.22	92.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.4	88.4	0.01	0.01	0.01	92.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.39	3.63	6.37	0.01	0.12	—	0.12	0.11	—	0.11	—	1,014	1,014	0.04	0.01	—	1,017
Onsite truck	< 0.005	0.10	0.05	< 0.005	< 0.005	2.70	2.70	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	65.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.66	1.16	< 0.005	0.02	—	0.02	0.02	—	0.02	—	168	168	0.01	< 0.005	—	168
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.49	0.49	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	1.20	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	266	266	0.01	0.01	0.83	270
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.28	140
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.02	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	252	252	< 0.005	0.01	0.02	255

Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.01	140
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.76	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	< 0.005	0.01	0.25	185
Vendor	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
Hauling	< 0.005	0.12	0.04	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	< 0.005	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.04	30.6
Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.01	16.6

3.20. Architectural Coating (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.3	88.3	0.01	0.01	0.22	92.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.09	8.92	0.01	0.17	—	0.17	0.16	—	0.16	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.14	0.08	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	88.4	88.4	0.01	0.01	0.01	92.2

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.39	3.63	6.37	0.01	0.12	—	0.12	0.11	—	0.11	—	1,014	1,014	0.04	0.01	—	1,017
Onsite truck	< 0.005	0.10	0.05	< 0.005	< 0.005	2.70	2.70	< 0.005	0.27	0.27	—	63.1	63.1	< 0.005	0.01	0.07	65.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.66	1.16	< 0.005	0.02	—	0.02	0.02	—	0.02	—	168	168	0.01	< 0.005	—	168
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.49	0.49	< 0.005	0.05	0.05	—	10.4	10.4	< 0.005	< 0.005	0.01	10.9
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	1.20	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	266	266	0.01	0.01	0.83	270
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.28	140
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	1.02	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	252	252	< 0.005	0.01	0.02	255
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	133	133	0.01	0.02	0.01	140
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.76	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	183	183	< 0.005	0.01	0.25	185
Vendor	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
Hauling	< 0.005	0.12	0.04	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	95.3	95.3	< 0.005	0.02	0.09	100
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.04	30.6

Vendor	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
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	15.8	15.8	< 0.005	< 0.005	0.01	16.6

3.21. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.52	4.86	8.93	0.01	0.15	—	0.15	0.14	—	0.14	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	86.4	86.4	< 0.005	0.01	0.01	90.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.45	0.82	< 0.005	0.01	—	0.01	0.01	—	0.01	—	131	131	0.01	< 0.005	—	131
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.35	0.35	< 0.005	0.03	0.04	—	7.94	7.94	< 0.005	< 0.005	0.01	8.30
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.6	21.6	< 0.005	< 0.005	—	21.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	1.31	1.31	< 0.005	< 0.005	< 0.005	1.37
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.96	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	247	247	< 0.005	0.01	0.02	250
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	130	130	0.01	0.02	0.01	137
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	23.1	23.1	< 0.005	< 0.005	0.03	23.4
Vendor	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
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.0	12.0	< 0.005	< 0.005	0.01	12.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.82	3.82	< 0.005	< 0.005	< 0.005	3.87
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.99	1.99	< 0.005	< 0.005	< 0.005	2.08

3.22. Architectural Coating (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.52	4.86	8.93	0.01	0.15	—	0.15	0.14	—	0.14	—	1,419	1,419	0.06	0.01	—	1,424
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	4.00	4.00	< 0.005	0.40	0.40	—	86.4	86.4	< 0.005	0.01	0.01	90.2

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.45	0.82	< 0.005	0.01	—	0.01	0.01	—	0.01	—	131	131	0.01	< 0.005	—	131
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.35	0.35	< 0.005	0.03	0.04	—	7.94	7.94	< 0.005	< 0.005	0.01	8.30
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.6	21.6	< 0.005	< 0.005	—	21.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	1.31	1.31	< 0.005	< 0.005	< 0.005	1.37
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.96	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	247	247	< 0.005	0.01	0.02	250
Vendor	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
Hauling	< 0.005	0.16	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	130	130	0.01	0.02	0.01	137
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	23.1	23.1	< 0.005	< 0.005	0.03	23.4
Vendor	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
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.0	12.0	< 0.005	< 0.005	0.01	12.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.82	3.82	< 0.005	< 0.005	< 0.005	3.87
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.99	1.99	< 0.005	< 0.005	< 0.005	2.08

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	11/14/2024	1/1/2025	5.00	35.0	site clearing
Grading	Grading	1/2/2025	4/2/2025	5.00	65.0	excavation and grading
Building Construction	Building Construction	4/3/2025	1/7/2026	5.00	200	installation of park canopies and structures
Paving	Paving	1/8/2026	2/16/2028	5.00	550	paving of parking lot and access roads/paths
Architectural Coating	Architectural Coating	1/8/2026	2/16/2028	5.00	550	landscaping & finishing on structures

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Site Preparation	Air Compressors	Diesel	Average	1.00	4.00	37.0	0.48
Site Preparation	Skid Steer Loaders	Diesel	Average	1.00	6.00	71.0	0.37
Site Preparation	Aerial Lifts	Diesel	Average	5.00	6.00	46.0	0.31
Site Preparation	Rubber Tired Loaders	Diesel	Average	2.00	6.00	150	0.36
Site Preparation	Welders	Diesel	Average	3.00	4.00	46.0	0.45
Site Preparation	Cranes	Diesel	Average	1.00	4.00	367	0.29
Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	1.00	6.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	6.00	7.00	84.0	0.37
Grading	Air Compressors	Diesel	Average	2.00	6.00	37.0	0.48
Grading	Rollers	Diesel	Average	1.00	6.00	36.0	0.38
Grading	Rubber Tired Loaders	Diesel	Average	5.00	7.00	150	0.36
Grading	Welders	Diesel	Average	3.00	7.00	46.0	0.45
Grading	Aerial Lifts	Diesel	Average	9.00	6.00	46.0	0.31
Grading	Generator Sets	Diesel	Average	2.00	6.00	14.0	0.74
Grading	Cranes	Diesel	Average	1.00	4.00	367	0.29
Grading	Forklifts	Diesel	Average	4.00	7.00	82.0	0.20
Grading	Pressure Washers	Diesel	Average	3.00	6.00	14.0	0.30
Grading	Trenchers	Diesel	Average	1.00	4.00	40.0	0.50
Grading	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
Building Construction	Forklifts	Diesel	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74

Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Rollers	Diesel	Average	2.00	7.00	36.0	0.38
Building Construction	Rubber Tired Loaders	Diesel	Average	4.00	7.00	150	0.36
Building Construction	Skid Steer Loaders	Diesel	Average	2.00	7.00	71.0	0.37
Building Construction	Graders	Diesel	Average	2.00	6.00	148	0.41
Building Construction	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
Building Construction	Off-Highway Tractors	Diesel	Average	1.00	6.00	38.0	0.44
Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Graders	Diesel	Average	1.00	6.00	148	0.41
Paving	Welders	Diesel	Average	1.00	6.00	46.0	0.45
Architectural Coating	Skid Steer Loaders	Diesel	Average	2.00	7.00	71.0	0.37
Architectural Coating	Forklifts	Diesel	Average	2.00	7.00	82.0	0.20
Architectural Coating	Aerial Lifts	Diesel	Average	1.00	7.00	46.0	0.31
Architectural Coating	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Site Preparation	Air Compressors	Diesel	Average	1.00	4.00	37.0	0.48
Site Preparation	Skid Steer Loaders	Diesel	Average	1.00	6.00	71.0	0.37
Site Preparation	Aerial Lifts	Diesel	Average	5.00	6.00	46.0	0.31
Site Preparation	Rubber Tired Loaders	Diesel	Average	2.00	6.00	150	0.36
Site Preparation	Welders	Diesel	Average	3.00	4.00	46.0	0.45
Site Preparation	Cranes	Diesel	Average	1.00	4.00	367	0.29

Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	1.00	6.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	6.00	7.00	84.0	0.37
Grading	Air Compressors	Diesel	Average	2.00	6.00	37.0	0.48
Grading	Rollers	Diesel	Average	1.00	6.00	36.0	0.38
Grading	Rubber Tired Loaders	Diesel	Average	5.00	7.00	150	0.36
Grading	Welders	Diesel	Average	3.00	7.00	46.0	0.45
Grading	Aerial Lifts	Diesel	Average	9.00	6.00	46.0	0.31
Grading	Generator Sets	Diesel	Average	2.00	6.00	14.0	0.74
Grading	Cranes	Diesel	Average	1.00	4.00	367	0.29
Grading	Forklifts	Diesel	Average	4.00	7.00	82.0	0.20
Grading	Pressure Washers	Diesel	Average	3.00	6.00	14.0	0.30
Grading	Trenchers	Diesel	Average	1.00	4.00	40.0	0.50
Grading	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
Building Construction	Forklifts	Diesel	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Rollers	Diesel	Average	2.00	7.00	36.0	0.38
Building Construction	Rubber Tired Loaders	Diesel	Average	4.00	7.00	150	0.36
Building Construction	Skid Steer Loaders	Diesel	Average	2.00	7.00	71.0	0.37
Building Construction	Graders	Diesel	Average	2.00	6.00	148	0.41
Building Construction	Surfacing Equipment	Diesel	Average	1.00	4.00	399	0.30
Building Construction	Off-Highway Tractors	Diesel	Average	1.00	6.00	38.0	0.44
Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Graders	Diesel	Average	1.00	6.00	148	0.41

Paving	Welders	Diesel	Average	1.00	6.00	46.0	0.45
Architectural Coating	Skid Steer Loaders	Diesel	Average	2.00	7.00	71.0	0.37
Architectural Coating	Forklifts	Diesel	Average	2.00	7.00	82.0	0.20
Architectural Coating	Aerial Lifts	Diesel	Average	1.00	7.00	46.0	0.31
Architectural Coating	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	64.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	6.00	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	110	18.5	LDA,LDT1,LDT2
Grading	Vendor	10.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	9.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	160	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	20.0	10.2	HHDT,MHDT
Building Construction	Hauling	2.00	20.0	HHDT
Building Construction	Onsite truck	11.0	4.00	HHDT,MHDT
Paving	—	—	—	—

Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	4.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	20.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	2.00	20.0	HHDT
Architectural Coating	Onsite truck	7.00	4.00	HHDT,MHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	64.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	6.00	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	110	18.5	LDA,LDT1,LDT2
Grading	Vendor	10.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	9.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	160	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	20.0	10.2	HHDT,MHDT
Building Construction	Hauling	2.00	20.0	HHDT
Building Construction	Onsite truck	11.0	4.00	HHDT,MHDT

Paving	—	—	—	—
Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	4.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	20.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	2.00	20.0	HHDT
Architectural Coating	Onsite truck	7.00	4.00	HHDT,MHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	57%	57%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	0.00	0.00	—

Grading	0.00	0.00	65.0	0.00	—
Paving	0.00	0.00	37.5	0.00	3.00

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Parking Lot	3.00	100%
City Park	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	690	0.05	0.01
2025	0.00	690	0.05	0.01
2026	0.00	690	0.05	0.01
2027	0.00	690	0.05	0.01
2028	0.00	690	0.05	0.01

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

6.4.1. Wildfire

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-14: Maintain Trails and Parks	Improved Public Health, Social Equity	—	1.00	1.00

6.4.2. Temperature and Extreme Heat

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
D-3: Install Drought Resistant Landscaping	Water Conservation	—	1.00	1.00

EH-9: Expand Urban Tree Canopy	Energy and Fuel Savings, Improved Air Quality, Improved Public Health, Social Equity	1.00	1.00	—
MH-14: Maintain Trails and Parks	Improved Public Health, Social Equity	—	1.00	1.00
MH-23: Landscape with Climate Considerations	Improved Ecosystem Health, Water Conservation	—	1.00	—
MH-41: Expand Urban Greening/Agriculture	Enhanced Food Security, Improved Air Quality, Improved Public Health, Social Equity, Water Conservation	1.00	1.00	1.00

6.4.3. Air Quality Degradation

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-41: Expand Urban Greening/Agriculture	Enhanced Food Security, Improved Air Quality, Improved Public Health, Social Equity, Water Conservation	1.00	1.00	1.00

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	69.6
AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0

Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8
Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—

High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0

Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0
Children	99.4
Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9

Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Park construction schedule obtained from PD dated 1-11-24.

Construction: Off-Road Equipment	Equipment inventory provided by LADWP.
Construction: Dust From Material Movement	Included all phases with earthmoving equipment (i.e., grader).
Construction: Trips and VMT	Personnel & vehicle inventories provided by LADWP.
Construction: On-Road Fugitive Dust	Vehicle speeds on unpaved areas limited to 15 mph = 57% dust reduction (SCAQMD Table XI-A)

LADWP Headworks Project - WQL Construction Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - WQL Construction
Construction Start Date	6/14/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.15313612290838, -118.3185549473283
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Research & Development	100	1000sqft	4.85	100,000	111,500	111,500	—	—

Parking Lot	2.15	Acre	2.15	0.00	15,625	15,625	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-4*	Use Local and Sustainable Building Materials

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12.2	33.3	37.7	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,448	9,448	0.39	0.22	6.64	9,521
Mit.	12.2	33.3	37.7	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,448	9,448	0.39	0.22	6.64	9,521
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12.2	33.4	37.5	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,428	9,428	0.38	0.22	0.17	9,497
Mit.	12.2	33.4	37.5	0.08	1.28	9.65	10.3	1.18	1.87	3.05	—	9,428	9,428	0.38	0.22	0.17	9,497
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	3.82	11.4	15.3	0.03	0.43	5.34	5.60	0.39	0.67	0.99	—	3,510	3,510	0.13	0.09	1.25	3,542
Mit.	3.82	11.4	15.3	0.03	0.43	5.34	5.60	0.39	0.67	0.99	—	3,510	3,510	0.13	0.09	1.25	3,542
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.70	2.09	2.80	0.01	0.08	0.97	1.02	0.07	0.12	0.18	—	581	581	0.02	0.02	0.21	586
Mit.	0.70	2.09	2.80	0.01	0.08	0.97	1.02	0.07	0.12	0.18	—	581	581	0.02	0.02	0.21	586
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86	33.3	37.7	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,448	9,448	0.39	0.20	3.21	9,521

2028	1.11	11.5	17.4	0.03	0.20	6.81	7.00	0.18	0.79	0.97	—	3,347	3,347	0.11	0.08	2.74	3,376
2029	12.2	18.0	30.3	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,656	7,656	0.26	0.22	6.64	7,734
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86	33.4	37.5	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,428	9,428	0.38	0.20	0.10	9,497
2028	1.97	16.3	24.4	0.05	0.48	6.81	7.00	0.44	0.79	1.14	—	5,910	5,910	0.23	0.18	0.09	5,969
2029	12.2	18.1	29.0	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,550	7,550	0.26	0.22	0.17	7,622
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.33	11.4	13.4	0.03	0.43	2.59	3.02	0.39	0.60	0.99	—	3,342	3,342	0.13	0.08	0.57	3,368
2028	0.87	8.70	12.8	0.02	0.17	4.52	4.69	0.15	0.53	0.68	—	2,613	2,613	0.09	0.06	0.87	2,635
2029	3.82	9.94	15.3	0.02	0.26	5.34	5.60	0.24	0.67	0.91	—	3,510	3,510	0.12	0.09	1.25	3,542
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.24	2.09	2.45	0.01	0.08	0.47	0.55	0.07	0.11	0.18	—	553	553	0.02	0.01	0.09	558
2028	0.16	1.59	2.34	< 0.005	0.03	0.83	0.86	0.03	0.10	0.12	—	433	433	0.02	0.01	0.14	436
2029	0.70	1.81	2.80	< 0.005	0.05	0.97	1.02	0.04	0.12	0.17	—	581	581	0.02	0.02	0.21	586

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86	33.3	37.7	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,448	9,448	0.39	0.20	3.21	9,521
2028	1.11	11.5	17.4	0.03	0.20	6.81	7.00	0.18	0.79	0.97	—	3,347	3,347	0.11	0.08	2.74	3,376
2029	12.2	18.0	30.3	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,656	7,656	0.26	0.22	6.64	7,734
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2027	3.86	33.4	37.5	0.08	1.28	7.16	8.44	1.18	1.87	3.05	—	9,428	9,428	0.38	0.20	0.10	9,497
2028	1.97	16.3	24.4	0.05	0.48	6.81	7.00	0.44	0.79	1.14	—	5,910	5,910	0.23	0.18	0.09	5,969
2029	12.2	18.1	29.0	0.05	0.67	9.65	10.3	0.61	1.28	1.89	—	7,550	7,550	0.26	0.22	0.17	7,622
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.33	11.4	13.4	0.03	0.43	2.59	3.02	0.39	0.60	0.99	—	3,342	3,342	0.13	0.08	0.57	3,368
2028	0.87	8.70	12.8	0.02	0.17	4.52	4.69	0.15	0.53	0.68	—	2,613	2,613	0.09	0.06	0.87	2,635
2029	3.82	9.94	15.3	0.02	0.26	5.34	5.60	0.24	0.67	0.91	—	3,510	3,510	0.12	0.09	1.25	3,542
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.24	2.09	2.45	0.01	0.08	0.47	0.55	0.07	0.11	0.18	—	553	553	0.02	0.01	0.09	558
2028	0.16	1.59	2.34	< 0.005	0.03	0.83	0.86	0.03	0.10	0.12	—	433	433	0.02	0.01	0.14	436
2029	0.70	1.81	2.80	< 0.005	0.05	0.97	1.02	0.04	0.12	0.17	—	581	581	0.02	0.02	0.21	586

3. Construction Emissions Details

3.1. Site Preparation (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272
Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	0.13	52.8

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272
Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	< 0.005	52.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.30	10.2	0.02	0.37	—	0.37	0.34	—	0.34	—	2,371	2,371	0.10	0.02	—	2,380
Dust From Material Movement	—	—	—	—	—	0.91	0.91	—	0.40	0.40	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.92	0.92	< 0.005	0.09	0.09	—	14.5	14.5	< 0.005	< 0.005	0.02	15.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	1.86	< 0.005	0.07	—	0.07	0.06	—	0.06	—	393	393	0.02	< 0.005	—	394
Dust From Material Movement	—	—	—	—	—	0.17	0.17	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.17	0.17	< 0.005	0.02	0.02	—	2.40	2.40	< 0.005	< 0.005	< 0.005	2.51
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	1.80	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	399	399	0.02	0.01	1.24	405

Vendor	0.01	0.53	0.25	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	1.28	511
Hauling	< 0.005	0.32	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.57	281
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.13	1.53	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	378	378	0.01	0.01	0.03	382
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.46	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	110	110	< 0.005	< 0.005	0.15	112
Vendor	< 0.005	0.16	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	141	141	0.01	0.02	0.16	147
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	76.7	76.7	< 0.005	0.01	0.07	80.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.3	18.3	< 0.005	< 0.005	0.03	18.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.3	23.3	< 0.005	< 0.005	0.03	24.3
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3

3.2. Site Preparation (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272

Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	0.13	52.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.73	32.3	35.5	0.08	1.28	—	1.28	1.17	—	1.17	—	8,243	8,243	0.33	0.07	—	8,272
Dust From Material Movement	—	—	—	—	—	3.18	3.18	—	1.38	1.38	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.04	< 0.005	< 0.005	3.38	3.38	< 0.005	0.34	0.34	—	50.5	50.5	< 0.005	0.01	< 0.005	52.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.30	10.2	0.02	0.37	—	0.37	0.34	—	0.34	—	2,371	2,371	0.10	0.02	—	2,380
Dust From Material Movement	—	—	—	—	—	0.91	0.91	—	0.40	0.40	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.92	0.92	< 0.005	0.09	0.09	—	14.5	14.5	< 0.005	< 0.005	0.02	15.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	1.86	< 0.005	0.07	—	0.07	0.06	—	0.06	—	393	393	0.02	< 0.005	—	394
Dust From Material Movement	—	—	—	—	—	0.17	0.17	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.17	0.17	< 0.005	0.02	0.02	—	2.40	2.40	< 0.005	< 0.005	< 0.005	2.51

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	1.80	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	399	399	0.02	0.01	1.24	405
Vendor	0.01	0.53	0.25	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	1.28	511
Hauling	< 0.005	0.32	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.57	281
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.13	1.53	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	378	378	0.01	0.01	0.03	382
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.46	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	110	110	< 0.005	< 0.005	0.15	112
Vendor	< 0.005	0.16	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	141	141	0.01	0.02	0.16	147
Hauling	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	76.7	76.7	< 0.005	0.01	0.07	80.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.3	18.3	< 0.005	< 0.005	0.03	18.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.3	23.3	< 0.005	< 0.005	0.03	24.3
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.7	12.7	< 0.005	< 0.005	0.01	13.3

3.3. Grading (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.89	16.1	22.1	0.05	0.53	—	0.53	0.49	—	0.49	—	4,601	4,601	0.19	0.04	—	4,616
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	75.8	75.8	< 0.005	0.01	< 0.005	79.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	2.34	< 0.005	0.06	—	0.06	0.05	—	0.05	—	486	486	0.02	< 0.005	—	488
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.51	0.51	< 0.005	0.05	0.05	—	8.00	8.00	< 0.005	< 0.005	0.01	8.36
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.31	0.43	< 0.005	0.01	—	0.01	0.01	—	0.01	—	80.5	80.5	< 0.005	< 0.005	—	80.8
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.09	0.09	< 0.005	0.01	0.01	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.38
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.17	2.04	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	504	504	0.01	0.02	0.04	510
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.23	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	54.0	54.0	< 0.005	< 0.005	0.08	54.7
Vendor	< 0.005	0.06	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	51.7	51.7	< 0.005	0.01	0.06	53.9
Hauling	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	28.2	28.2	< 0.005	< 0.005	0.03	29.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.95	8.95	< 0.005	< 0.005	0.01	9.06
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.56	8.56	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.67	4.67	< 0.005	< 0.005	< 0.005	4.90

3.4. Grading (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.89	16.1	22.1	0.05	0.53	—	0.53	0.49	—	0.49	—	4,601	4,601	0.19	0.04	—	4,616

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	75.8	75.8	< 0.005	0.01	< 0.005	79.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.70	2.34	< 0.005	0.06	—	0.06	0.05	—	0.05	—	486	486	0.02	< 0.005	—	488
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.51	0.51	< 0.005	0.05	0.05	—	8.00	8.00	< 0.005	< 0.005	0.01	8.36
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.31	0.43	< 0.005	0.01	—	0.01	0.01	—	0.01	—	80.5	80.5	< 0.005	< 0.005	—	80.8
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.09	0.09	< 0.005	0.01	0.01	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.38
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.17	2.04	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	504	504	0.01	0.02	0.04	510
Vendor	0.01	0.55	0.26	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	489	489	0.02	0.07	0.03	510
Hauling	< 0.005	0.33	0.13	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	267	267	0.01	0.04	0.01	280

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.23	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	54.0	54.0	< 0.005	< 0.005	0.08	54.7
Vendor	< 0.005	0.06	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	51.7	51.7	< 0.005	0.01	0.06	53.9
Hauling	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	28.2	28.2	< 0.005	< 0.005	0.03	29.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.95	8.95	< 0.005	< 0.005	0.01	9.06
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.56	8.56	< 0.005	< 0.005	0.01	8.93
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.67	4.67	< 0.005	< 0.005	< 0.005	4.90

3.5. Grading (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.81	15.2	22.1	0.05	0.47	—	0.47	0.44	—	0.44	—	4,602	4,602	0.19	0.04	—	4,618
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.11	0.06	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	74.1	74.1	< 0.005	0.01	< 0.005	77.3
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	1.46	2.12	< 0.005	0.05	—	0.05	0.04	—	0.04	—	441	441	0.02	< 0.005	—	443

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.47	0.47	< 0.005	0.05	0.05	—	7.10	7.10	< 0.005	< 0.005	0.01	7.42
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.27	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	73.1	73.1	< 0.005	< 0.005	—	73.3
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.18	1.18	< 0.005	< 0.005	< 0.005	1.23
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.16	1.92	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	495	495	0.01	0.02	0.04	501
Vendor	0.01	0.52	0.24	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	478	478	0.02	0.07	0.03	499
Hauling	< 0.005	0.32	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	261	261	0.01	0.04	0.01	274
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	48.2	48.2	< 0.005	< 0.005	0.06	48.8
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	45.8	45.8	< 0.005	0.01	0.05	47.8
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.0	25.0	< 0.005	< 0.005	0.02	26.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.97	7.97	< 0.005	< 0.005	0.01	8.08
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.59	7.59	< 0.005	< 0.005	0.01	7.92

Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.14	4.14	< 0.005	< 0.005	< 0.005	4.35

3.6. Grading (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.81	15.2	22.1	0.05	0.47	—	0.47	0.44	—	0.44	—	4,602	4,602	0.19	0.04	—	4,618
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.11	0.06	< 0.005	< 0.005	5.13	5.13	< 0.005	0.51	0.51	—	74.1	74.1	< 0.005	0.01	< 0.005	77.3
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	1.46	2.12	< 0.005	0.05	—	0.05	0.04	—	0.04	—	441	441	0.02	< 0.005	—	443
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.47	0.47	< 0.005	0.05	0.05	—	7.10	7.10	< 0.005	< 0.005	0.01	7.42
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.27	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	73.1	73.1	< 0.005	< 0.005	—	73.3

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.18	1.18	< 0.005	< 0.005	< 0.005	1.23
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.16	1.92	0.00	0.00	0.52	0.52	0.00	0.12	0.12	—	495	495	0.01	0.02	0.04	501
Vendor	0.01	0.52	0.24	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	478	478	0.02	0.07	0.03	499
Hauling	< 0.005	0.32	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	261	261	0.01	0.04	0.01	274
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	48.2	48.2	< 0.005	< 0.005	0.06	48.8
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	45.8	45.8	< 0.005	0.01	0.05	47.8
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.0	25.0	< 0.005	< 0.005	0.02	26.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.97	7.97	< 0.005	< 0.005	0.01	8.08
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.59	7.59	< 0.005	< 0.005	0.01	7.92
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.14	4.14	< 0.005	< 0.005	< 0.005	4.35

3.7. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.3	86.3	< 0.005	0.01	0.21	90.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.4	86.4	< 0.005	0.01	0.01	90.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.55	6.84	8.55	0.01	0.12	—	0.12	0.11	—	0.11	—	1,454	1,454	0.06	0.01	—	1,459
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.49	3.49	< 0.005	0.35	0.35	—	53.2	53.2	< 0.005	0.01	0.05	55.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	1.25	1.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	241	241	0.01	< 0.005	—	241
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.64	0.64	< 0.005	0.06	0.06	—	8.81	8.81	< 0.005	< 0.005	0.01	9.21
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.20	3.38	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	783	783	0.01	0.03	2.23	794
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	119	119	< 0.005	0.02	0.30	125
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.23	2.88	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	742	742	0.01	0.03	0.06	751
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.14	1.85	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	464	464	0.01	0.02	0.60	470
Vendor	< 0.005	0.08	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	73.6	73.6	< 0.005	0.01	0.08	76.9
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.34	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	76.9	76.9	< 0.005	< 0.005	0.10	77.9
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.2	12.2	< 0.005	< 0.005	0.01	12.7
Hauling	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

3.8. Building Construction (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.3	86.3	< 0.005	0.01	0.21	90.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.90	11.1	13.9	0.02	0.19	—	0.19	0.18	—	0.18	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	86.4	86.4	< 0.005	0.01	0.01	90.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.55	6.84	8.55	0.01	0.12	—	0.12	0.11	—	0.11	—	1,454	1,454	0.06	0.01	—	1,459
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	3.49	3.49	< 0.005	0.35	0.35	—	53.2	53.2	< 0.005	0.01	0.05	55.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	1.25	1.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	241	241	0.01	< 0.005	—	241
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.64	0.64	< 0.005	0.06	0.06	—	8.81	8.81	< 0.005	< 0.005	0.01	9.21
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.20	3.38	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	783	783	0.01	0.03	2.23	794
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	119	119	< 0.005	0.02	0.30	125
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.23	2.88	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	742	742	0.01	0.03	0.06	751
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	120	120	< 0.005	0.02	0.01	125
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.14	1.85	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	464	464	0.01	0.02	0.60	470
Vendor	< 0.005	0.08	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	73.6	73.6	< 0.005	0.01	0.08	76.9

Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.34	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	76.9	76.9	< 0.005	< 0.005	0.10	77.9
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.2	12.2	< 0.005	< 0.005	0.01	12.7
Hauling	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

3.9. Building Construction (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.1	84.1	< 0.005	0.01	0.20	88.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.2	84.2	< 0.005	0.01	0.01	88.0
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38	4.77	6.02	0.01	0.08	—	0.08	0.07	—	0.07	—	1,024	1,024	0.04	0.01	—	1,028
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	2.46	2.46	< 0.005	0.25	0.25	—	36.6	36.6	< 0.005	0.01	0.04	38.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.07	0.87	1.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	170	170	0.01	< 0.005	—	170
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.04	—	6.05	6.05	< 0.005	< 0.005	0.01	6.33
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	3.16	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	770	770	0.01	0.03	2.00	780
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.28	122
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.21	2.68	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	730	730	0.01	0.03	0.05	739
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.01	122
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.09	1.22	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	322	322	< 0.005	0.01	0.38	326
Vendor	< 0.005	0.05	0.03	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	50.5	50.5	< 0.005	0.01	0.05	52.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	53.3	53.3	< 0.005	< 0.005	0.06	54.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.37	8.37	< 0.005	< 0.005	0.01	8.74
Hauling	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

3.10. Building Construction (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.12	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.1	84.1	< 0.005	0.01	0.20	88.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.89	11.0	13.9	0.02	0.18	—	0.18	0.17	—	0.17	—	2,358	2,358	0.10	0.02	—	2,366
Onsite truck	< 0.005	0.13	0.07	< 0.005	< 0.005	5.99	5.99	< 0.005	0.60	0.60	—	84.2	84.2	< 0.005	0.01	0.01	88.0
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38	4.77	6.02	0.01	0.08	—	0.08	0.07	—	0.07	—	1,024	1,024	0.04	0.01	—	1,028
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	2.46	2.46	< 0.005	0.25	0.25	—	36.6	36.6	< 0.005	0.01	0.04	38.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.87	1.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	170	170	0.01	< 0.005	—	170
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.45	0.45	< 0.005	0.04	0.04	—	6.05	6.05	< 0.005	< 0.005	0.01	6.33
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	3.16	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	770	770	0.01	0.03	2.00	780
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.28	122
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.21	2.68	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	730	730	0.01	0.03	0.05	739
Vendor	< 0.005	0.12	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	< 0.005	0.02	0.01	122
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.09	1.22	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	322	322	< 0.005	0.01	0.38	326
Vendor	< 0.005	0.05	0.03	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	50.5	50.5	< 0.005	0.01	0.05	52.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	53.3	53.3	< 0.005	< 0.005	0.06	54.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.37	8.37	< 0.005	< 0.005	0.01	8.74
Hauling	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

3.11. Paving (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.25	113

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.01	113
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.11	< 0.005	0.03	—	0.03	0.03	—	0.03	—	164	164	0.01	< 0.005	—	165
Paving	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.04	0.03	< 0.005	< 0.005	1.33	1.33	< 0.005	0.13	0.13	—	29.6	29.6	< 0.005	< 0.005	0.03	31.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	27.2	27.2	< 0.005	< 0.005	—	27.3
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	4.91	4.91	< 0.005	< 0.005	< 0.005	5.13
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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
Hauling	0.01	0.59	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.98	534
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985

Vendor	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
Hauling	0.01	0.61	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.03	534
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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
Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.12	146
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.1	23.1	< 0.005	< 0.005	0.02	24.2

3.12. Paving (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.25	113
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.03	4.03	0.01	0.12	—	0.12	0.11	—	0.11	—	599	599	0.02	< 0.005	—	601
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	5.14	5.15	< 0.005	0.52	0.52	—	108	108	0.01	0.02	0.01	113
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.11	< 0.005	0.03	—	0.03	0.03	—	0.03	—	164	164	0.01	< 0.005	—	165
Paving	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.04	0.03	< 0.005	< 0.005	1.33	1.33	< 0.005	0.13	0.13	—	29.6	29.6	< 0.005	< 0.005	0.03	31.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	27.2	27.2	< 0.005	< 0.005	—	27.3
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.24	0.24	< 0.005	0.02	0.02	—	4.91	4.91	< 0.005	< 0.005	< 0.005	5.13
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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
Hauling	0.01	0.59	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.98	534
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985
Vendor	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
Hauling	0.01	0.61	0.24	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	509	509	0.03	0.08	0.03	534
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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

Hauling	< 0.005	0.17	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	139	139	0.01	0.02	0.12	146
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.1	23.1	< 0.005	< 0.005	0.02	24.2

3.13. Architectural Coating (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—
Architectural Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.0	36.0	< 0.005	0.01	0.08	37.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—

Architectu Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.1	36.1	< 0.005	0.01	< 0.005	37.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	3.76	4.79	0.01	0.15	—	0.15	0.14	—	0.14	—	1,192	1,192	0.05	0.01	—	1,196
Dust From Material Movement	—	—	—	—	—	0.15	0.15	—	0.02	0.02	—	—	—	—	—	—	—
Architectu ral Coatings	2.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.44	0.44	< 0.005	0.04	0.04	—	9.88	9.88	< 0.005	< 0.005	0.01	10.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.69	0.87	< 0.005	0.03	—	0.03	0.02	—	0.02	—	197	197	0.01	< 0.005	—	198
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Architectu ral Coatings	0.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.64	1.64	< 0.005	< 0.005	< 0.005	1.71
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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

Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	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

3.14. Architectural Coating (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—

Architectu Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.0	36.0	< 0.005	0.01	0.08	37.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	13.7	17.5	0.04	0.54	—	0.54	0.49	—	0.49	—	4,351	4,351	0.18	0.04	—	4,366
Dust From Material Movement	—	—	—	—	—	0.55	0.55	—	0.06	0.06	—	—	—	—	—	—	—
Architectu ral Coatings	9.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.71	1.72	< 0.005	0.17	0.17	—	36.1	36.1	< 0.005	0.01	< 0.005	37.7
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	3.76	4.79	0.01	0.15	—	0.15	0.14	—	0.14	—	1,192	1,192	0.05	0.01	—	1,196
Dust From Material Movement	—	—	—	—	—	0.15	0.15	—	0.02	0.02	—	—	—	—	—	—	—
Architectu ral Coatings	2.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.44	0.44	< 0.005	0.04	0.04	—	9.88	9.88	< 0.005	< 0.005	0.01	10.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.69	0.87	< 0.005	0.03	—	0.03	0.02	—	0.02	—	197	197	0.01	< 0.005	—	198

Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Architectural Coatings	0.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.64	1.64	< 0.005	< 0.005	< 0.005	1.71
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	4.22	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,026	1,026	0.01	0.04	2.66	1,041
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.27	3.57	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	973	973	0.01	0.04	0.07	985
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.03	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	271	271	< 0.005	0.01	0.32	274
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.05	45.4
Vendor	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
Hauling	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

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	6/14/2027	11/5/2027	5.00	105	—
Grading	Grading	11/8/2027	2/18/2028	5.00	75.0	—
Building Construction	Building Construction	2/21/2028	8/10/2029	5.00	385	—
Paving	Paving	8/13/2029	12/28/2029	5.00	100	—
Architectural Coating	Architectural Coating	8/13/2029	12/28/2029	5.00	100	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

Site Preparation	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Site Preparation	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Site Preparation	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Site Preparation	Scrapers	Diesel	Average	3.00	6.00	423	0.48
Site Preparation	Off-Highway Tractors	Diesel	Average	2.00	6.00	38.0	0.44
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Grading	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Grading	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Pressure Washers	Diesel	Average	2.00	6.00	14.0	0.30
Grading	Cranes	Diesel	Average	2.00	6.00	367	0.29
Grading	Welders	Diesel	Average	4.00	6.00	46.0	0.45
Building Construction	Forklifts	Electric	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Aerial Lifts	Diesel	Average	8.00	8.00	46.0	0.31
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Forklifts	Electric	Average	1.00	8.00	82.0	0.20
Architectural Coating	Graders	Diesel	Average	1.00	8.00	148	0.41
Architectural Coating	Scrapers	Diesel	Average	2.00	6.00	423	0.48

Architectural Coating	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Architectural Coating	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Site Preparation	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Site Preparation	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Site Preparation	Scrapers	Diesel	Average	3.00	6.00	423	0.48
Site Preparation	Off-Highway Tractors	Diesel	Average	2.00	6.00	38.0	0.44
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Grading	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Grading	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Pressure Washers	Diesel	Average	2.00	6.00	14.0	0.30
Grading	Cranes	Diesel	Average	2.00	6.00	367	0.29
Grading	Welders	Diesel	Average	4.00	6.00	46.0	0.45
Building Construction	Forklifts	Electric	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37

Building Construction	Aerial Lifts	Diesel	Average	8.00	8.00	46.0	0.31
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Forklifts	Electric	Average	1.00	8.00	82.0	0.20
Architectural Coating	Graders	Diesel	Average	1.00	8.00	148	0.41
Architectural Coating	Scrapers	Diesel	Average	2.00	6.00	423	0.48
Architectural Coating	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Architectural Coating	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Architectural Coating	Trenchers	Diesel	Average	1.00	6.00	40.0	0.50

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	16.0	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	40.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	16.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	6.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	60.0	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	4.00	10.2	HHDT,MHDT

Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	7.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	0.00	10.2	HHDT,MHDT
Paving	Hauling	8.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	80.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	3.00	4.00	HHDT,MHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	16.0	10.2	HHDT,MHDT
Site Preparation	Hauling	4.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	40.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	16.0	10.2	HHDT,MHDT
Grading	Hauling	4.00	20.0	HHDT
Grading	Onsite truck	6.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	60.0	18.5	LDA,LDT1,LDT2

Building Construction	Vendor	4.00	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	7.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	80.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	0.00	10.2	HHDT,MHDT
Paving	Hauling	8.00	20.0	HHDT
Paving	Onsite truck	9.00	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	80.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	3.00	4.00	HHDT,MHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	57%	57%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	150,000	50,000	5,619

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	315	0.00	—
Grading	0.00	0.00	0.00	0.00	—
Paving	0.00	0.00	0.00	0.00	2.15
Architectural Coating	0.00	0.00	200	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Research & Development	0.00	0%
Parking Lot	2.15	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00	690	0.05	0.01
2028	196	690	0.05	0.01
2029	294	690	0.05	0.01

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	69.6

AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0
Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8
Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract

Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—

Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0
Children	99.4

Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9
Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land uses based off PD and updated site plan.
Construction: Construction Phases	Schedule provided by LADWP.
Construction: Off-Road Equipment	Equipment inventory provided by LADWP.
Construction: Dust From Material Movement	All earthwork balanced on-site.
Construction: Trips and VMT	Personnel & vehicle inventories provided by LADWP.
Construction: On-Road Fugitive Dust	Limit vehicle speeds on unpaved areas to 15 mph.

LADWP Headworks Project - DPR Demo Construction Detailed Report

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8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - DPR Demo Construction
Construction Start Date	5/1/2030
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.15343780699328, -118.31929069851039
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Parking Lot	0.85	Acre	0.85	0.00	0.00	0.00	—	—

Research & Development	25.0	1000sqft	1.37	25,000	34,500	34,500	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-4*	Use Local and Sustainable Building Materials

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
Mit.	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
Mit.	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.14	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.62	2,310
Mit.	1.14	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.62	2,310
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.21	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.10	382
Mit.	0.21	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.10	382
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
2031	1.67	5.49	7.81	0.01	0.12	3.64	3.76	0.11	0.47	0.58	—	1,684	1,684	0.05	0.02	1.70	1,692
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	1.71	12.8	21.1	0.04	0.26	11.4	11.7	0.24	1.31	1.54	—	4,877	4,877	0.17	0.14	0.09	4,924
2031	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.83	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.50	2,310
2031	1.14	4.19	6.38	0.01	0.10	2.91	3.01	0.09	0.38	0.47	—	1,456	1,456	0.04	0.04	0.62	1,470
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.15	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.08	382
2031	0.21	0.76	1.16	< 0.005	0.02	0.53	0.55	0.02	0.07	0.09	—	241	241	0.01	0.01	0.10	243

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	2.85	22.5	31.6	0.06	0.88	11.4	11.7	0.81	1.65	2.45	—	7,533	7,533	0.30	0.17	3.46	7,594
2031	1.67	5.49	7.81	0.01	0.12	3.64	3.76	0.11	0.47	0.58	—	1,684	1,684	0.05	0.02	1.70	1,692
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	1.71	12.8	21.1	0.04	0.26	11.4	11.7	0.24	1.31	1.54	—	4,877	4,877	0.17	0.14	0.09	4,924

2031	2.99	13.8	24.7	0.04	0.40	11.7	12.1	0.37	1.50	1.87	—	5,925	5,925	0.18	0.16	0.14	5,979
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.83	6.28	9.53	0.02	0.20	3.64	3.84	0.18	0.50	0.69	—	2,289	2,289	0.09	0.06	0.50	2,310
2031	1.14	4.19	6.38	0.01	0.10	2.91	3.01	0.09	0.38	0.47	—	1,456	1,456	0.04	0.04	0.62	1,470
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2030	0.15	1.15	1.74	< 0.005	0.04	0.66	0.70	0.03	0.09	0.13	—	379	379	0.01	0.01	0.08	382
2031	0.21	0.76	1.16	< 0.005	0.02	0.53	0.55	0.02	0.07	0.09	—	241	241	0.01	0.01	0.10	243

3. Construction Emissions Details

3.1. Site Preparation (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.06	8.08	12.2	0.03	0.33	—	0.33	0.31	—	0.31	—	2,969	2,969	0.12	0.02	—	2,979
Dust From Material Movement	—	—	—	—	—	0.41	0.41	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	4.56	4.56	< 0.005	0.46	0.46	—	46.7	46.7	< 0.005	0.01	0.11	48.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.13	1.00	1.51	< 0.005	0.04	—	0.04	0.04	—	0.04	—	366	366	0.01	< 0.005	—	367
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.53	0.53	< 0.005	0.05	0.05	—	5.76	5.76	< 0.005	< 0.005	0.01	6.02
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.18	0.28	< 0.005	0.01	—	0.01	0.01	—	0.01	—	60.6	60.6	< 0.005	< 0.005	—	60.8
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.10	0.10	< 0.005	0.01	0.01	—	0.95	0.95	< 0.005	< 0.005	< 0.005	1.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	226	226	0.01	0.03	0.54	236
Hauling	< 0.005	0.14	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	124	124	0.01	0.02	0.23	130
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.01	16.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.53	2.53	< 0.005	< 0.005	< 0.005	2.66

3.2. Site Preparation (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.06	8.08	12.2	0.03	0.33	—	0.33	0.31	—	0.31	—	2,969	2,969	0.12	0.02	—	2,979
Dust From Material Movement	—	—	—	—	—	0.41	0.41	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.04	< 0.005	< 0.005	4.56	4.56	< 0.005	0.46	0.46	—	46.7	46.7	< 0.005	0.01	0.11	48.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.00	1.51	< 0.005	0.04	—	0.04	0.04	—	0.04	—	366	366	0.01	< 0.005	—	367
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.53	0.53	< 0.005	0.05	0.05	—	5.76	5.76	< 0.005	< 0.005	0.01	6.02
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02	0.18	0.28	< 0.005	0.01	—	0.01	0.01	—	0.01	—	60.6	60.6	< 0.005	< 0.005	—	60.8
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.10	0.10	< 0.005	0.01	0.01	—	0.95	0.95	< 0.005	< 0.005	< 0.005	1.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	0.01	0.23	0.11	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	226	226	0.01	0.03	0.54	236
Hauling	< 0.005	0.14	0.06	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	124	124	0.01	0.02	0.23	130
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.3	15.3	< 0.005	< 0.005	0.01	16.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.53	2.53	< 0.005	< 0.005	< 0.005	2.66

3.3. Grading (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.74	21.7	29.8	0.06	0.87	—	0.87	0.80	—	0.80	—	6,484	6,484	0.26	0.05	—	6,507
Dust From Material Movement	—	—	—	—	—	2.26	2.26	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	5.70	5.70	< 0.005	0.57	0.57	—	58.3	58.3	< 0.005	0.01	0.13	61.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34	2.67	3.67	0.01	0.11	—	0.11	0.10	—	0.10	—	799	799	0.03	0.01	—	802
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.66	0.66	< 0.005	0.07	0.07	—	7.20	7.20	< 0.005	< 0.005	0.01	7.52
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.49	0.67	< 0.005	0.02	—	0.02	0.02	—	0.02	—	132	132	0.01	< 0.005	—	133
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.19	1.19	< 0.005	< 0.005	< 0.005	1.24
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	< 0.005	0.11	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	113	113	< 0.005	0.02	0.27	118
Hauling	0.01	0.57	0.23	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	497	497	0.02	0.08	0.90	522
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.9	13.9	< 0.005	< 0.005	0.01	14.5
Hauling	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	61.2	61.2	< 0.005	0.01	0.05	64.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.30	2.30	< 0.005	< 0.005	< 0.005	2.41
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.1	10.1	< 0.005	< 0.005	0.01	10.6

3.4. Grading (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.74	21.7	29.8	0.06	0.87	—	0.87	0.80	—	0.80	—	6,484	6,484	0.26	0.05	—	6,507

Dust From Material Movement	—	—	—	—	—	2.26	2.26	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	5.70	5.70	< 0.005	0.57	0.57	—	58.3	58.3	< 0.005	0.01	0.13	61.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34	2.67	3.67	0.01	0.11	—	0.11	0.10	—	0.10	—	799	799	0.03	0.01	—	802
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.66	0.66	< 0.005	0.07	0.07	—	7.20	7.20	< 0.005	< 0.005	0.01	7.52
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.49	0.67	< 0.005	0.02	—	0.02	0.02	—	0.02	—	132	132	0.01	< 0.005	—	133
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.19	1.19	< 0.005	< 0.005	< 0.005	1.24
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.49	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	379	379	< 0.005	0.01	0.89	384
Vendor	< 0.005	0.11	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	113	113	< 0.005	0.02	0.27	118
Hauling	0.01	0.57	0.23	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	497	497	0.02	0.08	0.90	522

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.9	44.9	< 0.005	< 0.005	0.05	45.5
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.9	13.9	< 0.005	< 0.005	0.01	14.5
Hauling	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	61.2	61.2	< 0.005	0.01	0.05	64.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.44	7.44	< 0.005	< 0.005	0.01	7.53
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.30	2.30	< 0.005	< 0.005	< 0.005	2.41
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.1	10.1	< 0.005	< 0.005	0.01	10.6

3.5. Building Construction (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.24	110
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.01	110

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	1.96	2.87	0.01	0.04	—	0.04	0.04	—	0.04	—	558	558	0.02	< 0.005	—	560
Onsite truck	< 0.005	0.03	0.01	< 0.005	< 0.005	1.59	1.59	< 0.005	0.16	0.16	—	17.3	17.3	< 0.005	< 0.005	0.02	18.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.36	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	92.4	92.4	< 0.005	< 0.005	—	92.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	2.86	2.86	< 0.005	< 0.005	< 0.005	2.99
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.20	3.96	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,010	1,010	0.01	0.04	2.37	1,024
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.40	177
Hauling	< 0.005	0.29	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.45	261
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.24	3.34	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	957	957	0.01	0.04	0.06	969
Vendor	< 0.005	0.18	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.01	177
Hauling	< 0.005	0.30	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.01	261
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	160	160	< 0.005	0.01	0.17	162
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.8	40.8	< 0.005	0.01	0.03	42.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.4	26.4	< 0.005	< 0.005	0.03	26.8

Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.76	6.76	< 0.005	< 0.005	0.01	7.09

3.6. Building Construction (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.15	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.24	110
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	11.9	17.5	0.03	0.25	—	0.25	0.23	—	0.23	—	3,394	3,394	0.14	0.03	—	3,406
Onsite truck	< 0.005	0.16	0.09	< 0.005	< 0.005	10.3	10.3	< 0.005	1.03	1.03	—	105	105	0.01	0.01	0.01	110
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	1.96	2.87	0.01	0.04	—	0.04	0.04	—	0.04	—	558	558	0.02	< 0.005	—	560
Onsite truck	< 0.005	0.03	0.01	< 0.005	< 0.005	1.59	1.59	< 0.005	0.16	0.16	—	17.3	17.3	< 0.005	< 0.005	0.02	18.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.36	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	92.4	92.4	< 0.005	< 0.005	—	92.7
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	2.86	2.86	< 0.005	< 0.005	< 0.005	2.99

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.20	3.96	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	1,010	1,010	0.01	0.04	2.37	1,024
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.40	177
Hauling	< 0.005	0.29	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.45	261
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.24	3.34	0.00	0.00	1.05	1.05	0.00	0.25	0.25	—	957	957	0.01	0.04	0.06	969
Vendor	< 0.005	0.18	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.01	177
Hauling	< 0.005	0.30	0.12	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	248	248	0.01	0.04	0.01	261
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	160	160	< 0.005	0.01	0.17	162
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.8	27.8	< 0.005	< 0.005	0.03	29.1
Hauling	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.8	40.8	< 0.005	0.01	0.03	42.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.4	26.4	< 0.005	< 0.005	0.03	26.8
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.61	4.61	< 0.005	< 0.005	< 0.005	4.81
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.76	6.76	< 0.005	< 0.005	0.01	7.09

3.7. Paving (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	7.55	12.4	0.02	0.29	—	0.29	0.26	—	0.26	—	2,577	2,577	0.10	0.02	—	2,585
Dust From Material Movement	—	—	—	—	—	0.14	0.14	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	6.29	6.29	< 0.005	0.63	0.63	—	125	125	0.01	0.02	0.01	130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.36	< 0.005	0.03	—	0.03	0.03	—	0.03	—	282	282	0.01	< 0.005	—	283
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.65	0.65	< 0.005	0.07	0.07	—	13.6	13.6	< 0.005	< 0.005	0.01	14.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.25	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.7	46.7	< 0.005	< 0.005	—	46.9
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	2.26	2.26	< 0.005	< 0.005	< 0.005	2.36
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.31	0.36	4.72	0.00	0.00	1.57	1.57	0.00	0.37	0.37	—	1,415	1,415	0.02	0.06	0.08	1,432
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	164	164	0.01	0.02	0.01	171
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.54	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	157	157	< 0.005	0.01	0.15	159
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	18.0	18.0	< 0.005	< 0.005	0.02	18.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.0	26.0	< 0.005	< 0.005	0.02	26.4
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.97	2.97	< 0.005	< 0.005	< 0.005	3.11
Hauling	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

3.8. Paving (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	7.55	12.4	0.02	0.29	—	0.29	0.26	—	0.26	—	2,577	2,577	0.10	0.02	—	2,585

Dust From Material Movement	—	—	—	—	—	0.14	0.14	—	0.01	0.01	—	—	—	—	—	—	—
Paving	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	0.19	0.11	< 0.005	< 0.005	6.29	6.29	< 0.005	0.63	0.63	—	125	125	0.01	0.02	0.01	130
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.83	1.36	< 0.005	0.03	—	0.03	0.03	—	0.03	—	282	282	0.01	< 0.005	—	283
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.65	0.65	< 0.005	0.07	0.07	—	13.6	13.6	< 0.005	< 0.005	0.01	14.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.15	0.25	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.7	46.7	< 0.005	< 0.005	—	46.9
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	2.26	2.26	< 0.005	< 0.005	< 0.005	2.36
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.31	0.36	4.72	0.00	0.00	1.57	1.57	0.00	0.37	0.37	—	1,415	1,415	0.02	0.06	0.08	1,432
Vendor	< 0.005	0.17	0.08	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	164	164	0.01	0.02	0.01	171
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.54	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	157	157	< 0.005	0.01	0.15	159
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	18.0	18.0	< 0.005	< 0.005	0.02	18.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.0	26.0	< 0.005	< 0.005	0.02	26.4
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.97	2.97	< 0.005	< 0.005	< 0.005	3.11
Hauling	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

3.9. Architectural Coating (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.51	5.27	4.98	0.01	0.12	—	0.12	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	58.4	58.4	< 0.005	0.01	< 0.005	61.0

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.31	0.29	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.7	51.7	< 0.005	< 0.005	—	51.9
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	0.02	0.02	—	3.43	3.43	< 0.005	< 0.005	< 0.005	3.58
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.56	8.56	< 0.005	< 0.005	—	8.59
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.57	0.57	< 0.005	< 0.005	< 0.005	0.59
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.18	2.51	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	718	718	0.01	0.03	0.05	727
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	42.8	42.8	< 0.005	< 0.005	0.04	43.3
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.08	7.08	< 0.005	< 0.005	0.01	7.17
Vendor	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
Hauling	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

3.10. Architectural Coating (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.51	5.27	4.98	0.01	0.12	—	0.12	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.09	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	58.4	58.4	< 0.005	0.01	< 0.005	61.0
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.31	0.29	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.7	51.7	< 0.005	< 0.005	—	51.9
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.16	0.16	< 0.005	0.02	0.02	—	3.43	3.43	< 0.005	< 0.005	< 0.005	3.58
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.01	0.06	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.56	8.56	< 0.005	< 0.005	—	8.59
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.57	0.57	< 0.005	< 0.005	< 0.005	0.59
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.18	2.51	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	718	718	0.01	0.03	0.05	727
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.15	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	42.8	42.8	< 0.005	< 0.005	0.04	43.3
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.08	7.08	< 0.005	< 0.005	0.01	7.17
Vendor	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
Hauling	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

3.11. Architectural Coating (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.5	56.5	< 0.005	0.01	0.12	59.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.6	56.6	< 0.005	0.01	< 0.005	59.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	3.13	2.96	0.01	0.07	—	0.07	0.06	—	0.06	—	524	524	0.02	< 0.005	—	526
Architectural Coatings	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.61	1.61	< 0.005	0.16	0.16	—	33.6	33.6	< 0.005	< 0.005	0.03	35.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.57	0.54	< 0.005	0.01	—	0.01	0.01	—	0.01	—	86.7	86.7	< 0.005	< 0.005	—	87.0

Architectural Coatings	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	5.57	5.57	< 0.005	< 0.005	0.01	5.83
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.15	2.78	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	746	746	0.01	< 0.005	1.58	749
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.18	2.36	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	707	707	0.01	0.03	0.04	716
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.11	1.47	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	427	427	< 0.005	0.02	0.41	433
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.27	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	70.7	70.7	< 0.005	< 0.005	0.07	71.6
Vendor	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
Hauling	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

3.12. Architectural Coating (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.5	56.5	< 0.005	0.01	0.12	59.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	5.25	4.98	0.01	0.11	—	0.11	0.11	—	0.11	—	881	881	0.04	0.01	—	884
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.08	0.05	< 0.005	< 0.005	2.86	2.86	< 0.005	0.29	0.29	—	56.6	56.6	< 0.005	0.01	< 0.005	59.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	3.13	2.96	0.01	0.07	—	0.07	0.06	—	0.06	—	524	524	0.02	< 0.005	—	526
Architectural Coatings	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.03	< 0.005	< 0.005	1.61	1.61	< 0.005	0.16	0.16	—	33.6	33.6	< 0.005	< 0.005	0.03	35.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.57	0.54	< 0.005	0.01	—	0.01	0.01	—	0.01	—	86.7	86.7	< 0.005	< 0.005	—	87.0

Architectu Coatings	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	0.01	< 0.005	< 0.005	0.29	0.29	< 0.005	0.03	0.03	—	5.57	5.57	< 0.005	< 0.005	0.01	5.83
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.15	2.78	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	746	746	0.01	< 0.005	1.58	749
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.18	2.36	0.00	0.00	0.78	0.78	0.00	0.18	0.18	—	707	707	0.01	0.03	0.04	716
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.11	1.47	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	427	427	< 0.005	0.02	0.41	433
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.27	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	70.7	70.7	< 0.005	< 0.005	0.07	71.6
Vendor	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
Hauling	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

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	5/1/2030	7/2/2030	5.00	45.0	—
Grading	Grading	7/3/2030	9/3/2030	5.00	45.0	—
Building Construction	Building Construction	9/4/2030	11/26/2030	5.00	60.0	—
Paving	Paving	2/3/2031	3/28/2031	5.00	40.0	—
Architectural Coating	Architectural Coating	12/2/2030	10/31/2031	5.00	240	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37

Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Scrapers	Diesel	Average	2.00	6.00	423	0.48
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Off-Highway Tractors	Diesel	Average	1.00	7.00	38.0	0.44
Building Construction	Forklifts	Electric	Average	3.00	7.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Aerial Lifts	Diesel	Average	6.00	7.00	46.0	0.31
Building Construction	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Building Construction	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Building Construction	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Building Construction	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Building Construction	Excavators	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Paving	Surfacing Equipment	Diesel	Average	1.00	7.00	399	0.30
Paving	Trenchers	Diesel	Average	1.00	7.00	40.0	0.50
Paving	Graders	Diesel	Average	1.00	8.00	148	0.41
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Architectural Coating	Forklifts	Electric	Average	4.00	8.00	82.0	0.20
Architectural Coating	Generator Sets	Diesel	Average	3.00	8.00	14.0	0.74
Architectural Coating	Welders	Diesel	Average	1.00	7.00	46.0	0.45

Architectural Coating	Aerial Lifts	Diesel	Average	3.00	7.00	46.0	0.31

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Scrapers	Diesel	Average	2.00	6.00	423	0.48
Grading	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Grading	Off-Highway Tractors	Diesel	Average	1.00	7.00	38.0	0.44
Building Construction	Forklifts	Electric	Average	3.00	7.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Aerial Lifts	Diesel	Average	6.00	7.00	46.0	0.31
Building Construction	Rubber Tired Loaders	Diesel	Average	1.00	7.00	150	0.36
Building Construction	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Building Construction	Skid Steer Loaders	Diesel	Average	1.00	7.00	71.0	0.37
Building Construction	Surfacing Equipment	Diesel	Average	1.00	6.00	399	0.30
Building Construction	Excavators	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42

Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Paving	Surfacing Equipment	Diesel	Average	1.00	7.00	399	0.30
Paving	Trenchers	Diesel	Average	1.00	7.00	40.0	0.50
Paving	Graders	Diesel	Average	1.00	8.00	148	0.41
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Architectural Coating	Forklifts	Electric	Average	4.00	8.00	82.0	0.20
Architectural Coating	Generator Sets	Diesel	Average	3.00	8.00	14.0	0.74
Architectural Coating	Welders	Diesel	Average	1.00	7.00	46.0	0.45
Architectural Coating	Aerial Lifts	Diesel	Average	3.00	7.00	46.0	0.31

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	8.00	10.2	HHDT,MHDT
Site Preparation	Hauling	2.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	30.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	4.00	10.2	HHDT,MHDT
Grading	Hauling	8.00	20.0	HHDT
Grading	Onsite truck	5.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	80.0	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	6.00	10.2	HHDT,MHDT

Building Construction	Hauling	4.00	20.0	HHDT
Building Construction	Onsite truck	9.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	120	18.5	LDA,LDT1,LDT2
Paving	Vendor	6.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	11.0	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	60.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	5.00	4.00	HHDT,MHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	30.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	8.00	10.2	HHDT,MHDT
Site Preparation	Hauling	2.00	20.0	HHDT
Site Preparation	Onsite truck	4.00	4.00	HHDT,MHDT
Grading	—	—	—	—
Grading	Worker	30.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	4.00	10.2	HHDT,MHDT
Grading	Hauling	8.00	20.0	HHDT
Grading	Onsite truck	5.00	4.00	HHDT,MHDT
Building Construction	—	—	—	—
Building Construction	Worker	80.0	18.5	LDA,LDT1,LDT2

Building Construction	Vendor	6.00	10.2	HHDT,MHDT
Building Construction	Hauling	4.00	20.0	HHDT
Building Construction	Onsite truck	9.00	4.00	HHDT,MHDT
Paving	—	—	—	—
Paving	Worker	120	18.5	LDA,LDT1,LDT2
Paving	Vendor	6.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	11.0	4.00	HHDT,MHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	60.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	5.00	4.00	HHDT,MHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	57%	57%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	37,500	12,500	2,222

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	67.5	0.00	—
Grading	0.00	0.00	113	0.00	—
Paving	0.00	0.00	20.0	0.00	0.85

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Parking Lot	0.85	100%
Research & Development	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2030	648	690	0.05	0.01
2031	391	690	0.05	0.01

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	2	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	0	N/A
Wildfire	1	2	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	2	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	1	3
Wildfire	1	2	1	3
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	2	1	3

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

6.4.1. Temperature and Extreme Heat

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-23: Landscape with Climate Considerations	Improved Ecosystem Health, Water Conservation	—	1.00	—

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—

AQ-Ozone	69.6
AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0
Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8
Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—

Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0

Children	99.4
Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9
Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land uses based on PD and site plan.
Construction: Construction Phases	Construction schedule provided by LADWP.
Construction: Off-Road Equipment	Equipment inventory provided by LADWP.
Construction: Dust From Material Movement	All earthwork will be balanced on site.
Construction: On-Road Fugitive Dust	Limit vehicle speeds on unpaved roads to 15 mph (SCAQMD Rule 403).
Construction: Trips and VMT	Vehicle and personnel inventories provided by LADWP.

LADWP Headworks Project - Operations Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	LADWP Headworks Project - Operations
Operational Year	2031
Lead Agency	LADWP
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	34.15285671760434, -118.3170842391024
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3974
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Research & Development	100	1000sqft	4.85	100,000	111,500	111,500	—	—

Research & Development	25.0	1000sqft	1.37	25,000	34,500	34,500	—	—
City Park	17.5	Acre	17.5	0.00	387,830	387,830	—	—
Parking Lot	6.00	Acre	6.00	0.00	13,000	13,000	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Transportation	T-34*	Provide Bike Parking
Energy	E-21*	Install Cool Pavements

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
Mit.	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535
Mit.	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535

% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561
Mit.	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252
Mit.	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	3,000
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	3,000
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	Yes

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Area	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Area	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.33	0.59	5.67	0.01	0.01	0.93	0.94	0.01	0.24	0.24	—	1,001	1,001	0.09	0.07	0.83	1,023
Area	3.87	0.03	3.72	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	15.3	15.3	< 0.005	< 0.005	—	15.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169
Area	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Energy	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	828	828	0.06	0.01	—	832
Water	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244
Waste	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
Total	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Area	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.54	1.26	11.5	0.01	0.07	0.94	1.01	0.06	0.24	0.30	124	7,018	7,142	13.2	0.40	5.11	7,597
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Area	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472

Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	4.64	1.26	6.22	0.01	0.06	0.94	1.00	0.06	0.24	0.30	124	6,957	7,081	13.2	0.41	3.24	7,535
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.33	0.59	5.67	0.01	0.01	0.93	0.94	0.01	0.24	0.24	—	1,001	1,001	0.09	0.07	0.83	1,023
Area	3.87	0.03	3.72	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	15.3	15.3	< 0.005	< 0.005	—	15.4
Energy	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	5,004	5,004	0.37	0.04	—	5,026
Water	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Waste	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Total	5.24	1.29	9.96	0.01	0.06	0.93	1.00	0.06	0.24	0.30	124	6,983	7,106	13.2	0.41	4.02	7,561
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169
Area	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Energy	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	828	828	0.06	0.01	—	832
Water	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244
Waste	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
Total	0.96	0.24	1.82	< 0.005	0.01	0.17	0.18	0.01	0.04	0.05	20.5	1,156	1,177	2.19	0.07	0.67	1,252

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.34	0.53	5.30	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	948	948	0.09	0.06	1.74	970
City Park	0.02	0.02	0.25	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	81.2	81.2	< 0.005	< 0.005	0.17	82.0
Parking Lot	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
Total	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.33	0.57	5.44	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	913	913	0.09	0.06	0.05	934
City Park	0.02	0.02	0.22	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	77.5	77.5	< 0.005	< 0.005	< 0.005	78.2
Parking Lot	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
Total	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.24	0.10	0.99	< 0.005	< 0.005	0.15	0.16	< 0.005	0.04	0.04	—	153	153	0.02	0.01	0.12	156
City Park	< 0.005	< 0.005	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	13.0	13.0	< 0.005	< 0.005	0.01	13.1
Parking Lot	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
Total	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.34	0.53	5.30	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	948	948	0.09	0.06	1.74	970
City Park	0.02	0.02	0.25	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	81.2	81.2	< 0.005	< 0.005	0.17	82.0
Parking Lot	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
Total	1.36	0.54	5.54	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	1,029	1,029	0.09	0.06	1.91	1,052
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	1.33	0.57	5.44	0.01	0.01	0.86	0.86	0.01	0.22	0.22	—	913	913	0.09	0.06	0.05	934
City Park	0.02	0.02	0.22	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	77.5	77.5	< 0.005	< 0.005	< 0.005	78.2
Parking Lot	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
Total	1.35	0.59	5.65	0.01	0.01	0.94	0.95	0.01	0.24	0.25	—	990	990	0.10	0.07	0.05	1,012
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.24	0.10	0.99	< 0.005	< 0.005	0.15	0.16	< 0.005	0.04	0.04	—	153	153	0.02	0.01	0.12	156
City Park	< 0.005	< 0.005	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	13.0	13.0	< 0.005	< 0.005	0.01	13.1
Parking Lot	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
Total	0.24	0.11	1.03	< 0.005	< 0.005	0.17	0.17	< 0.005	0.04	0.04	—	166	166	0.02	0.01	0.14	169

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	624	624	0.04	0.01	—	626
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	71.7	71.7	0.01	< 0.005	—	72.0
Total	—	—	—	—	—	—	—	—	—	—	—	695	695	0.05	0.01	—	699

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	3,766	3,766	0.27	0.04	—	3,784
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	433	433	0.03	< 0.005	—	435
Total	—	—	—	—	—	—	—	—	—	—	—	4,199	4,199	0.30	0.04	—	4,219
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	624	624	0.04	0.01	—	626
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	71.7	71.7	0.01	< 0.005	—	72.0
Total	—	—	—	—	—	—	—	—	—	—	—	695	695	0.05	0.01	—	699

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134
City Park	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
Parking Lot	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
Total	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
City Park	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
Parking Lot	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
Total	0.04	0.67	0.57	< 0.005	0.05	—	0.05	0.05	—	0.05	—	805	805	0.07	< 0.005	—	807
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134
City Park	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
Parking Lot	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
Total	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.89	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Total	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscap Equipment	0.11	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Total	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.89	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Total	4.15	0.05	5.44	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.4	22.4	< 0.005	< 0.005	—	22.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Consumer Products	0.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.11	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54
Total	0.71	0.01	0.68	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.54	2.54	< 0.005	< 0.005	—	2.54

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346
City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346

City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	19.5	139	158	2.01	0.05	—	223
City Park	—	—	—	—	—	—	—	—	—	—	0.00	20.1	20.1	< 0.005	< 0.005	—	20.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.67	0.67	< 0.005	< 0.005	—	0.68
Total	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346
City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	118	837	955	12.1	0.30	—	1,346

City Park	—	—	—	—	—	—	—	—	—	—	0.00	121	121	0.01	< 0.005	—	122
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	4.07	4.07	< 0.005	< 0.005	—	4.09
Total	—	—	—	—	—	—	—	—	—	—	118	962	1,080	12.1	0.30	—	1,472
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	19.5	139	158	2.01	0.05	—	223
City Park	—	—	—	—	—	—	—	—	—	—	0.00	20.1	20.1	< 0.005	< 0.005	—	20.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.67	0.67	< 0.005	< 0.005	—	0.68
Total	—	—	—	—	—	—	—	—	—	—	19.5	159	179	2.01	0.05	—	244

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	0.85	0.00	0.85	0.08	0.00	—	2.97
City Park	—	—	—	—	—	—	—	—	—	—	0.13	0.00	0.13	0.01	0.00	—	0.47
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	5.12	0.00	5.12	0.51	0.00	—	17.9
City Park	—	—	—	—	—	—	—	—	—	—	0.81	0.00	0.81	0.08	0.00	—	2.84
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	5.93	0.00	5.93	0.59	0.00	—	20.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	0.85	0.00	0.85	0.08	0.00	—	2.97
City Park	—	—	—	—	—	—	—	—	—	—	0.13	0.00	0.13	0.01	0.00	—	0.47
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.44

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.19	3.19
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Research & Development	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53	0.53

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipme Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Research & Development	580	580	580	211,700	1,051	1,051	1,051	383,615

Research & Development	16.0	16.0	16.0	5,840	159	159	159	58,195
City Park	12.1	12.1	12.1	4,407	120	120	120	43,919
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Research & Development	580	580	580	211,700	1,051	1,051	1,051	383,615
Research & Development	16.0	16.0	16.0	5,840	159	159	159	58,195
City Park	12.1	12.1	12.1	4,407	120	120	120	43,919
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	187,500	62,500	15,682

5.10.3. Landscape Equipment

Season	Unit	Value

Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Research & Development	1,592,875	690	0.0489	0.0069	2,009,186
Research & Development	398,219	690	0.0489	0.0069	502,296
City Park	0.00	690	0.0489	0.0069	0.00
Parking Lot	228,951	690	0.0489	0.0069	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Research & Development	1,592,875	690	0.0489	0.0069	2,009,186
Research & Development	398,219	690	0.0489	0.0069	502,296
City Park	0.00	690	0.0489	0.0069	0.00
Parking Lot	228,951	690	0.0489	0.0069	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Research & Development	49,169,395	3,474,980
Research & Development	12,292,349	1,075,218
City Park	0.00	12,087,009
Parking Lot	0.00	405,155

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Research & Development	49,169,395	3,474,980
Research & Development	12,292,349	1,075,218
City Park	0.00	12,087,009
Parking Lot	0.00	405,155

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Research & Development	7.60	—
Research & Development	1.90	—
City Park	1.50	—
Parking Lot	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Research & Development	7.60	—
Research & Development	1.90	—
City Park	1.50	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

Research & Development	Household refrigerators and/or freezers	R-134a	1,430	0.45	0.60	0.00	1.00
Research & Development	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	2	3	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	2	2
Wildfire	2	2	2	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A

Air Quality Degradation	5	2	3	3

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	3	1
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	2	2	2
Wildfire	2	2	2	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	5	2	3	3

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

6.4.1. Temperature and Extreme Heat

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
EH-9: Expand Urban Tree Canopy	Energy and Fuel Savings, Improved Air Quality, Improved Public Health, Social Equity	1.00	1.00	—
MH-23: Landscape with Climate Considerations	Improved Ecosystem Health, Water Conservation	—	1.00	—

MH-39: Implement Pervious and Climate-Smart Surfaces	Energy and Fuel Savings, Improved Air Quality, Improved Ecosystem Health, Improved Public Health, Water Conservation	—	1.00	—

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	69.6
AQ-PM	65.9
AQ-DPM	47.5
Drinking Water	92.5
Lead Risk Housing	—
Pesticides	0.00
Toxic Releases	70.0
Traffic	99.5
Effect Indicators	—
CleanUp Sites	94.3
Groundwater	36.9
Haz Waste Facilities/Generators	47.6
Impaired Water Bodies	77.3
Solid Waste	89.9
Sensitive Population	—
Asthma	8.92
Cardio-vascular	23.8

Low Birth Weights	—
Socioeconomic Factor Indicators	—
Education	—
Housing	—
Linguistic	—
Poverty	—
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—

Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	99.8
Physically Disabled	99.8
Heart Attack ER Admissions	79.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0

Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	100.0
SLR Inundation Area	0.0
Children	99.4
Elderly	99.8
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.9
Traffic Density	0.0
Traffic Access	23.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	—

Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

Measure Title	Co-Benefits Achieved
PH-2: Increase Urban Tree Canopy and Green Spaces	Energy and Fuel Savings, Enhanced Energy Security, Improved Air Quality, Improved Ecosystem Health, Improved Public Health, Social Equity
IC-4: Enhanced Open and Green Spaces	Improved Ecosystem Health, Improved Public Health, Social Equity, Water Conservation

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Land uses based on updated PD & site plan.
Operations: Vehicle Data	Trips from traffic memo: 608 total daily, 580 WQL, 159 DPR, 120 Park.
Operations: Fleet Mix	No medium or heavy-duty trucks for Park patrons.

APPENDIX F

Noise and Vibration Impact Study

HEADWORKS SITE DEVELOPMENT PROJECT

Noise and Vibration Impact Study

Prepared for:
Michael Baker International

Prepared by:
Terry A. Hayes Associates Inc.

January 2024

taha
environmental planners

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1.0 SUMMARY OF FINDINGS

Terry A. Hayes Associates Inc. (TAHA) completed a Noise and Vibration Impact Study (Study) for the Headworks Site Development Project (proposed project) located in the City of Los Angeles, CA. This Study addresses potential environmental impacts associated with noise and vibration generated by the construction and operation of the proposed project. Conclusions that address significance determinations under the California Environmental Quality Act (CEQA) Environmental Checklist criteria are shown in **Table 1-1**. The Study analysis concluded that construction and operation of the proposed project would not produce any significant and unavoidable environmental impacts pertaining to Noise and Vibration under CEQA.

TABLE 1-1: SUMMARY OF IMPACT STATEMENTS

Impact Statement	Proposed Project Level of Significance	Applicable Mitigation Measures
Would the proposed project result in 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?	Construction: Less-Than-Significant Impact with Mitigation Incorporated Operations: No Impact	**N1** through **N5**
Would the proposed project result in generation of excessive ground-borne vibration or ground-borne noise levels?	No Impact	None
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 proposed project expose people that reside or work within the project area to excessive noise levels.	No Impact	None

SOURCE: TAHA, 2024.

Mitigation Measures

N-1 Construction equipment shall be properly maintained and equipped with mufflers to manufacturer specifications.

N-2 Rubber-tired equipment shall be used rather than tracked equipment when feasible.

N-3 Equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance.

N-4 A public liaison shall be responsible for addressing public concerns about construction activities, including excessive noise. As needed, the liaison shall determine the cause of the concern (e.g., starting too early, bad muffler) and implement measures to address the concern.

N-5 The public shall be notified in advance of the location and dates of construction hours and activities.

2.0 INTRODUCTION

2.1 STUDY PURPOSE

The purpose of this report is to evaluate the potential noise and vibration impacts associated with the proposed project in accordance with the CEQA. Included in this report is a description of the existing noise environment within the project site area, an estimation of future noise and vibration levels at surrounding sensitive land uses associated with construction and operation of the proposed project, a description of the potential significant impacts, and the inclusion of mitigation measures to address any identified potential significant impacts.

2.2 PROJECT DESCRIPTION

The proposed water quality lab (WQL) would include approximately 100,000 gross square feet of floor space; surface parking for 12 visitor vehicles, 102 staff vehicles, and 20 Los Angeles Department of Water and Power (LADWP) fleet vehicles; a mobile laboratory trailer; landscaping; and other site improvements. It would be located to the east of the Direct Potable Reuse (DPR) Demonstration Facility at the Headworks Spreading Grounds (HWSG) property. The DPR Demonstration Facility would be an advanced water purification facility (AWPF). The AWPF and support facilities and areas would be approximately 20,000 square feet, with an additional 20,000 square feet for a surrounding vehicle access road. A visitor center and a parking lot would also be provided. The visitor center would be approximately 5,000 square feet, and a parking lot would require approximately 16,500 square feet to accommodate staff and visitors. The DPR Demonstration Facility and visitor center would be located at the west end of the HWSG property.

The centerpiece of Headworks Park would be the West Reservoir Gardens, constructed on top of the approximately eight-acre West Reservoir, which will have been covered with several feet of soil to enable planting. Surrounding the reservoir garden and extending into other portions of the HWSG property would be a series of pedestrian, bicycle, and equestrian pathways, including the Headworks segment of the Los Angeles River Trail. The park would be developed in the eastern portion of the property, atop the West Reservoir, with other park features, including parking, a pavilion building, trails and site landscaping, located in adjacent areas.

The primary vehicular access to the Headworks site for all the proposed project components would be from Forest Lawn Drive at Mount Sinai Drive. Secondary access for employee, service, and maintenance vehicles would be provided from Forest Lawn Drive at the west end of the Headworks site. Public access to the Headworks site would be limited to dawn to dusk.

Figure 2-1 shows the regional location of the proposed project. **Figure 2-2** shows the site plan.

2.3 CONSTRUCTION SCHEDULE

Construction of the proposed project is anticipated to begin in the fourth quarter of 2024 with the Headworks Restoration Park, which would take approximately 3.3 years to complete, concluding in the first quarter of 2028. The construction of the proposed WQL would begin in the second quarter of 2027, overlapping the last phases of the park construction by approximately 9 months. The proposed WQL construction would take approximately 2.5 years to complete, concluding in the first quarter of 2030. Construction of the proposed DPR Demonstration Facility would follow in succession, starting in the second quarter of 2030 and ending in the fourth quarter of 2031, a period of approximately 1.5 years. Accounting for overlaps in the construction periods for the project components, the total construction time for the proposed project would be approximately 7 years, from late 2024 to late 2031. Construction activities would typically occur Monday through Friday during the daytime hours, beginning no earlier than 7:00 a.m. and generally ending by 5:00 p.m. Saturday construction may also be required at times.



Source: AECOM, 2021.

taha environmental planners

TAHA 2021-041

Headworks Site Development Project
Noise and Vibration Impact Study

MICHAEL BAKER INTERNATIONAL

FIGURE 2-1

REGIONAL LOCATION



Legend

1. Headworks Park (Proposed)
2. Headworks Park - Pavilion Gateway (Proposed)
3. Headworks Park - Parking Lot (Proposed)
4. LA River Trail Segment (Proposed)
5. Access Road (Proposed)
6. Equestrian Tunnel (Existing)
7. Connection to Griffith Park (Existing)
8. Water Quality Lab (Proposed)
9. DPR Demonstration Facility (Proposed)
10. DPR Demonstration Facility Visitor Center (Proposed)
11. East Reservoir (Existing)
12. Flow Control Station (In Construction)

Source: LADWP, 2024.

FIGURE 2-2

PROJECT LOCATION

3.0 NOISE AND VIBRATION

This section describes the characteristics and effects of noise and vibration, the applicable regulatory setting, the existing setting, and evaluates noise and vibration levels associated with the proposed project.

3.1 NOISE AND VIBRATION BASICS

3.1.1 Noise Principles and Descriptors

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is generally defined as undesirable (i.e., loud, unexpected, or annoying) sound. Acoustics is defined as the physics of sound and addresses its propagation and control.[1] In acoustics, the fundamental scientific model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver.

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement and reflects the way people perceive changes in sound amplitude. The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 and 140 dB corresponding to the thresholds of feeling and pain, respectively. Pressure waves traveling through air exert a force registered by the human ear as sound.[2]

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. When all of the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequencies spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.[3]

The typical human ear is not equally sensitive to the frequency range from 20 to 20,000 Hz. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to these extremely low and extremely high frequencies. This method of frequency filtering or weighting is referred to as A-weighting, expressed in units of A-weighted decibels (dBA), which is typically applied to community noise measurements.[4] Some representative common outdoor and indoor noise sources and their corresponding A-weighted noise levels are shown in **Figure 3-1**.

[1] Caltrans, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, *Section 2.2.1*, September 2013.
[2] *Ibid*, *Section 2.1.3*.
[3] *Ibid.*
[4] *Ibid.*

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	**70**	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	**60**	
		Large business office
Quiet urban daytime	**50**	Dishwasher in next room
Quiet urban nighttime	**40**	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	

Source: California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, 2013.

FIGURE 3-1
A-WEIGHTED DECIBEL SCALE

3.1.2 Noise Exposure and Community Noise

Community noise exposure is typically measured over a period of time; a noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the sound sources contributing to the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with many unidentifiable individual contributors. Single-event noise sources, such as aircraft flyovers, sirens, etc., may cause sudden changes in background noise level.[5] However, generally, background noise levels change gradually throughout the day, corresponding with the addition and subtraction of distant noise sources, such as changes in traffic volume.

In an outdoor environment, sound energy attenuates through the air as a function of distance. Such attenuation is called "distance loss" or "geometric spreading" and is based on the type of source configuration (i.e., a point source or a line source). The rate of sound attenuation for a point source, such as a piece of mechanical or electrical equipment (e.g., air conditioner or bulldozer), is 6 dBA per doubling of distance from the noise source to the receptor over acoustically "hard" sites (e.g., asphalt and concrete surfaces) and 7.5 dBA per doubling of distance from the noise source to the receptor over acoustically "soft" sites (e.g., soft dirt, grass or scattered bushes and trees).[6] For example, an outdoor condenser fan that generates a sound level of 60 dBA at a distance of 50 feet from a point source at an acoustically hard site would attenuate to 54 dBA at a distance of 100 feet from the point source and attenuate to 48 dBA at 200 feet from the point source. The rate of sound attenuation for a line source, such as a constant flow of traffic on a roadway, is 3 dBA per doubling of distance from the point source to the receptor for hard sites and 4.5 dBA per doubling of distance for soft sites.[7]

Structures (e.g., buildings and solid walls) and natural topography (e.g., hills and berms) that obstruct the line-of-sight between a noise source and a receptor further reduce the noise level if the receptor is located within the "shadow" of the obstruction, such as behind a sound wall. This type of sound attenuation is known as "barrier insertion loss." If a receptor is located behind the wall but still has a view of the source (i.e., the line-of-sight is not fully blocked), barrier insertion loss would still occur but to a lesser extent. Additionally, a receptor located on the same side of the wall as a noise source may actually experience an increase in the perceived noise level as the wall can reflect noise back to the receptor, thereby compounding the noise. Noise barriers can provide noise level reductions ranging from approximately 5 dBA (where the barrier just breaks the line-of-sight between the source and receiver) to an upper range of 20 dBA with a larger barrier.[8] Additionally, structures with closed windows can further attenuate exterior noise by a minimum of 20 dBA to 30 dBA.[9]

These successive additions of sound to the community noise environment change the community noise level from moment to moment, requiring the noise exposure to be measured over periods of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. The following noise descriptors are used to characterize environmental noise levels over time.[10]

L_{eq}: The equivalent sound level over a specified period of time, typically, 1 hour (L_{eq}). The L_{eq} may also be referred to as the energy-average sound level.

L_{max}: The maximum, instantaneous noise level experienced during a given period of time.

[5]Caltrans, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, *Section 2.2.1*, September 2013.
[6]Caltrans, *Technical Noise Supplement (TeNS)*, 2009, Chapter 2.1.4.2.
[7]*Ibid.*
[8]*Ibid.*
[9]*Ibid.*
[10]Caltrans, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, *Section 2.2.2*, September 2013.

L_{min}: The minimum, instantaneous noise level experienced during a given period of time.

L_x: The noise level exceeded a percentage of a specified time period. For instance, L_{50} and L_{90} represent the noise levels that are exceeded 50 percent and 90 percent of the time, respectively.

L_{dn}: The average A-weighted noise level during a 24-hour day, obtained after an addition of 10 dBA to measured noise levels between the hours of 10:00 p.m. and 7:00 a.m.to account for nighttime noise sensitivity. The L_{dn} is also termed the day-night average noise level (DNL).

CNEL: The Community Noise Equivalent Level (CNEL) is the time average A-weighted noise level during a 24-hour day that includes an addition of 5 dBA to measured noise levels between the hours of 7:00 p.m. and 10:00 p.m. and an addition of 10 dBA to noise levels between the hours of 10:00 p.m. and 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively.

3.1.3 Effects of Noise on People

Noise is generally loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity that is a nuisance or disruptive. The effects of noise on people can be placed into four general categories:

- Subjective effects (e.g., dissatisfaction, annoyance);
- Interference effects (e.g., communication, sleep, and learning interference);
- Physiological effects (e.g., startle response); and
- Physical effects (e.g., hearing loss).

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. Interference effects interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and interference with sleep. Sleep interference effects can include both awakening and arousal to a lesser state of sleep.[11]

The World Health Organization's Guidelines for Community Noise details the adverse health effects of noise, which include hearing impairment, speech intelligibility, sleep disturbance, physiological functions (e.g., hypertension and cardiovascular effects), mental illness, performance of cognitive tasks, social and behavioral effects (e.g., feelings of helplessness, aggressive behavior), and annoyance.[12]

With regard to the subjective effects, an individuals' responses to similar noise events are diverse and influenced by many factors, including the type of noise, the perceived importance of the noise, the appropriateness of the noise to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity. Overall, there is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e.,

[11]Caltrans, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, *Section 2.2.2*, September 2013.

[12]Berglund et al, Berglund, Birgitta, Lindvall, Thomas, Schwela, Dietrich H & World Health Organization. Occupational and Environmental Health Team. 1999. *Guidelines for community noise.* World Health Organization. https://apps.who.int/iris/handle/10665/66217.

comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur:[13]

- Except in carefully controlled laboratory experiments, a change of 1 dBA in ambient noise levels cannot be perceived.
- Outside of the laboratory, a 3 dBA change in ambient noise levels is considered to be a barely perceivable difference.
- A change in ambient noise levels of 5 dBA is considered to be a readily perceivable difference.
- A change in ambient noise levels of 10 dBA is subjectively heard as doubling of the perceived loudness.

These relationships between change in noise level and human hearing response occur in part because of the logarithmic nature of sound and the dB scale. Because the dBA scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. Under the dBA scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two sources are each producing sound of the same loudness, the resulting sound level at a given distance would be approximately 3 dBA higher than one of the sources under the same conditions. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. Under the dB scale, three sources of equal loudness together produce a sound level of approximately 5 dBA louder than one source, and ten sources of equal loudness together produce a sound level of approximately 10 dBA louder than the single source.[14]

3.1.4 Noise Attenuation

When noise propagates over a distance, the noise level reduces with distance depending on the type of noise source and the propagation path. Noise from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, referred to as “spherical spreading.” Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (i.e., reduce) at a rate between 6 dBA for acoustically “hard” sites and 7.5 dBA for “soft” sites for each doubling of distance from the reference measurement, as their energy is continuously spread out over a spherical surface (e.g., for hard surfaces, 80 dBA at 50 feet attenuates to 74 dBA at 100 feet, 68 dBA at 200 feet).[15] Hard sites are those with a reflective surface between the source and the receiver, such as asphalt or concrete surfaces or smooth bodies of water.[16] No excess ground attenuation is assumed for hard sites and the reduction in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source.[17] Soft sites are those that have an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees, which in addition to geometric spreading, provides an excess ground attenuation value of 1.5 dBA (per doubling distance).[18]

[13]California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, *Section 2.2.1*, September 2013.
[14]*Ibid.*
[15]*Ibid*, *Section 2.1.4.2*.
[16]*Ibid.*
[17]*Ibid.*
[18]*Ibid.*

Roadways and highways consist of several localized noise sources on a defined path, and hence are treated as "line" sources, which approximate the effect of several point sources.[19] Noise from a line source propagates over a cylindrical surface, often referred to as "cylindrical spreading."[20] Line sources (e.g., traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement.[21] Therefore, noise due to a line source attenuates less with distance than that of a point source with increased distance.

Receptors located downwind from a noise source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels.[22] Atmospheric temperature inversion (i.e., increasing temperature with elevation) can increase sound levels at long distances. Other factors such as air temperature, humidity, and turbulence can, under the right conditions, also have substantial effects on noise levels.[23]

3.1.5 Vibration Fundamentals

Vibration can be interpreted as energy transmitted in waves through the ground or man-made structures, which generally dissipate with distance from the vibration source. Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Since energy is lost during its transfer from one particle to another, vibration becomes less perceptible with increasing distance from the source.

As described in the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment Manual*, groundborne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard.[24] In contrast to airborne noise, groundborne vibration is not a common environmental problem, as it is unusual for vibration from sources such as rubber-tired buses and trucks to be perceptible, even in locations close to major roads. Some common sources of groundborne vibration are trains, heavy trucks traveling on rough roads, and certain construction activities, such as blasting, pile-driving, and operation of heavy earth-moving equipment.[25] Groundborne vibration generated by man-made activities (e.g., road traffic, construction operations) typically weakens with greater horizontal distance from the source of the vibration.

Several different methods are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal in inches per second (in/sec) and is most frequently used to describe vibration impacts to buildings.[26] The root mean square (RMS) amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body.[27] Decibel notation (VdB) is commonly used to express RMS vibration velocity amplitude. The relationship of PPV to RMS velocity is expressed in terms of the "crest factor," defined as the ratio of the PPV amplitude to the RMS amplitude. PPV is typically a factor of 1.7 to 6 times greater than RMS vibration velocity; FTA uses a crest factor of 4.[28] The decibel notation VdB acts to compress the range of numbers required to describe vibration. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance

[19] *Ibid*, *Section 2.1.4.1*.
[20] *Ibid.*
[21] *Ibid.*
[22] *Ibid*, *Section 2.1.4.3*.
[23] *Ibid.*
[24] FTA, *Transit Noise and Vibration Impact Assessment Manual*, *Section 7*, 2018, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf.
[25] *Ibid.*
[26] *Ibid, Section 5.1*.
[27] *Ibid*.
[28] *Ibid*.

from the source of the vibration. Sensitive receptors for vibration include buildings where vibration would interfere with operations within the building or cause damage (especially older masonry structures), locations where people sleep, and locations with vibration sensitive equipment.[29]

Groundborne noise specifically refers to the rumbling noise emanating from the motion of building room surfaces due to the vibration of floors and walls; it is perceptible only inside buildings.[30] The relationship between groundborne vibration and groundborne noise depends on the frequency of the vibration and the acoustical absorption characteristics of the receiving room. For typical buildings, groundborne vibration that causes low frequency noise (i.e., the vibration spectrum peak is less than 30 Hz) results in a groundborne noise level that is approximately 50 dB lower than the velocity level. For groundborne vibration that causes mid-frequency noise (i.e., the vibration spectrum peak is 30 to 60 Hz), the groundborne noise level will be approximately 35 to 37 dB lower than the velocity level.[31] Therefore, for typical buildings, the groundborne noise dB level is lower than the groundborne vibration velocity levels.

3.2 REGULATORY FRAMEWORK

There are several plans, regulations, and programs that include policies, requirements, and guidelines regarding Noise at the federal, state, regional, and local levels. As described below, these plans, guidelines, and laws include the following:

- Noise Control Act of 1972
- Federal Transportation Administration (FTA) Vibration Standards
- Occupational Safety and Health Act of 1970
- Caltrans Vibration/Groundborne Noise Standards
- Los Angeles County Airport Land Use Commission Comprehensive Land Use Plan
- City of Los Angeles Municipal Code (LAMC)
- City of Los Angeles General Plan Noise Element

3.2.1 Federal

Noise Control Act of 1972

Under the authority of the Noise Control Act of 1972, the United States Environmental Protection Agency (USEPA) established noise emission criteria and testing methods published in Parts 201 through 205 of Title 40 of the Code of Federal Regulations (CFR) that apply to some transportation equipment (e.g., interstate rail carriers, medium trucks, and heavy trucks) and construction equipment. In 1974, USEPA issued guidance levels for the protection of public health and welfare in residential areas of an outdoor L_{dn} of 55 dBA and an indoor L_{dn} of 45 dBA.[32] These guidance levels are not standards or regulations and were developed without consideration of technical or economic feasibility. There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the proposed project. Moreover, the federal noise standards are not reflective of urban environments that range by land use, density, proximity to commercial or industrial centers, etc. As such, for purposes of determining acceptable sound levels to determine and evaluate intrusive noise sources and increases, this document utilizes the City of Los Angeles Noise Regulations, discussed below.

[29] *Ibid*, *Section 6.1*, *6.2*, and *6.3*, 2018.
[30] *Ibid*, *Section 5.4*, 2018.
[31] *Ibid*, *Table 6-3 and Table 6-14*, *pages 126 and 146*, 2018.
[32] USEPA, *EPA Identifies Noise Levels Affecting Health and Welfare*, April 1974. https://archive.epa.gov/epa/aboutepa/epa-identifies-noise-levels-affecting-health-and-welfare.html.

Federal Transit Administration (FTA) Vibration Standards

There are no federal vibration standards or regulations adopted by any agency that are applicable to evaluating vibration impacts from land use development projects such as the proposed project. However, the FTA has adopted vibration criteria for use in evaluating vibration impacts from construction activities.[33] The vibration damage criteria adopted by the FTA are shown in **Table 3-1**.

TABLE 3-1: CONSTRUCTION VIBRATION DAMAGE CRITERIA

Building Category	Peak Particle Velocity (in/sec)
I. Reinforced-concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12
SOURCE: FTA, *Transit Noise and Vibration Impact Assessment Manual*, 2018.	

The FTA has also adopted standards associated with human annoyance for determining the groundborne vibration and noise impacts from ground-borne noise on the following three off-site land-use categories: Vibration Category 1 – High Sensitivity, Vibration Category 2 – Residential, and Vibration Category 3 – Institutional.[34] The FTA defines Category 1 as buildings where vibration would interfere with operations within the building, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. Category 2 refers to all residential land uses and any buildings where people sleep, such as hotels and hospitals. Category 3 refers to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment but that still potentially involve activities that could be disturbed by vibration. The vibration thresholds associated with human annoyance for these three land-use categories are shown in **Table 3-2**. No thresholds have been adopted or recommended for commercial or office uses.

Occupational Safety and Health Act of 1970

Under the Occupational Safety and Health Act of 1970 (29 United States Code §1919 et seq.), the Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise level exposure as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring noise to which workers are exposed, ensuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.[35]

[33]FTA, *Transit Noise and Vibration Impact Assessment Manual*, Table 7-5, page 186, 2018.
[34]*Ibid*, Table 6-1, page 124.
[35]United States Department of Labor, *OSH Act of 1970*, https://www.osha.gov/laws-regs/oshact/completeoshact.

TABLE 3-2: GROUNDBORNE VIBRATION AND GROUNDBORNE NOISE IMPACT CRITERIA FOR GENERAL ASSESSMENT			
Land Use Category	**Frequent Events /a/**	**Occasional Events /b/**	**Infrequent Events /c/**
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB[d]	65 VdB[d]	65 VdB /d/
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

/a/ "Frequent Events" is defined as more than 70 vibration events of the same source per day.
/b/ "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.
/c/ "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day.
/d/ This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes.
SOURCE: FTA, *Transit Noise and Vibration Impact Assessment Manual*, 2018.

3.2.2 State

Caltrans Vibration/Groundborne Noise Standards

The State of California has not adopted Statewide standards or regulations for evaluating vibration or groundborne noise impacts from land use development projects such as the proposed project. Although the State has not adopted any vibration standard, Caltrans in its *Transportation and Construction Vibration Guidance Manual* recommends the following vibration thresholds that are more practical than those provided by the FTA, as shown in **Table 3-3**.

TABLE 3-3: GUIDELINES VIBRATION DAMAGE POTENTIAL THRESHOLD CRITERIA		
	Maximum Peak Particle Velocity (in/sec)	
Structure and Condition	**Transit Sources /a/**	**Continuous/Frequent Intermittent Sources /b/**
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

/a/ Transient sources create a single, isolated vibration event, such as blasting or drop balls.
/b/ Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
SOURCE: Caltrans, *Transportation and Construction Vibration Guidance Manual*, 2020.

3.2.3 Regional

Los Angeles County Airport Land Use Commission Comprehensive Land Use Plan

In Los Angeles County, the Regional Planning Commission has the responsibility for acting as the Airport Land Use Commission and for coordinating the airport planning of public agencies within the county. The Airport Land Use Commission coordinates planning for the areas surrounding public use airports. The Comprehensive Land Use Plan provides for the orderly expansion of Los Angeles County's public use airports and the area surrounding them. It is intended to provide for the adoption of land use measures that will minimize the public's exposure to excessive noise and safety hazards. In formulating the Comprehensive Land Use Plan, the Los Angeles County Airport Land Use Commission has established provisions for safety, noise insulation, and the regulation of building height within areas adjacent to each of the public airports in the County.

3.2.4 Local

City of Los Angeles Municipal Code (LAMC)

The City of Los Angeles Noise Regulations are provided in Chapter XI of the LAMC. The LAMC provides that in cases where the actual ambient conditions are not known, the City's presumed daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) minimum ambient noise levels as defined in LAMC Section 111.03 should be used. The presumed ambient noise levels for these areas where the actual ambient conditions are not known as set forth in the LAMC Section 111.03 are provided in **Table 3-4**. For example, for residential-zoned areas, the presumed ambient noise level is 50 dBA during the daytime and 40 dBA during the nighttime.

TABLE 3-4: PRESUMED EXISTING AMBIENT NOISE LEVEL

Type	Zones	dBA	
		Daytime (7:00 a.m. to 10:00 p.m.)	**Nighttime (10:00 p.m. to 7:00 a.m.)**
Residential	A1, A2, RA, RE, RS, RD, RW1, RW2, R1, R2, R3, R4, and R5	50	40
Commercial	P, PB, CR, C1, C1.5, C2, C4, C5, and CM	60	55
Industrial	M1, MR1, and MR2	60	55
	M2 and M3	65	65

SOURCE: LAMC, Section 111.03.

LAMC Section 112.02 limits increases in noise levels from air conditioning, refrigeration, heating, pumping and filtering equipment. Such equipment may not be operated in such manner as to create any noise which would cause the noise level on the premises of any other occupied property, or, if a condominium, apartment house, duplex, or attached business, within any adjoining unit, to exceed the ambient noise level by more than 5 dB.

LAMC Section 112.05 sets a maximum noise level for construction equipment of 75 dBA at a distance of 50 feet when operated within 500 feet of a residential zone. Compliance with this standard shall not apply where compliance therewith is technically infeasible.[36] LAMC Section 41.40 prohibits construction between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, 6:00 p.m. and 8:00 a.m. on Saturday, and at any time on Sunday (i.e., construction is allowed Monday through Friday between 7:00 a.m. to 9:00 p.m.; and Saturdays and National Holidays between 8:00 a.m. to 6:00 p.m.). In general, the City's Department of Building and Safety enforces Noise Ordinance provisions relative to equipment and the Los Angeles Police Department (LAPD) enforces provisions relative to noise generated by people.

Regarding construction, LAMC Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited) states that no construction or repair work shall be performed between the hours of 9:00 p.m. and 7:00 a.m. on Monday through Friday since such activities would generate loud noises and disturb persons occupying sleeping quarters in any adjacent dwelling, hotel, apartment, or other place of residence. Further, no person, other than an individual homeowner engaged in the repair or construction of his/her single-family dwelling, shall perform any construction or repair work of any kind or perform such work within 500 feet of land so occupied before 8:00 a.m. or after 6:00 p.m. on any Saturday, nor at any time on any Sunday or on a federal holiday. Under certain conditions, the

[36]In accordance with the City's Noise Ordinances, "technically feasible" means that the established noise limitations can be complied with at a project site, with the use of mufflers, shields, sound barriers, and/or other noise reduction devices or techniques employed during the operation of equipment.

City may grant a waiver to allow limited construction activities to occur outside of the limits described above.

City of Los Angeles General Plan Noise Element

The Noise Element of the City's General Plan policies include the CNEL guidelines for land use compatibility as shown in **Table 3-5** and includes a number of goals, objectives, and policies for land use planning purposes. The overall purpose of the Noise Element is to guide policymakers in making land use determinations and in preparing noise ordinances that would limit exposure of citizens to excessive noise levels.[37]

TABLE 3-5: GUIDELINES FOR NOISE COMPATIBLE LAND USE

	Community Noise Exposure : Day-Night Average Exterior Sound level (dBA, CNEL)						
Land Use Category	**50**	**55**	**60**	**65**	**70**	**75**	**80**
Residential Single Family Duplex, Mobile Home	A	C	C	C	N	U	U
Residential Multi-Family	A	A	C	C	N	U	U
Transient Lodging, Motel, Hotel	A	A	C	C	N	U	U
Schools, Library, Church, Hospital, Nursing Home	A	A	C	C	N	N	U
Auditorium, Concert Hall, Amphitheater	C	C	C	C/N	U	U	U
Sports Arena, Outdoor Spectator Sports	C	C	C	C	C/U	U	U
Playground, Neighborhood Park	A	A	A	A/N	N	N/U	U
Golf Course, Riding Stable, Water Recreation, Cemetery	A	A	A	A	N	A/N	U
Office Building, Business, Commercial and Professional	A	A	A	A/C	C	C/N	N
Agriculture, Industrial, Manufacturing, Utilities	A	A	A	A	A/C	C/N	N

A = Normally Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

C = Conditionally Acceptable - New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice.

N = Normally Unacceptable - New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

U = Clearly Unacceptable - New construction or development should generally not be undertaken.

SOURCE: City of Los Angeles General Plan, *Noise Element*, February 1999.

3.3 EXISTING SETTING

3.3.1 Existing Noise and Vibration Environment

Noise

The existing noise environment near the site is predominantly characterized by vehicular traffic and to a lesser extent by occasional aircraft flyovers and other typical urban noise sources. The existing noise levels were monitored on April 7, 2022 from 9:30 a.m. to 11:00 a.m. in 15-minute increments. This time of day represents a typical construction time without the added noise source of peak hour traffic. Monitored noise levels ranged from 55.3 to 72.2 dBA L_{eq}. The monitoring locations are shown in **Figure 3-2** and monitored noise levels are shown in **Table 3-6**. A 24-hour noise measurement was not completed because a secure location was not identified for the monitor.

[37]City of Los Angeles, *General Plan, Noise Element* adopted February 3, 1999, https://planning.lacity.org/odocument/b49a8631-19b2-4477-8c7f-08b48093cddd/Noise_Element.pdf.

TABLE 3-6: EXISTING NOISE LEVELS		
Figure 3-2 Key	**Noise Monitoring Location**	**Sound Levels (dBA, L_{eq})**
1	Forest Lawn Cemetery	55.3
2	Mt. Sinai Funeral Home	61.4
3	Mt Sinai/Forest Lawn Dr.	72.2
4	Mt. Sinai Cemetery Interior	56.5
SOURCE: TAHA, 2022.		

Vibration

Based on field observations, the primary source of existing groundborne vibration in the vicinity of the site is vehicular travel (e.g., standard cars, refuse trucks, delivery trucks, construction trucks, school buses, buses) on local roadways. According to the FTA *Transit Noise and Vibration Impact Assessments* guidance, typical road traffic-induced vibration levels are unlikely to be perceptible by people outside of the road right-of-way.[38] Trucks and buses typically generate groundborne vibration velocity levels of approximately 63 VdB at 50 feet, which can reach levels of 72 VdB when trucks and buses pass over bumps in the road. Per the FTA, 75 VdB is the dividing line between barely perceptible vibration to distinctly perceptible.[39] Therefore, existing ground vibration in the vicinity of the site is generally below the perceptible level.

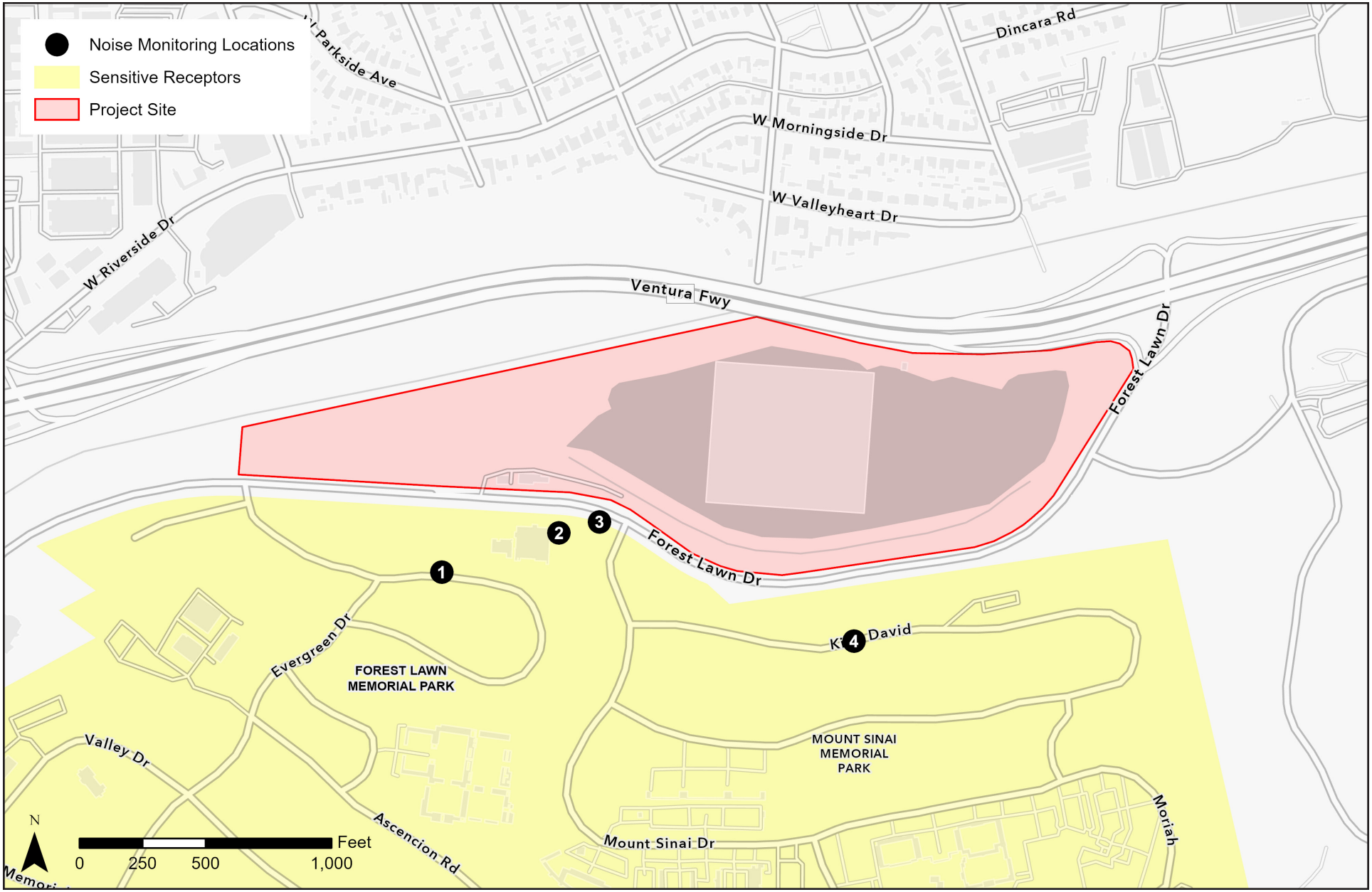
3.3.2 Sensitive Receptors

Noise- and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. The *L.A. CEQA Thresholds Guide* states that noise-sensitive uses include residences, transient lodgings (hotels), schools, libraries, churches, hospitals, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks.[40] Similarly, the Noise Element defines noise-sensitive land uses as single-family and multi-unit dwellings, long-term care facilities (including convalescent and retirement facilities), dormitories, motels, hotels, transient lodging, and other residential uses; houses of worship; hospitals; libraries; schools; auditoriums; concert halls; outdoor theaters; nature and wildlife preserves; and parks.[41] These uses are generally considered more sensitive to noise than commercial and industrial land uses. LAMC Sections 41.40 and 112.05 indicate that 500 feet is an appropriate screening distance for assessing construction-related noise impacts in an urban environment.

Sensitive receptors within 500 feet of the site are shown in **Figure 3-2** and include:

- Mount Sinai Funeral Home located approximately 150 feet to the south of the project site.
- Mount Sinai Cemetery property line located approximately 100 feet to the south of the project site.
- Mount Sinai Cemetery interior area located approximately 330 feet to the south of the project site.
- Forest Lawn Cemetery property line located approximately 100 feet to the south of the project site.
- Forest Lawn Cemetery interior area located approximately 350 feet to the south of the project site.

[38]FTA, *Transit Noise and Vibration Impact Assessment,* page 112, September 2018.
[39]*Ibid,* Table *5-5.*
[40]City of Los Angeles, *L.A. CEQA Thresholds Guide*, page I.1-3.
[41]City of Los Angeles, *General Plan, Noise Element,* Chapter IV.



Source: TAHA, 2024.

taha environmental planners
TAHA 2021-041

Headworks Site Development Project
Noise and Vibration Impact Study

MICHAEL BAKER INTERNATIONAL

FIGURE 3-2

NOISE MONITORING LOCATIONS AND SENSITIVE RECEPTORS

Although sensitive receptors north of the State Route 134 (SR-134) freeway are located within 500 feet of the proposed project they have not been included in the analysis. The freeway is located between the project site and the sensitive receptors with intervening walls and would overshadow/block any construction or operational noise. Special uses, such as recording studios, should be provided with special consideration as they require quiet as an essential function of their business. No such uses have been identified within 500 feet of the proposed project vicinity.

3.4 METHODOLOGY AND SIGNIFICANCE THRESHOLDS

3.4.1 Methodology

On-Site Construction Noise

Noise levels associated with typical construction equipment were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM).[42] This model predicts noise from construction based on a compilation of empirical data and the application of acoustical propagation formulas. Maximum equipment noise levels were adjusted based on anticipated percent of use. Combined construction activity noise levels were estimated by combining anticipated equipment for each activity using RCNM. The projected noise level during the construction period at receptors was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level. According to Caltrans guidance, air temperature and humidity affect molecular absorption differently depending on the frequency spectrum and can vary significantly over long distances in a complex manner. Molecular absorption in air also reduces noise levels with distance. According to Caltrans, this process only accounts for about 1 dBA per 1,000 feet, which is an inaudible and negligible difference in noise levels. Noise levels have been estimated using a decrease of 6 dBA over hard surfaces for each doubling of the distance. The methodology and formulas obtained from the Caltrans Technical Noise Supplement can be viewed below.

(1) *Noise Distance Attenuation Formula:* $dBA_2 = dBA_1 + 20 \times LOG_{10} (D_1/D_2)$

Where:

dBA_1 = *Noise level at the reference distance of 50 feet*
dBA_2 = *Noise level at the receptor*
D_1 = *Reference distance (50 feet)*
D_2 = *Distance from source to receptor (measured distance)*

(2) Logarithmic Noise Level Addition Formula: Nc = 10 x LOG10 ((10^(N1/10)) + (10^(N2/10)))

Where:

Nc = Combined noise level
N1 = Noise level one
N2 = Noise level two

Off-Site Construction Haul Trucks

Off-site construction haul truck noise was assessed qualitatively utilizing a California Department of Transportation methodology which states that a doubling of traffic volumes is necessary to result in an audible increase in noise. Haul truck trips were compared to existing traffic volumes to determine if a doubling of traffic would occur.

[42]FHWA, *Roadway Construction Noise Model*, Version 1.1, August 2008.

On-Site Stationary Noise Sources (Operation)

On-site stationary noise sources were assessed based on reference noise levels for anticipated noise sources and predicted at sensitive receptors based on their distance from each noise source. Stationary sources of noise that were assessed includes recreational activities areas, rooftop patios, mechanical equipment, such as heating, ventilation, and air conditioning (HVAC), recreational activity related to the park uses, and parking activity.

HVAC equipment noise was calculated utilizing a reference noise level of 50 dBA at 50 feet. [43] The noise level was then calculated for the use of 10 HVAC units on the near side of the proposed buildings to sensitive receptors which would result in an approximate noise level of 60 dBA at 50 feet.

Recreational activity noise was calculated based on people talking at the park. The reference noise level utilizing for a normal speaking voice was 57.8 dBA L_{eq} at 3 feet.[44] Conservatively it has been assumed that 25 people would be located in one area of the park which would generate a noise level of approximately 71.8 dBA, L_{eq} at 3 feet.

Parking activity noise was calculated based on an FTA Transit Noise and Vibration Impact Assessment methodology for assessing parking noise. The reference noise level of 56.4 dBa, L_{eq} for a parking lot with 1,000 space was utilized for the analysis. The parking noise level was adjusted based on the number of peak hour trips anticipated for each of the three parking lots.

Off-Site Roadway Noise (Operation)

Operational mobile noise was assessed qualitatively utilizing a Caltrans methodology which states that a doubling of traffic volumes is necessary to result in an audible increase in noise. Project operational traffic volumes were compared to existing traffic volumes to determine if a doubling of traffic would occur.

Construction Vibration

Construction vibration was assessed for construction equipment and off-site haul trucks. Vibration levels were estimated using example vibration levels and propagation formulas provided by FTA.[45] Vibration damage is assessed using Formula (3). Vibration annoyance is assessed using Formula (4).

(3) *Vibration Damage Attenuation Formula:* $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

Where:

PPV_{equip} *= Peak particles velocity in inches per second of the equipment adjusted for distance*
PPV_{ref} *= Reference vibration level in inches per second at 25 feet*
D = Distance from the equipment to the receptor in feet

[43]Daikin, 7.*5 Ton Light Commercial Packaged Air Conditioner*, https://hvacdirect.com/daikin-7-5-ton-light-commercial-packaged-air-conditioner-dcc090xxx4vxxx.html, accessed July 6, 2022.
[44]Soundplan Essential Version 4.1
[45]FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

(4) *Vibration Annoyance Attenuation Formula:* $L_{vdistance} = L_{vref} - 30 \times LOG(D/25)$

Where:

$L_{vdistanc}$ = the rms velocity level adjusted for distance in VdB
L_{vref} = Reference vibration level at 25 feet in VdB
D = Distance from the equipment to the receptor in feet

Operational Vibration

Operational vibration is qualitatively discussed as the proposed project would not include significant sources of operational vibration.

3.4.2 Significance Thresholds

In accordance with the State CEQA Guidelines Appendix G, the proposed project would have a significant impact related to noise and vibration if it would:

- Result in the 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.
- Result in the generation of excessive ground-borne vibration or ground-borne noise levels; and/or,
- 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.

For this analysis, the Appendix G Thresholds listed above are relied upon.

Noise Significance Thresholds

A project would normally have a significant impact on noise levels from construction if:

Construction Noise

- Construction activities would occur within 500 feet of a noise-sensitive use and outside the hours allowed in the LAMC. The allowable hours of construction in the LAMC include 7:00 a.m. to 9:00 p.m. Monday through Friday and 8:00 a.m. to 6:00 p.m. on Saturday.
- Construction equipment noise levels would exceed 75 dBA L_{eq} unless technically infeasible.

Operational Noise

A proposed project would normally have a significant impact on noise levels from operation if:

- The proposed project (on-site and off-site sources) causes the ambient noise levels measured at the property line of affected noise-sensitive uses to increase by 3 dBA in CNEL to or within the “normally unacceptable” or “clearly unacceptable” category (see **Figure 3-2** for a description of these categories); or,
- The proposed project (on-site and off-site sources) causes the ambient noise levels measured at the property line of affected noise-sensitive uses to increase by 5 dBA in CNEL

or greater for noise levels within the "conditionally acceptable" or "normally acceptable" category; or,

- Project-related operational on-site (i.e., non-roadway) noise sources, such as outdoor building mechanical/electrical equipment, outdoor activities, or parking facilities, increase the ambient noise level (hourly L_{eq}) at noise-sensitive uses by 5 dBA.

The threshold of significance criteria used in the noise analysis for on-site operations presented below is an increase in the ambient noise level of 5 dBA (hourly L_{eq}) at the noise-sensitive uses, in accordance with the LAMC. The LAMC does not apply to off-site traffic (i.e., vehicle traveling on public roadways). Therefore, the significance threshold for off-site traffic noise associated with operations is based on the *L.A. CEQA Thresholds Guide*, meaning that the threshold of significance is an increase in the ambient noise level by 3 dBA or 5 dBA in CNEL (depending on the land use category) at noise-sensitive uses. In addition, the threshold for composite noise levels (on-site and off-site sources) is also based on the *L.A. CEQA Thresholds Guide*, which is an increase in the ambient noise level of 3 dBA or 5 dBA in CNEL (depending on the land use category) for the project's composite noise (both project-related on-site and off-site sources) at noise-sensitive uses.

Vibration Significance Thresholds

The City has not adopted any standards, regulations, or thresholds addressing groundborne vibration or groundborne noise impacts during construction. As such, to assess impacts due to groundborne vibration, the City of Los Angeles utilizes guidelines from the FTA. FTA's published technical manual, "Transit Noise and Vibration Impacts Assessment," dated September 2018, provides groundborne vibration impact criteria relative to building damage and human annoyance.[46] For damage, the impact criteria are established based on the structural foundation of the potentially impacted building. Vibration damage criteria are given in **Table 3-1** for various structural categories. Low-rise residential in California are typically engineered concrete and masonry buildings. Larger commercial buildings are typically reinforced-concrete, steel, or timber buildings. No other types of buildings have been identified within the vicinity of the project site. The proposed project would result in a significant impact if vibration levels would exceed the limits in the following tables.

- Project construction activities cause ground-borne vibration levels to exceed 0.5 PPV at the nearest off-site reinforced-concrete, steel, or timber building.
- Project construction activities cause ground-borne vibration levels to exceed 0.3 PPV at the nearest off-site engineered concrete and masonry building.
- Project construction activities cause ground-borne vibration levels to exceed 0.2 PPV at the nearest off-site n/on-engineered timber and masonry building.
- Project construction activities cause ground-borne vibration levels to exceed 0.12 PPV at buildings extremely susceptible to vibration damage, such as historic buildings.

Table 3-2 shows the annoyance criteria. Based on FTA guidance, construction vibration impacts associated with human annoyance would be significant if the following were to occur (applicable to frequent events; 70 or more vibration events per day):

- Project construction activities cause ground-borne vibration levels to exceed 65 VdB at off-site buildings where vibration would interfere with interior operations (e.g. hospitals, recording studios).

[46]FTA, *Transit Noise and Vibration Impact Assessment,* September 2018.

3.5 ENVIRONMENTAL IMPACTS

3.5.1 Would the proposed project result in the 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? (Less-Than-Significant Impact with Mitigation Incorporated during Construction and No Impact during Operations)

Impact Analysis

Construction. The proposed project would be constructed beginning in 2024 and finishing in 2031. **Table 3-7** shows noise levels associated with various pieces of construction equipment. Construction noise levels were calculated using the FHWA RCNM. Noise levels would fluctuate depending on equipment type, horsepower, and atmospheric conditions, among other factors. Construction equipment is expected to generate noise levels ranging from approximately 63.2 dBA L_{eq} to 81.0 dBA L_{eq} at a distance of 50 feet, and noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance. Noise from construction activities may intermittently dominate the noise environment in the immediate area of construction.

Construction activities typically require the use of numerous pieces of noise-generating equipment. The noise levels shown in **Table 3-7** consider the likelihood that multiple pieces of construction equipment would be operating simultaneously and the typical overall noise levels that would be expected for each phase of construction. Equipment would be spread throughout the project site for the duration of construction and would typically not present a concentrated noise source. The combined construction noise levels are based on work zones where two to four pieces of equipment may be operating simultaneously at one time. When considered as an entire process with multiple pieces of equipment, the construction scenario where 39 pieces of equipment would be used on site would be the loudest phase of construction and would generate a noise level of approximately 83.8 dBA L_{eq} at 50 feet.

Noise associated with construction is controlled by the City of Los Angeles Noise Ordinance. Therefore, the proposed project would result in a significant impact if construction equipment noise levels would exceed 75 dBA at a noise-sensitive use (unless technically infeasible) or if construction would occur between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday. Construction activity would be limited to daytime hours and would not occur between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday.

Table 3-8 presents the estimated noise levels at the sensitive receptors nearest to the proposed project as well as the incremental increase in noise associated with construction. The combined equipment noise level for each construction scenario was used to predict noise during each construction scenario. The most noise-intensive construction activities would occur during the early phases of construction (e.g., excavation and grading). The majority of the latter phases of construction would occur interior to the project site or within the interior of buildings, and result in lower noise levels than exterior construction. The LAMC limits equipment noise levels to 75 dBA L_{eq} unless technically infeasible. Noise levels would exceed 75 dBA during the construction scenario with 39 pieces of equipment on-site. The threshold would typically not be exceeded at distances of 100 feet or greater. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

TABLE 3-7: CONSTRUCTION NOISE LEVEL BY PHASE AND EQUIPMENT TYPE	
Noise Source	**Noise Level (dBA) L_{eq} at 50 Feet**
MAXIMUM CONSTRUCTION (39 EQUIPMENT PIECES)	
Air Compressor	73.7
Backhoe	73.6
Forklift	63.2
Generator	77.6
Grader	81.0
Loader	75.1
Manlift	67.7
Pickup Truck	71.0
Roller	73.0
Skiploader	75.1
Water Truck	70.3
Welding Machine	70.0
39 Equipment Combined Noise Level	**83.8 /a/**
TYPICAL CONSTRUCTION (15 EQUIPMENT PIECES)	
Bobcat	64.3
Concrete Pump Truck	74.4
Forklift	63.2
Generator	70.0
Grader	81.0
Loader	75.1
Pickup Truck	71.0
Roller	73.0
Skiploader	75.1
Water Truck	70.3
15 Equipment Combined Noise Level	**79.7 /b/**
TYPICAL CONSTRUCTION (5 EQUIPMENT PIECES)	
Excavator	76.7
Manlift	67.7
Pickup Truck	71.0
Skiploader	75.1
Water Truck	70.3
Excavator	76.7
5 Equipment Combined Noise Level	**76.3 /c/**

/a/ Logarithmic sum of four pieces of equipment at one location
/b/ Logarithmic sum of three pieces of equipment at one location
/c/ Logarithmic sum of two pieces of equipment at one location
SOURCE: FHWA, *Roadway Construction Noise Model (RCNM) Version 1.1*.

TABLE 3-8: CONSTRUCTION NOISE LEVELS (UNMITIGATED)				
Sensitive Receptor	**Distance (Feet)**	**Existing Noise Level (dBA, L_{eq}) /a/**	**Project Noise Level (dBA, L_{eq})**	**Exceed Threshold (75 dBA, L_{eq})**
39 PIECES OF EQUIPMENT				
Forest Lawn Cemetery Property Line	100	72.2	77.8	Yes
Mt. Sinai Cemetery Property Line	100	72.2	77.8	Yes
Mt. Sinai Funeral Home	150	61.4	74.3	No
Forest Lawn Cemetery Interior	300	55.3	68.2	No
Mt. Sinai Cemetery Interior	300	56.5	68.2	No
15 PIECES OF EQUIPMENT				
Forest Lawn Cemetery Property Line	100	72.2	73.7	No
Mt. Sinai Cemetery Property Line	100	72.2	73.7	No
Mt. Sinai Funeral Home	150	61.4	70.2	No
Forest Lawn Cemetery Interior	300	55.3	64.1	No
Mt. Sinai Cemetery Interior	300	56.5	64.1	No
5 PIECES OF EQUIPMENT				
Forest Lawn Cemetery Property Line	100	72.2	70.3	No
Mt. Sinai Cemetery Property Line	100	72.2	70.3	No
Mt. Sinai Funeral Home	150	61.4	66.8	No
Forest Lawn Cemetery Interior	300	55.3	60.7	No
Mt. Sinai Cemetery Interior	300	56.5	60.7	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2024.

Haul trucks associated with construction activity would potentially increase noise levels along the haul route. The anticipated haul route is the SR-134 Freeway to Forest Lawn Drive then to the project site. The greatest number of daily haul truck trips that would occur would be approximately 16 haul trucks or 32 one-way trips. This would equate to approximately four truck trips per hour. According to the Los Angeles Department of Transportation, Forest Lawn Drive in the vicinity of the project site experiences approximately 21,299 vehicle trips per day with an AM and PM peak hour volume of 1,845 trips, and 1,661 trips, respectively. The off-peak hours of 10:00 a.m. to 3:00 p.m. averages approximately 1,158 trips per hour.[47] A doubling of traffic volumes is typically needed to audibly increase noise levels along a roadway. The addition of four haul truck trips per hour during any portion of the day during typical construction hours would not result in a doubling of traffic volumes. Therefore, the proposed project would result in a less-than-significant impact related to haul truck noise.

Operations. The operational analysis assesses noise related to mechanical equipment, recreational activities, parking, and off-site vehicle movements. A significant impact would result if the ambient noise level measured at the property line of the affected uses increases by 3 dBA CNEL to or within 70 to 75 dBA CNEL, or any 5 dBA or more increase in noise level.

[47]Los Angeles Department of Transportation, *24 Hours Traffic Volumes*, *Forestlawn Dr at Mt Sinai Dr*, February 4, 2014.

Mechanical Equipment. Mechanical sources of noise would typically be located on the rooftops of the WQL facility and the DPR facility. HVAC equipment typically generates noise levels of approximately 50 dBA at 50 feet.[48] Assuming 10 HVAC units could be located on the near roof side of the proposed buildings, the reference noise level would be approximately 60 dBA at 50 feet. As shown in **Table 3-9**, HVAC equipment would not generate audible noise at offsite land uses. In addition, HVAC noise would be less than the existing noise level and would result in a less than 0.1 dBA L_{eq} increase in noise. As such, the estimated ambient noise levels at all off-site receptor locations with the addition mechanical equipment would be below the significance criteria of 5 dBA L_{eq} above ambient noise levels. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels related to mechanical equipment noise.

TABLE 3-9: HVAC NOISE ANALYSIS

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA, L_{eq})	HVAC Noise Level (dBA, L_{eq})	New Ambient Noise Level (dBA, L_{eq})	Noise Level Increase (dBA, L_{eq})
Forest Lawn Cemetery Property Line	200	72.2	48.0	72.2	0.0
Mt. Sinai Funeral Home	370	61.4	42.6	61.5	0.1
Mt. Sinai Cemetery Property Line	530	72.2	39.5	72.2	0.0

SOURCE: TAHA, 2024.

Recreational Activities. The proposed project would include the construction of a public park and garden. As currently designed, the garden would include a series of ramps, landings, walkways, courtyards, overlooks, and bridges as well as tree groves and gardens reflecting chaparral and dry meadow plant communities. The park would also include a series of pedestrian, bicycle, and equestrian pathways, including the Headworks segment of the Los Angeles River Trail, which would interconnect with Griffith Park and the existing river trail system via existing tunnels beneath Forest Lawn Drive and SR-134 at the east end of the HWSG property. The typical noise source for these recreational areas would be people speaking. The main noise source for recreational activities in and around the project site would be conversational noise. A normal speaking voice generate a noise level of approximately 57.8 dBA L_{eq} at 3 feet.[49] The park is anticipated to generate approximately two vehicle trips during the peak hour. Conservatively it has been assumed that 25 people would be located in one area of the park which would generate a noise level of approximately 71.8 dBA, L_{eq} at 3 feet.

Recreational noise levels at off-site sensitive receptors are shown in **Table 3-10**. Recreational activity noise would be overshadowed by existing noise sources such as traffic noise generated by Forest Lawn Drive and the SR-134 Freeway. If the noise source is not audible at off-site uses then there is no potential for an increase in the 24-hour CNEL noise level to occur. Recreational activity noise at the park would therefore not increase noise levels at adjacent receptors by 3 dBA CNEL to or within the "normally acceptable" or "clearly unacceptable" categories, as shown in **Table 3-5**, or increase noise levels by 5 dBA CNEL or more. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels related to recreational activity noise.

[48]Daikin*, 7.5 Ton Light Commercial Packaged Air Conditioner*, https://hvacdirect.com/daikin-7-5-ton-light-commercial-packaged-air-conditioner-dcc090xxx4vxxx.html, accessed July 6, 2022.

[49]SoundPLAN Essential, Version 4.1.

TABLE 3-10: RECREATIONAL ACTIVITY NOISE					
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA, L_{eq})**	**Noise Level at Receptor (dBA, L_{eq}) /a/**	**New Ambient Noise Level (dBA, L_{eq})**	**Noise Level Increase (dBA, L_{eq})**
Mt. Sinai Cemetery Property Line	300	72.2	31.8	72.2	0.0
Forest Lawn Cemetery Property Line	570	72.2	26.2	72.2	0.0
Mt. Sinai Funeral Home	650	61.4	25.1	61.4	0.0
SOURCE: TAHA, 2024.					

Parking Activity. Parking would be provided for the WQL, DPR, and the Headworks Restoration Park. Parking noise typically includes engine starting, tire noise, and vehicle movements.

Passenger vehicles traveling within a parking lot at low speed would generate a noise level of approximately 50 dBA at 50 feet.[50] Parking activity noise was calculated based on the number of peak hour trips associated with each of the three project components. As shown in **Table 3-11**, the Water Quality lab would generate the highest noise level of approximately 44.5 dBA L_{eq} at 50 feet. Parking activity noise was calculated at each receptor as shown in **Table 3-12**.

TABLE 3-11: PARKING ACTIVITY NOISE LEVELS		
Parking Lot	**Average Peak Hour Vehicle Volume**	**Parking Noise Level at 50 Feet (dBA, L_{eq})**
Water Quality Lab	65	44.5
Direct Potable Reuse Demonstration Facility	2	29.4
Headworks Restoration Park Parking	2	29.4
SOURCE: TAHA, 2024.		

TABLE 3-12: PARKING ACTIVITY NOISE AT RECEPTORS					
Sensitive Receptor	**Distance (feet) /a/**	**Existing Noise Level (dBA, L_{eq})**	**Combined Parking Noise Level at Receptor (dBA, L_{eq}) /a/**	**New Ambient Noise Level (dBA, L_{eq})**	**Noise Level Increase (dBA, L_{eq})**
Mt. Sinai Cemetery Property Line	Variable	72.2	30.7	72.2	0.0
Forest Lawn Cemetery Property Line	Variable	72.2	29.0	72.2	0.0
Mt. Sinai Funeral Home	Variable	61.4	25.5	61.4	0.0
/a/ Distance to each sensitive receptor from each parking lot would vary and are included in the appendix. **SOURCE:** TAHA, 2024.					

The Mount Sinai Cemetery property line would experience the relative highest noise level of approximately 30.7 dBA L_{eq}. Nonetheless, parking activity noise would be significantly quieter than the existing noise levels of 61.4 dBA L_{eq} to 71.2 dBA L_{eq}. Parking activity noise would be overshadowed by existing noise sources such as traffic noise generated by Forest Lawn Drive and the SR-134 Freeway. If a noise source is not audible at off-site uses, then there is no potential for an increase in the 24-hour CNEL noise level to occur. Parking activity noise at the park would therefore not increase noise levels at adjacent receptors by 3 dBA CNEL to or within the "normally acceptable" or "clearly unacceptable" categories, as shown in **Table 3-5**, or increase noise levels by 5 dBA CNEL or more. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels related to parking activity noise.

[50] SoundPLAN Essential, Version 4.1.

Off-site Vehicle Movements. The proposed project would generate approximately 608 daily vehicle trips, including 72 AM peak hour trips and 60 PM peak hour trips.[51] According to the Los Angeles Department of Transportation, Forest Lawn Drive in the vicinity of the project site experiences approximately 21,299 vehicle trips per day with an AM and PM peak hour volume of 1,845 trips, and 1,661 trips, respectively.[52] A doubling of traffic volumes is typically needed to audibly increase noise levels along a roadway. The addition of 72 trips per hour during the AM peak hour and 60 trips during PM peak hour would not result in a doubling of traffic volumes. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels related to operational mobile noise.

Composite Noise Level Impacts from Proposed Project Operations. In addition to considering the potential noise impacts resulting from individual on-site stationary noise, including mechanical equipment noise, recreational activity noise, parking noise, and off-site mobile noise, noise levels of all activities during operations were assessed. The various individual sources of noise would not be audible at sensitive receptors. The noise sources would be dispersed throughout the project site and would not present a concentrated noise source that would be greater than the individual sources. As the operational sources of noise would not be audible off site there is no potential to increase noise levels at adjacent receptors by 3 dBA CNEL to or within the "normally acceptable" or "clearly unacceptable" categories, as shown in **Table 3-5**, or increase noise levels by 5 dBA CNEL or more. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels related to operational noise.

Mitigation Measures

Because the 75 dBA significance threshold has the potential to intermittently be exceeded at multiple sensitive receptors during the noisiest construction activities, the following mitigation measures are required.

N-1 Construction equipment shall be properly maintained and equipped with mufflers to manufacturer specifications.

N-2 Rubber-tired equipment shall be used rather than tracked equipment when feasible.

N-3 Equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance.

N-4 A public liaison shall be responsible for addressing public concerns about construction activities, including excessive noise. As needed, the liaison shall determine the cause of the concern (e.g., starting too early, bad muffler) and implement measures to address the concern.

N-5 The public shall be notified in advance of the location and dates of construction hours and activities.

Level of Significance After Mitigation

Construction. Mitigation Measures **N1** through **N5** are designed to reduce construction noise levels. The equipment mufflers associated with Mitigation Measure **N1** would reduce construction noise levels by approximately 5 dBA. Mitigation Measures **N2** through **N5**, although difficult to quantify, would also reduce and/or control construction noise levels. Mitigated noise levels for previously identified sensitive receptors that would experience construction noise above thresholds are shown in **Table 3-13**. Mitigation Measures **N1** through **N5** would reduce noise levels to the greatest extent

[51]Translutions, *Headworks VMT Memorandum*, June 13, 2022.
[52]Los Angeles Department of Transportation, *24 Hours Traffic Volumes*, *Forestlawn Dr at Mt Sinai Dr*, February 4, 2014.

possible at nearby sensitive receptors and would reduce equipment noise levels to below 75 dBA. Consistent with the LAMC, all feasible measures would be taken to control construction noise. Therefore, the proposed project would result in a less-than-significant impact related to construction noise with mitigation incorporated.

TABLE 3-13: CONSTRUCTION NOISE LEVELS (MITIGATED)

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA, L_{eq}) /a/	Unmitigated Project Noise Level (dBA, L_{eq})	Mitigated Project Noise Level (dBA, L_{eq})	Exceed Threshold (75 dBA, L_{eq})
39 PIECES OF EQUIPMENT					
Forest Lawn Cemetery Property Line	100	72.2	77.8	72.8	No
Mount Sinai Cemetery Property Line	100	72.2	77.8	72.8	No
Mount Sinai Funeral Home	150	61.4	74.3	69.3	No
Forest Lawn Cemetery Interior	300	55.3	68.2	63.2	No
Mount Sinai Cemetery Interior	300	56.5	68.2	63.2	No
15 PIECES OF EQUIPMENT					
Forest Lawn Cemetery Property Line	100	72.2	73.7	68.7	No
Mount Sinai Cemetery Property Line	100	72.2	73.7	68.7	No
Mount Sinai Funeral Home	150	61.4	70.2	65.2	No
Forest Lawn Cemetery Interior	300	55.3	64.1	59.1	No
Mount Sinai Cemetery Interior	300	56.5	64.1	59.1	No
5 PIECES OF EQUIPMENT					
Forest Lawn Cemetery Property Line	100	72.2	70.3	65.3	No
Mount Sinai Cemetery Property Line	100	72.2	70.3	65.3	No
Mount Sinai Funeral Home	150	61.4	66.8	61.8	No
Forest Lawn Cemetery Interior	300	55.3	60.7	55.7	No
Mount Sinai Cemetery Interior	300	56.5	60.7	55.7	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2024.

Operations. Impacts related to operational noise would be less than significant and no mitigation is required.

3.5.2 Would the result in the generation of excessive ground-borne vibration or ground-borne noise levels? (No Impact)

Impact Analysis

Construction. Construction activity can generate varying degrees of vibration, depending on the procedure and equipment. The construction phases that would typically generate higher vibration levels include clearing, excavation, and grading and foundations due to the use of heavier pieces of construction equipment, that are similar to a large bulldozer. Equipment movements generate vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, and to slight damage at the highest levels. In most cases, the primary concern regarding construction vibration relates to damage.

Based on visual characteristics of adjacent structures (e.g., age), residential building foundations are assumed to be constructed of engineered timber and masonry. According to the FTA guidance, buildings constructed of engineered-concrete and masonry can withstand vibration levels up to 0.3 inches per second without experiencing damage. Equipment that would be utilized would be most similar to a large bulldozer, loaded trucks, and small bulldozer. Vibration levels for various types of construction equipment with an average source level reported in terms of velocity are shown in **Table 3-14**.

TABLE 3-14: VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT

	Vibration Levels							
	PPV (Inches per Second)				VdB (Micro-Inch/Second)			
Equipment	**25 Feet**	**50 Feet**	**75 Feet**	**100 Feet**	**25 Feet**	**50 Feet**	**75 Feet**	**100 Feet**
Large Bulldozer	0.089	0.031	0.017	0.011	87	78	73	69
Caisson Drilling	0.089	0.031	0.017	0.011	87	78	73	69
Loaded Trucks	0.076	0.027	0.015	0.010	86	77	72	68
Jackhammer	0.035	0.012	0.007	0.004	79	70	65	61
Small Bulldozer	0.003	0.001	0.001	0.000	58	49	44	40

SOURCE: FTA, *Transit Noise and Vibration Impact Assessment*, September 2018; TAHA, 2024.

Table 3-15 shows predicted vibration levels at each sensitive receptor. The vibration levels are a conservative estimate based on a large bulldozer operating at property boundary. Equipment activity at the property edge would be limited by space and the need for maneuvering. Construction equipment would typically be located more than 100 feet from the off-site structures. The maximum vibration level at an off-site use would be approximately 0.011 inches per second and would remain substantially below the 0.3 inches per second vibration damage threshold. Therefore, the proposed project would result in no impact related to vibration damage.

TABLE 3-15: VIBRATION DAMAGE IMPACT ANALYSIS

Off-Site Use	**Distance from Construction Activity (feet)**	**Reference Vibration Level (Inches/Second)**	**PPV at Structure (Inches/Second)**	**Exceed 0.3 Inches/Second Threshold**
Mt. Sinai Cemetery Property Line	100	0.089	0.011	No
Forest Lawn Property Line	100	0.089	0.011	No
Mt. Sinai Funeral Home	150	0.089	0.006	No

SOURCE: TAHA, 2024.

Vibration annoyance is another concern related to construction activity. However, perceptible vibration is not typically a concern for human health and is a common occurrence within the urban environment. Special uses such as select medical facilities, research facilities and recording studios would be potentially impacted by construction vibration annoyance due to the presences of sensitive equipment. None of these uses have been identified within the project vicinity. Therefore, the proposed project would result in no impact related to vibration annoyance.

Operations. The proposed project would not include a significant source of permanent vibration. Project-related vehicle trips could generate vibration, although similar to the existing condition, roadway vibration from passenger vehicles would not be perceptible outside of the roadway right-of-way. Therefore, no impact would occur related to operational vibration.

Mitigation Measures

No mitigation measures are required.

3.5.3 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 proposed project expose people residing or working in the project area to excessive noise levels? (No Impact)

Impact Analysis

The development site is located approximately 3.3 miles from the Hollywood Burbank Airport. Since the airport nearby is more than two miles from the project site, there is no potential for the proposed project to expose people working or residing in the area to excessive aircraft noise. Therefore, no impact would occur.

Mitigation Measures

No mitigation measures are required.

4.0 REFERENCES

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APPENDIX A

Noise and Vibration Calculations

Noise Formulas

Noise Distance Attenuation

Hard Site

Ni = No - 20 * LOG(Di/Do)

Ni = attenuated noise level of interest
No = reference noise level
Di = distance to receptor (Di>Do)
Do = reference distance

Source: (Bolt, Beranek, and Newman, 1971)

Summation of Noise Levels

Equation: Ns=10 x LOG10((10^(N1/10))+(10^(N2/10))+(10^(N3/10))+(10^(N4/10)))

Ns = Noise Level Sum
N1 = Noise Level 1
N2 = Noise Level 2
N3 = Noise Level 3
N4 = Noise Level 4

Efficient Summation Formula
=10*LOG(SUM(10^(UserRange/10)))

Source: California Department of Transportation, Technical Noise Supplement, 2013

Construction Noise Analysis

Phased Construction Noise Levels	
Construction Equipment	**Noise Level at 50 feet (dBA)**
Maximum Construction (39 Equipment Pieces)	
Air Compressor	73.7
Backhoe	73.6
Forklift	63.2
Generator	77.6
Grader	81.0
Loader	75.1
Manlift	67.7
Pickup Truck	71.0
Roller	73.0
Skiploader	75.1
Water Truck	70.3
Welding Machine	70.0
39 Equipment Combined	83.8
Typical Construction (15 Equipment)	
Bobcat	64.3
Fork Lift	63.2
Concrete Pump Truck	74.4
Generator	70.0
Grader	81
Loader	75.1
Pickup Truck	71.0
Roller	73.0
Skiploader	75.1
Water Truck	70.3
15 Equipment Combined	79.7
Typical Construction (5 Equipment)	
Excavator	76.7
Manlift	67.7
Pickup Truck	71
Skiploader	75.1
Water Truck	70.3
5 Equipment Combined	76.3

Source: Federal Highway Administration, *Roadway Construction Noise Model*, 2008

EXISTING AMBIENT NOISE LEVELS	
(Site Number) Noise Monitoring Locations	**Sound Level (dBA, Leq)**
1	55.3
2	61.4
3	72.2
4	56.5

UNMITIGATED CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS								
Sensitive Receptors	**Distance (feet)**	**Intervening Building /a/**	**Reference Noise Level (dBA)**	**Max Construction Noise (dBA, Leq)**	**Existing Ambient (dBA, Leq)**	**New Ambient (dBA, Leq)**	**LA City Noise Threshold**	**Exceed Threshold?**
MAXIMUM CONSTRUCTION (39 Pieces of Equipment)								
Forest Lawn Cemetery Property Line	100	0	83.8	77.8	72.2	78.8	75	Yes
Mount Sinai Cemetery Property Line	100	0	83.8	77.8	72.2	78.8	75	Yes
Mount Sinai Funeral Home	150	0	83.8	74.3	61.4	74.5	75	No
Forest Lawn Cemetery Interior	300	0	83.8	68.2	55.3	68.5	75	No
Mount Sinai Cemetery Interior	300	0	83.8	68.2	56.5	68.5	75	No
TYPICAL CONSTRUCTION (15 Pieces of Equipment)								
Sensitive Receptors	**Distance (feet)**	**Intervening Building /a/**	**Reference Noise Level (dBA)**	**Max Construction Noise (dBA, Leq)**	**Existing Ambient (dBA, Leq)**	**New Ambient (dBA, Leq)**	**LA City Noise Threshold**	**Exceed Threshold?**
Forest Lawn Cemetery Property Line	100	0	79.7	73.7	72.2	76.0	75	No
Mount Sinai Cemetery Property Line	100	0	79.7	73.7	72.2	76.0	75	No
Mount Sinai Funeral Home	150	0	79.7	70.2	61.4	70.7	75	No
Forest Lawn Cemetery Interior	300	0	79.7	64.1	55.3	64.7	75	No
Mount Sinai Cemetery Interior	300	0	79.7	64.1	56.5	64.8	75	No
TYPICAL CONSTRUCTION (5 Pieces of Equipment)								
Forest Lawn Cemetery Property Line	100	0	76.3	70.3	72.2	74.4	75	No
Mount Sinai Cemetery Property Line	100	0	76.3	70.3	72.2	74.4	75	No
Mount Sinai Funeral Home	150	0	76.3	66.8	61.4	67.9	75	No
Forest Lawn Cemetery Interior	300	0	76.3	60.7	55.3	61.8	75	No
Mount Sinai Cemetery Interior	300	0	76.3	60.7	56.5	62.1	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

MITIGATED CONSTRUCTION NOISE										
Sensitive Receptors	**Distance (feet)**	**Intervening Building /a/**	**Reference Noise Level (dBA)**	**Mitigation Measure /b/**	**Mitigation /b/**	**Mitigated Reference Noise Level**	**Mitigated Max Construction Noise (dBA, Leq)**	**Existing Ambient (dBA, Leq)**	**LA City Noise Threshold**	**Exceed Threshold?**
MAXIMUM CONSTRUCTION (39 Pieces of Equipment)										
Forest Lawn Cemetery Property Line	100	0	83.8	N1	5	78.8	72.8	72.2	75	No
Mount Sinai Cemetery Property Line	100	0	83.8	N1	5	78.8	72.8	72.2	75	No
Mount Sinai Funeral Home	150	0	83.8	N1	5	78.8	69.3	61.4	75	No
Forest Lawn Cemetery Interior	300	0	83.8	N1	5	78.8	63.2	55.3	75	No
Mount Sinai Cemetery Interior	300	0	83.8	N1	5	78.8	63.2	56.5	75	No
TYPICAL CONSTRUCTION (15 Pieces of Equipment)										
Forest Lawn Cemetery Property Line	100	0	79.7	N1	5	74.7	68.7	72.2	75	No
Mount Sinai Cemetery Property Line	100	0	79.7	N1	5	74.7	68.7	72.2	75	No
Mount Sinai Funeral Home	150	0	79.7	N1	5	74.7	65.2	61.4	75	No
Forest Lawn Cemetery Interior	300	0	79.7	N1	5	74.7	59.1	55.3	75	No
Mount Sinai Cemetery Interior	300	0	79.7	N1	5	74.7	59.1	56.5	75	No
TYPICAL CONSTRUCTION (5 Pieces of Equipment)										
Forest Lawn Cemetery Property Line	100	0	76.3	N1	5	71.3	65.3	72.2	75	No
Mount Sinai Cemetery Property Line	100	0	76.3	N1	5	71.3	65.3	72.2	75	No
Mount Sinai Funeral Home	150	0	76.3	N1	5	71.3	61.8	61.4	75	No
Forest Lawn Cemetery Interior	300	0	76.3	N1	5	71.3	55.7	55.3	75	No
Mount Sinai Cemetery Interior	300	0	76.3	N1	5	71.3	55.7	56.5	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row
/b/ Mitigation Measure N1 includes a 5 dB reduction for equipment mufflers.

OPERATIONAL RECREATIONAL NOISE								
Sensitive Receptors	Distance (feet)	Intervening Building /a/	Reference Noise Level (dBA)	Recreational Noise (dBA, Leq)	Existing Ambient (dBA, Leq)	New Ambient (dBA, Leq)	Incremental	Exceed Threshold (+5 dBA)?
Mount Sinai Cemetery Property Line	300	0	71.8	31.8	72.2	72.2	0.0	No
Forest Lawn Cemetery Property Line	570	0	71.8	26.2	72.2	72.2	0.0	No
Mount Sinai Funeral Home	650	0	71.8	25.1	61.4	61.4	0.0	No

OPERATIONAL HVAC NOISE								
Sensitive Receptors	Distance (feet)	Intervening Building /a/	Reference Noise Level (dBA)	HVAC Noise (dBA, Leq)	Existing Ambient (dBA, Leq)	New Ambient (dBA, Leq)	Incremental	Exceed Threshold (+5 dBA)?
Forest Lawn Cemetery Property Line	200	0	60.0	48.0	72.2	72.2	0.0	No
Mount Sinai Funeral Home	370	0	60.0	42.6	61.4	61.5	0.1	No
Mount Sinai Cemetery Property Line	530	0	60.0	39.5	72.2	72.2	0.0	No

Reference Noise Level at 50 feet (	Reference Parking Lot Capacity (Parking Spaces)
56.4	1,000

Proposed Project Parking Lot Noise		
Parking Lot	Proposed Project Parking Noise Level at 50 feet (dBA, Leq)	Number of Average Peak Hour Trips
Water Quality Lab	44.5	65
Direct Potable Reuse Demonstration Facility	29.4	2
Headworks Restoration Garden	29.4	2

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

PARKING NOISE AT RECEPTORS								
Sensitive Receptors	Distance (feet)	Intervening Building /a/	Reference Noise Level (dBA)	Parking Noise Noise (dBA, Leq)	Existing Ambient (dBA, Leq)	New Ambient (dBA, Leq)	Incremental	Exceed Threshold (+5 dBA)?
Water Quality Lab								
Forest Lawn Cemetery Property Line	250	0	44.5	30.5	72.2	72.2	0.0	No
Mount Sinai Funeral Home	300	0	44.5	29.0	61.4	61.4	0.0	No
Mount Sinai Cemetery Property Line	450	0	44.5	25.4	72.2	72.2	0.0	No
Direct Potable Reuse Demonstration Facility								
Forest Lawn Cemetery Property Line	270	0	29.4	14.8	72.2	72.2	0.0	No
Mount Sinai Funeral Home	600	0	29.4	7.8	61.4	61.4	0.0	No
Mount Sinai Cemetery Property Line	1,000	0	29.4	3.4	72.2	72.2	0.0	No
Headworks Restoration Garden								
Mount Sinai Cemetery Property Line	450	0	29.4	10.3	72.2	72.2	0.0	No
Mount Sinai Funeral Home	600	0	29.4	7.8	61.4	61.4	0.0	No
Forest Lawn Cemetery Property Line	680	0	29.4	6.7	72.2	72.2	0.0	No

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

Combined Parking Noise

Sensitive Receptors	Combined Parking Lot Noise	Existing Ambient
Mount Sinai Cemetery Property Line	30.7	72.2
Forest Lawn Cemetery Property Line	29.0	72.2
Mount Sinai Funeral Home	25.5	61.4

Vibration Formulas

Vibration Formulas

Vibration PPV Attenuation

Equation: PPVequip = PPVref x (25/D)^1.5
PPV (equip) is the peak particle velocity in in/sec of the equipment adjusted for distance
PPV (ref) is the reference vibration level in in/sec at 25 feet from Table 12-2
D is the distance from the equipment to the receiver.

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

Vibration VdB Attenuation

Equation: Lv(D) = Lv(25 ft) – 30log(D/25)
D = Distance (feet)
Lv(D) = Vibration Level

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

Vibration Damage and Annoyance Analysis

Construction Vibration Damage Criteria	
Building/Structural Category	PPV, in/sec
Reinforced-concrete, steel or timber	0.5
Engineered-concrete and masonry buildings	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.1

Vibration Velocities for Construction Equipment		
Equipment	PPV at 25 Feet (Inches/Second)	PPV at 50 Feet (Inches/Second)
Caisson Drill	0.089	0.031
Excavator	0.040	0.014
Pile Driver (Sonic)	0.170	0.060
Small Bulldozer	0.003	0.001
Large Bulldozer	0.089	0.0315

Vibration Damage Impact Analysis

Sensitive Receptor	Distance from Construction Activity (feet)	Reference Equipment	Reference Vibration Level	PPV at Structure	Vibration Threshold	Exceed Threshold?
Mount Sinai Cemetery Property Line	100	Large Bulldozer	0.089	0.011	0.3	No
Forest Lawn Property Line	100	Large Bulldozer	0.089	0.011	0.3	No
Mount Sinai Funeral Home	150	Large Bulldozer	0.089	0.006	0.3	No

Source: FTA, Transit Noise and Vibration Impact Assessment, September 2018; New Hampshire Department of Transportation, Ground Vibrations Emanating from Construction Equipment, September 8, 2012

APPENDIX B

Noise Monitoring Reports

Site 1: Forest Lawn Cemetery



Session Report

7/9/2022

Information Panel

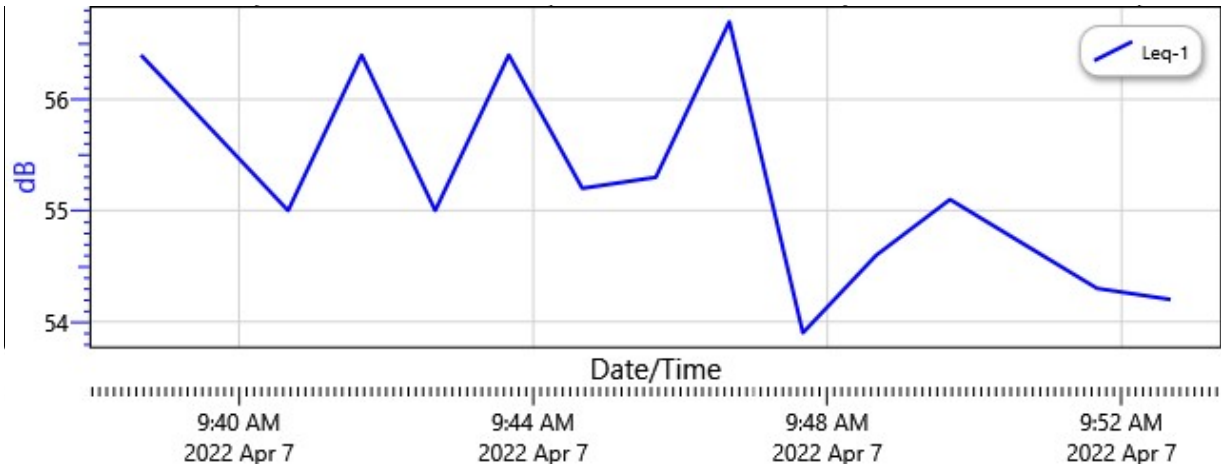
Name	LADWP_Headworks_Site1
Start Time	4/7/2022 9:37:40 AM
Stop Time	4/7/2022 9:52:40 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	55.3 dB	Lmax	1	61.9 dB
Lmin	1	51.7 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP_Headworks_Site1: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
4/7/2022 9:38:40 AM	56.4
9:39:40 AM	55.7
9:40:40 AM	55
9:41:40 AM	56.4
9:42:40 AM	55
9:43:40 AM	56.4
9:44:40 AM	55.2
9:45:40 AM	55.3
9:46:40 AM	56.7
9:47:40 AM	53.9
9:48:40 AM	54.6
9:49:40 AM	55.1
9:50:40 AM	54.7
9:51:40 AM	54.3
9:52:40 AM	54.2

Noise Measurement Report Form

Project: LADWP Headworks Contract No (s): N/A

Date: 4-7-2022 Day of Week: Thursday Time: 0935

Monitoring Site Number: ST-1 Monitoring Site Address: Forest Lawn Cemetery

Measurement Taken By: EH

Approximate Wind Speed: 3 mph [km/hr] Approximate Wind Direction: From the West

Approximate distance of Sound Level Meter from Receptor Location: on site

Approximate distance of Sound Level Meter from Project Site: 250 ft

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: _____ Serial Number: _____

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

During of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114.0	n/a	n/a
L_{eq}	55.3		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Freeway main source,
2. Active construction equipment at project site – not audible
3.
4.

Site 2: Mt. Sinai Funeral Home



Session Report

7/9/2022

Information Panel

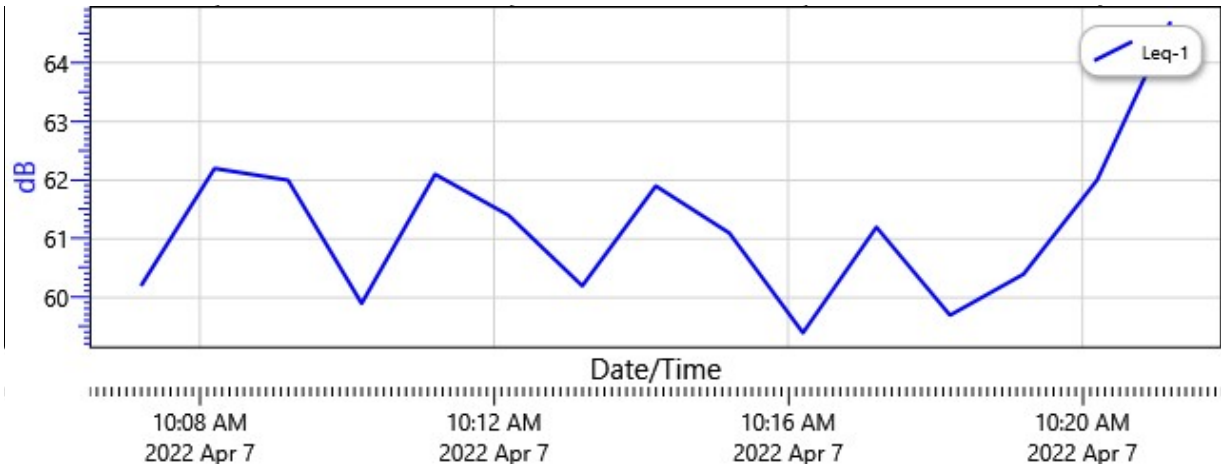
Name	LADWP_Headworks_Site2
Start Time	4/7/2022 10:06:12 AM
Stop Time	4/7/2022 10:21:12 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	61.4 dB	Lmax	1	72.8 dB
Lmin	1	51.7 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP_Headworks_Site2: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
4/7/2022 10:07:12 AM	60.2
10:08:12 AM	62.2
10:09:12 AM	62
10:10:12 AM	59.9
10:11:12 AM	62.1
10:12:12 AM	61.4
10:13:12 AM	60.2
10:14:12 AM	61.9
10:15:12 AM	61.1
10:16:12 AM	59.4
10:17:12 AM	61.2
10:18:12 AM	59.7
10:19:12 AM	60.4
10:20:12 AM	62
10:21:12 AM	64.7

Noise Measurement Report Form

Project: LADWP Headworks Contract No (s): N/A

Date: 4-7-2022 Day of Week: Thursday Time: 1004

Monitoring Site Number: ST-2 Monitoring Site Address: Mt Sinai Mortuary

Measurement Taken By: KK

Approximate Wind Speed: 3 mph [km/hr] Approximate Wind Direction: From the West

Approximate distance of Sound Level Meter from Receptor Location: on-site

Approximate distance of Sound Level Meter from Project Site: Ter 80F

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement:

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114.0	n/a	n/a
L_{eq}	61.4		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Forest lawn main noise source, freeway audible in background
2. Active construction equipment, not audible
3.
4.

Site 3: Mt. Sinai/Forest Lawn Dr.



Session Report

7/9/2022

Information Panel

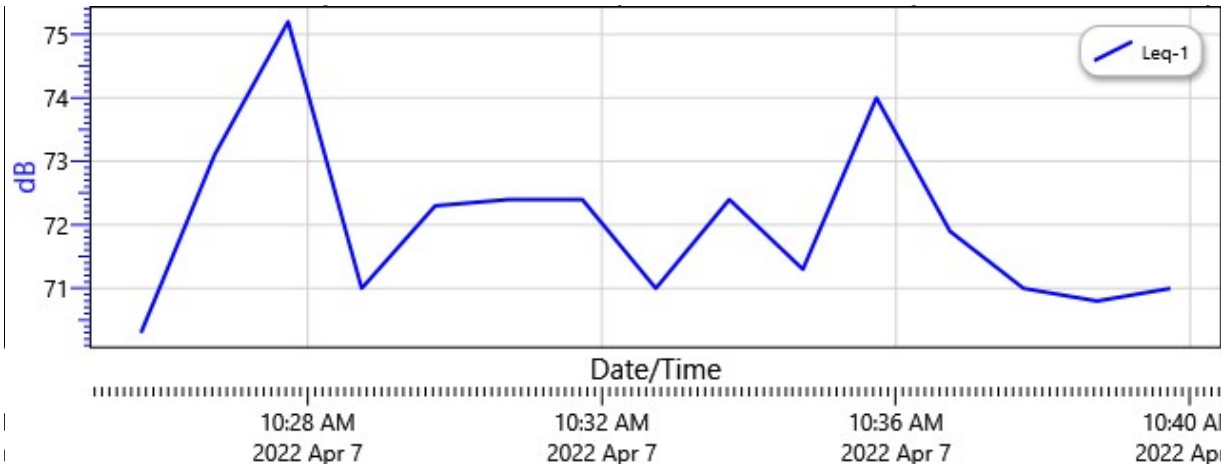
Name	LADWP_Headworks_Site3
Start Time	4/7/2022 10:24:44 AM
Stop Time	4/7/2022 10:39:44 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	72.2 dB	Lmax	1	85.6 dB
Lmin	1	55.4 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP_Headworks_Site3: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
4/7/2022 10:25:44 AM	70.3
10:26:44 AM	73.1
10:27:44 AM	75.2
10:28:44 AM	71
10:29:44 AM	72.3
10:30:44 AM	72.4
10:31:44 AM	72.4
10:32:44 AM	71
10:33:44 AM	72.4
10:34:44 AM	71.3
10:35:44 AM	74
10:36:44 AM	71.9
10:37:44 AM	71
10:38:44 AM	70.8
10:39:44 AM	71

Noise Measurement Report Form

Project: LADWP Headworks Contract No (s): N/A

Date: 4-7-2022 Day of Week: Thursday Time: 1022

Monitoring Site Number: ST-3 Monitoring Site Address: Mt Sinai / Forest Lawn Dr.

Measurement Taken By: ES

Approximate Wind Speed: _____ mph [km/hr] Approximate Wind Direction: From the _____

Approximate distance of Sound Level Meter from Receptor Location: _____

Approximate distance of Sound Level Meter from Project Site: _____

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: _____ Serial Number: _____

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

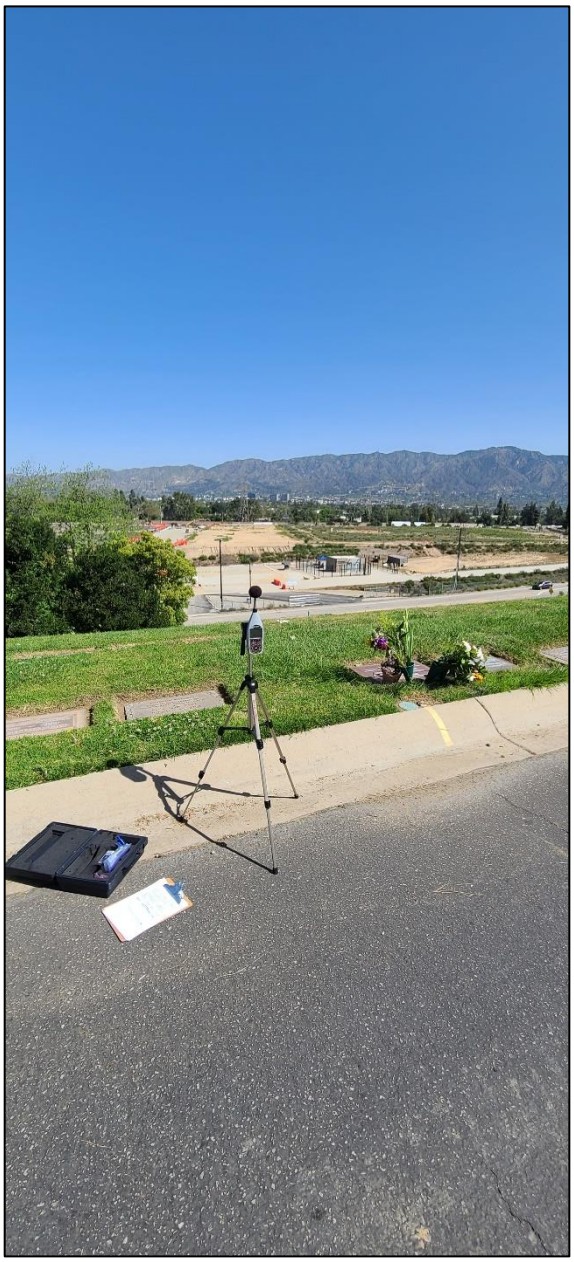
Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114.0	n/a	n/a
L_{eq}	72.2		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Forest lawn dr main noise source. Construction equipment active, but not audible
2.
3.
4.

Site 4: Mt. Sinai Cemetery Interior



Session Report

7/9/2022

Information Panel

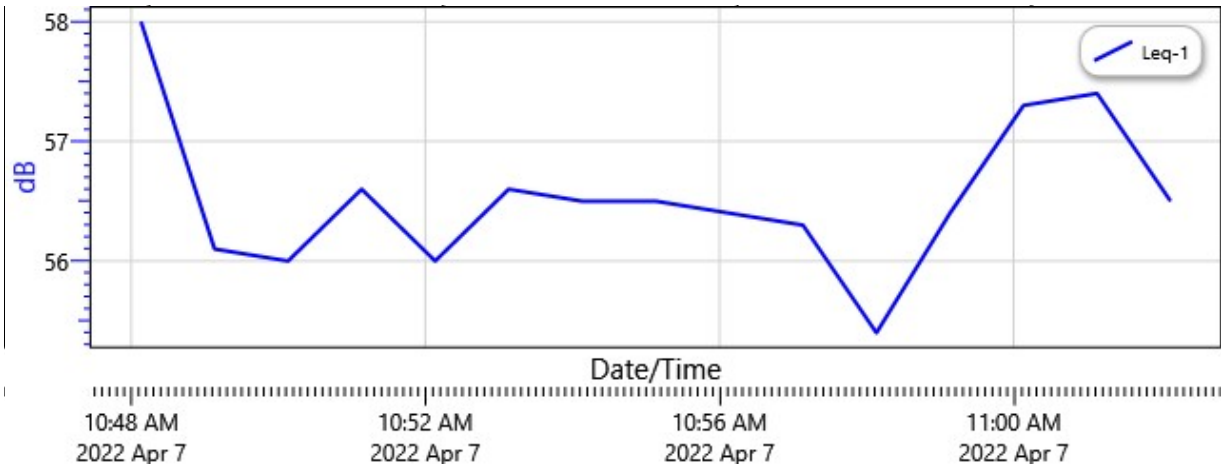
Name	LADWP_Headworks_Site4
Start Time	4/7/2022 10:47:08 AM
Stop Time	4/7/2022 11:02:08 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	56.5 dB	Lmax	1	70.1 dB
Lmin	1	53.6 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP_Headworks_Site4: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
4/7/2022 10:48:08 AM	58
10:49:08 AM	56.1
10:50:08 AM	56
10:51:08 AM	56.6
10:52:08 AM	56
10:53:08 AM	56.6
10:54:08 AM	56.5
10:55:08 AM	56.5
10:56:08 AM	56.4
10:57:08 AM	56.3
10:58:08 AM	55.4
10:59:08 AM	56.4
11:00:08 AM	57.3
11:01:08 AM	57.4
11:02:08 AM	56.5

Noise Measurement Report Form

Project: LADWP Headworks Contract No (s): N/A

Date: 4-7-2022 Day of Week: Thursday Time: 1045

Monitoring Site Number: ST-4 Monitoring Site Address: Mt Sinai Interior

Measurement Taken By: KB

Approximate Wind Speed: 3 mph [km/hr] Approximate Wind Direction: From the _____

Approximate distance of Sound Level Meter from Receptor Location: _____

Approximate distance of Sound Level Meter from Project Site: _____

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: _____ Serial Number: _____

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114.0	n/a	n/a
L_{eq}	56.6		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Faintly audible, main noise source
2.
3.
4.

APPENDIX G

Vehicle Miles Traveled Technical Memorandum

memorandum

DATE: June 13, 2022
TO: Natalie Thompson, Senior Environmental Planner, AECOM
FROM: Sandipan Bhattacharjee, P.E., T.E., AICP, ENV SP
SUBJECT: Headworks – VMT Memorandum

Translutions, Inc. (Translutions) is pleased to provide this memorandum discussing the vehicle Miles Traveled (VMT) for the proposed Headworks Site Development project in the City of Los Angeles. The proposed project is located at 6001 W. Forest Lawn Drive in the City of Los Angeles, California, at the LADWP Headworks spreading grounds property.

PROJECT DESCRIPTION

The project site will be developed to include a Water Quality Lab (WQL), Direct Potable Reuse (DPR) Demonstration Facility, and a public park (Headworks Park). The WQL component of the project will replace the existing Los Angeles Department of Water and Power (LADWP) laboratory located in Pasadena as well as the Rinaldi mobile lab facility located in Granada Hills and help LADWP to address issues including energy efficiency, operations and maintenance costs, and insufficient space to perform regulatory required laboratory testing. The WQL will consolidate the work locations of several related functions, such as sample collection, biology, science and research, and the water quality mobile laboratory trailer (MLT) that are currently performed in separate locations. The project will also help consolidate management and administrative functions related to water quality currently located at LADWP Headquarters and other downtown locations.

The DPR Demonstration Facility component of the proposed project would be an advanced water purification facility (AWPF) for treated drinking water augmentation, as defined in the State Water Resource Control Board (SWRCB) Proposed Framework for Regulating Direct Potable Reuse in California. The DPR Demonstration Facility would provide the opportunity to verify the technologies and processes required to produce purified recycled water suitable for DPR under close coordination with the SWRCB Division of Drinking Water (DDW), which must ultimately approve DPR programs.

The Headworks Park component of the proposed project would incorporate landscaping reflective of native plant communities and provide educational opportunities regarding local ecosystems and the Los Angeles River, as well as passive open-space recreation uses, including a segment of the Los Angeles River Trail system linking to adjacent recreation areas and trails. The park, a portion of which would be located atop the Headworks West Reservoir, would be consistent with the previously established plans to plant the top and sides of the buried concrete reservoir and surrounding areas with native vegetation.

The WQL would operate 7 days a week, 12-hours a day, from 6 a.m. to 6 p.m. At the outset of operations, 102 personnel would report to the facility on weekdays in staggered shifts. Of this total, 62 personnel would be transferred from the existing laboratory building in Pasadena. The Pasadena facility is owned by LADWP, and it would not be backfilled with another department use or leased to an outside entity. In addition, 5 personnel would be transferred from the LADWP Rinaldi Yard in Granada Hills, where the water quality mobile laboratory and support trailers are currently located. This function would be entirely relocated to the proposed WQL. The proposed WQL would initially require an increase of 35 personnel above the current staffing at the Pasadena lab to perform the laboratory functions required to meet state and federal regulations and ensure drinking water quality. Over time, it is anticipated that the number of personnel at the WQL would increase to a maximum of 172 based on the requirement for additional laboratory procedures and on organizational changes that would involve the transfer of existing management and administrative staff from the LADWP headquarters building in downtown Los Angeles. This increase in personnel from 102 to 172 may occur over a ten-year period. It is anticipated that the positions transferred from LADWP headquarters to the WQL would be replaced at the headquarters with new hires in other areas. On weekends, the WQL would maintain operations with a skeleton crew. While most personnel would operate from the laboratory building on a daily basis, some personnel would spend a portion of their day in the field collecting water samples, for which

fleet vehicles would be available from the WQL. Regular deliveries of chemicals and other supplies would be accommodated via the secondary, non-public gate at the west end of the Headworks spreading grounds property.

The DPR facility will include five (5) employees. The public park will include approximately 15 acres.

TRIP GENERATION

Trip generation for the project is based on trip generation rates from the Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition). The WQL part of the project involves research and development and the DPR would operate primarily as a light industrial use. The trip generation for these uses were based on the number of employees anticipated at maximum occupancy. The following trip generation rates were used for the various components of the project:

- WQL – Land Use 760 – Research & Development Center
- DPR – Land Use 110 – General Light Industrial
- Park – Land Use 411 – Public Park

Table A shows the project trip generation. As shown in Table A, the total project is anticipated to generate 72 trips during the a.m. peak hour, 69 trips during the p.m. peak hour, and 608 daily trips.

Table A - Project Trip Generation

			Peak Hours						Daily
			AM Peak Hour			PM Peak Hour			
Land Use		Units	In	Out	Total	In	Out	Total	
Proposed Demo & WQL Lab	172	Employees							
Trip Generation Rates[1]			0.34	0.06	0.40	0.05	0.33	0.38	3.37
Trip Generation			58	11	69	8	57	65	580
Demo Facility	5	Employees							
Trip Generation Rates[2]			0.44	0.09	0.53	0.11	0.38	0.49	3.10
Trip Generation			2	1	3	1	1	2	16
Public Park	15	Acres							
Trip Generation Rates[3]			0.01	0.01	0.02	0.06	0.05	0.11	0.78
Trip Generation			0	0	0	1	1	2	12
Total Trip Generation			**60**	**12**	**72**	**10**	**59**	**69**	**608**

[1] Trip generation based on rates for Land Use 760 - "Research & Development Center" from Institute of Transportation Engineers' (ITE) Trip Generation (11th Edition).
[2] Trip generation based on rates for Land Use 110 - "General Light Industrial" from ITE Trip Generation (11th Edition).
[3] Trip generation based on rates for Land Use 411 - "Public Park" from ITE Trip Generation (11th Edition).

VMT SCREENING

For identification of VMT impacts for a land use project, CEQA requires the identification of impacts based on whether the project conflicts or is inconsistent with CEQA Guidelines section 15064.3, subdivision (b)(1). The City of Los Angeles has developed several screening criteria to identify if a detailed analysis will be required.

Trip Based Screening. The primary screening criterion is a trip-based screening. If a project generates less than 250 daily trips, impacts are considered to be less than significant. As seen on Table A, the project generates more than 250 daily trips. Therefore, this screening criteria does not apply.

Land Use Based Screening. The City's guidelines also state that public services (e.g., police, fire stations, public utilities, public parks) do not generally generate substantial VMT. Instead, these land uses are often built-in response to development from other land uses (e.g., office and residential). Therefore, these land uses can be presumed to have less-than-significant impacts on VMT. The proposed project includes a public park and a drinking water treatment facility, which are public services that are presumed to have a less than significant VMT impact. Therefore, these components of the project are screened out from analysis. The WQL, although an LADWP function, would not meet the definition of a public service since it would serve as a laboratory and administrative facility that would generate daily employee trips in excess of the VMT daily threshold. Therefore, the WQL is subject to a VMT analysis.

WQL Net VMT Screening. To evaluate the VMT/employee for the WQL, the net change per employee was calculated. As stated earlier, the proposed project will replace the Pasadena and Rinaldi facilities. The Pasadena facility is located at 555 E Walnut Street in Pasadena, and the Rinaldi facility is located at 15901 Rinaldi Street in Granada Hills. For this evaluation, the net VMT for the project was calculated by subtracting the total VMT per employee for the Pasadena and Rinaldi facilities from the VMT for the proposed project. The VMT per employee for employees that are expected to transfer to the WQL from LADWP facilities in downtown Los Angeles were not subtracted because it is anticipated that those positions would be backfilled at the current locations in the future, unlike the positions in Pasadena and Rinaldi.

The Pasadena facility is in Traffic Analysis Zone (TAZ) 22121400 of the SCAG RTP Model. The VMT per employee for the TAZ is 16.3 miles/employee. The Rinaldi facility is included in the City of Los Angeles VMT Calculator, which shows a VMT per employee of 14.1 miles/employee. The VMT/Employee for the proposed project site is 12.4 miles/employee based on the VMT Calculator.

The total VMT for existing and proposed facilities were calculated by multiplying the VMT/employee for the existing and proposed facilities. The reduction of 62 employees at the Pasadena location will result in a VMT reduction of 1,011 miles, and that of the Rinaldi facility will result in a reduction of 71 miles. The VMT for the proposed project is anticipated to be 2,133 miles for 172 employees. The net change in VMT is 1,051 miles, which results in a net VMT of 6.11 miles per employee. Table B shows the calculations.

Table B: Project VMT/Employee

Land Uses	VMT/Employee	Employees	Total VMT
Project	12.4	172	2,133
VMT reduction from Pasadena Facility	16.3	62	-1,011
VMT reduction from Rinaldi Facility	14.1	5	-71
Net VMT			1,051
Net VMT/Employee		172	**6.11**
City Threshold (Central APC)			**7.6**

The project is located in the Central Area Planning Commission (APC), which has a VMT Impact Criteria (15% Below APC Average) of 7.6 miles per employee. Therefore, the project will result in less than significant impacts.

CONCLUSION

As seen from the above analysis, the project results in less than significant impacts as the VMT per employee is less than the threshold for the Central APC.

APPENDIX H

Department of City Planning Inter-Departmental Correspondence

FORM GEN. 160 (Rev. 6-80)

CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

DATE: September 28, 2022

TO: Evelyn Cortez-Davis
Director of Water Engineering and Technical Service Division
Los Angeles Department of Water and Power

FROM: Craig Weber *C W*
Principal City Planner
Department of City Planning

SUBJECT: **Tom Labonge Headworks Facility**

It is our understanding that the Department of Water and Power (DWP) is in the process of initiating infrastructure improvements at a City-owned site located at 6001 W Forest Lawn Drive (APN 5581-001-906). The site, located adjacent to the northwestern boundary of Griffith Park, near the City's border with Burbank, is within the Hollywood Community Plan area, and is designated for Open Space purposes, with a corresponding zone of OS-IXL-H-RIO. The site is also located within the River Improvement Overlay area. The site is located in proximity to the Forest Lawn Cemetery, the Los Angeles River, the Ventura Freeway (134), various Griffith Park facilities, and residential neighborhoods within the City of Burbank. The site is currently improved with a reservoir and other water system infrastructure.

In addition to the on-going construction of water system infrastructure, DWP is also developing a Water Quality Laboratory, Direct Potable Reuse Demonstration Facility, and a park facility that will be located at the site. While the initiated improvements are consistent with numerous General Plan and Community Plan goals and policies that seek to maintain open space uses for passive and active recreation purposes, and to carry out necessary infrastructure improvements, it is our understanding that the initiated development would be exempt from zoning review, or any approval process administered by the Department of City Planning, pursuant to City Charter Sections 672 and 675, which state that the Department of Water and Power Board shall have the power and duty to make and enforce all necessary rules and regulations governing the construction, maintenance, operation, connection to, and use of the Water and Power Assets for Departmental Purposes.